Bell Helicopter
A Textron Company

OPERATION SAFETY NOTICE GEN-13-46
17 December 2013

TO: All owners and operators of Bell helicopters

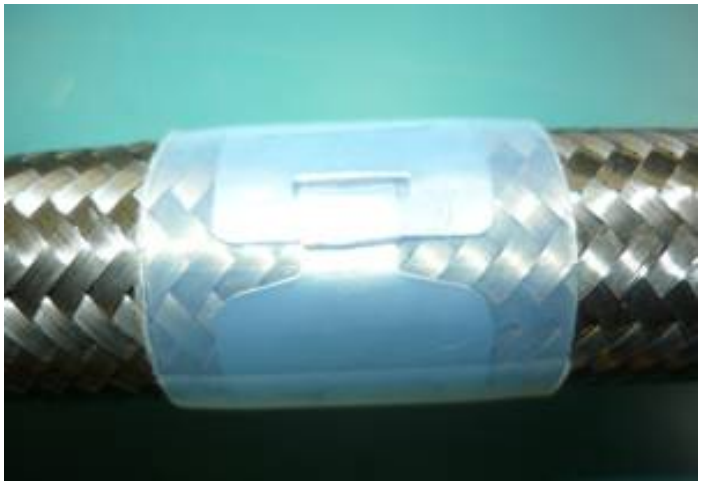
SUBJECT: FLUID LINES FRETTING DAMAGE

Bell Helicopter continues receiving sporadic reports from the field regarding fluid line damage or failure due to fretting from various sources. Incorrect clamping, poor routing, twisted installation, damaged attaching clamps and fretting with metal identification tags or other components are all possible causes for damage. Recently, two cases were reported where a flexible oil hose for a main transmission suffered failure due to the identification tag fretting into the hose as shown in Picture 1. In these instances, significant dark paste indicating fretting would have been present at numerous inspection intervals before the braid was worn through and subsequently resulting in the hose failure. This OSN emphasizes the importance of paying attention during scheduled inspections to any anomaly and to rectify any potential situation that may cause damage to fluid lines and surrounding components. The following are all conditions that should be verified and rectified as required to avoid fluid line degradation and possible failure.

Identification tags used on flexible lines should be properly secured and located in an area that is not in a bend radius. To prevent movement and limit fretting damage, many hoses manufactured after 2005 incorporate a clear heat shrink tubing over the ID tag as shown in Picture 2. Loose identification tag should be properly secured to avoid fretting damage.

Incorrect flexible line installation involving excessive hose bending or twisting may also result in fretting of the braids and cause their subsequent failure. Damaged attaching clamp, clamp of the wrong size or clamp with worn or missing protective rubber may also cause damage to any fluid line. Picture 3 shows an example of a rigid fluid line damaged by a worn clamp. In all cases, fluid lines should always be properly secured to avoid contact with surrounding components. Picture 4 shows the result of a flex hose contacting the transmission support case. Improperly installed and secured fluid line may also harmonize with inherent airframe vibrations and subsequently fail. Any evidence of fretting characterized by dark paste should always be investigated and rectified as soon as possible. Additional General Practices for fluid lines can be found in the BHT-ALL-SPM Chapter 8.

Picture 1



Picture 2

Picture 3

Picture 4

For any questions regarding this letter, please contact:

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