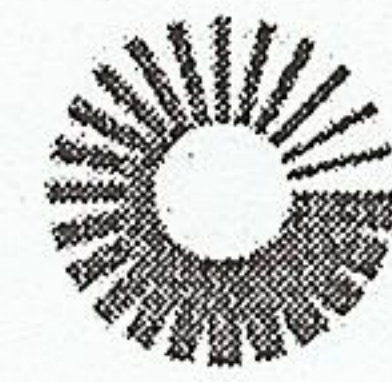


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**Sikorsky**  
A United Technologies Company

October 7, 2009

CCS-92-AOL-09-0019

To: All S-92 Helicopter Operators  
All S-92 Helicopter Maintenance Centers  
All Field Service Representatives

Attention: Aviation Director  
Chief of Maintenance  
Chief Helicopter Pilot

Subject: **S-92<sup>®</sup> Helicopter Main Gearbox Foot Cracks**

Attention: S-92 Helicopter Chief of Maintenance  
Director of Operations

Since January 2009, the S-92 helicopter fleet has experienced a number of cracks in one of the four feet that attach the gearbox to the aircraft. This letter describes what is known about this condition and what Sikorsky is doing to prevent further cracks.

The S-92 helicopter main gearbox is attached to the fuselage by four feet and each foot has two bolts for a total of eight bolts. This arrangement provides a degree of redundancy, and as part of the original substantiation, analyses were conducted that show continued airworthiness for a period of time even with one foot completely severed. This analysis was recently repeated with conservative assumptions and is one of the bases for the recently imposed 10-hour visual inspection of the feet under ASB 92-63-020.

It is known that all of the reported cracks have occurred on aircraft in operation in the North Sea region of Europe. The reasons for this are under investigation. It has been determined that some of the cracks were associated with continued use of the gearbox after one of the attachment bolts had broken and been replaced. When a bolt breaks, the loads are redistributed to the other bolt on the same foot increasing the stress in that region. This mode is understood and the new requirement to replace bolts every 500 hours should prevent recurrence.

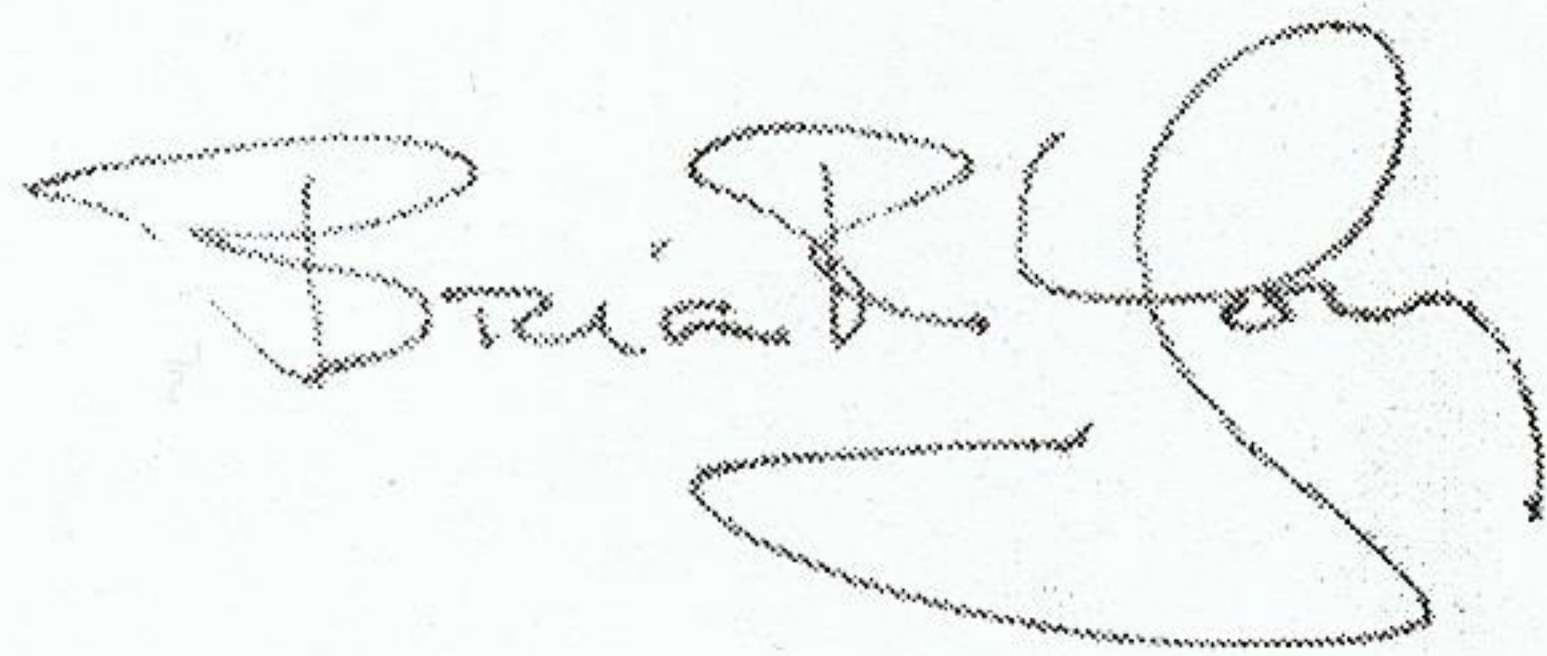
There is another mode of foot cracking under investigation wherein the crack originates at the bolt hole and propagates to the edge of the foot. There have been a total of eight reported cracks of this kind. Parts from the field have been examined in the Sikorsky Materials Laboratory and several possible contributing factors have been identified that necessitate further investigation. One of the loads in the foot is caused by the intentional press fit of the steel bushing into the magnesium housing during manufacture.

Sikorsky has identified a process improvement to reduce these stresses and that change is in production for new transmissions and spare housings used at overhaul.

Another factor is corrosion of the magnesium that causes pits that are stress risers for crack initiation. Maintenance manual procedures are designed to prevent corrosion by the appropriate application of sealant around the bolt heads and around the perimeter of the foot-to-airframe interface. We have observed corrosion and pitting on housings returned to Sikorsky including those that have cracked.

The most recent of these cracks occurred this week, again in the North Sea, on a replacement gearbox with a new housing which had only been in service for 70 hours. The prior gearbox on this aircraft was also removed for a foot crack. We have not yet examined this gearbox, but we do know it had the latest press fit on the bushing and that with such low time in service it is unlikely that corrosion was a factor. Accordingly, we are dispatching a team to that customer's location to fully assess the situation. As new information is learned and corrective actions defined, Sikorsky will communicate with all customers through the normal channels of operator letters and service bulletins as appropriate.

Very truly yours,  
SIKORSKY AIRCRAFT CORPORATION

A handwritten signature in dark ink, appearing to read "Brian R. Young". The signature is fluid and cursive, with a large, sweeping flourish at the end.

Brian R. Young  
Director, Commercial Programs