

Technical Bulletin

Evaluation of damage on connections

Background

Recently during load out checks, there has been an increase in the number of “catches” by our Verification Technicians who have found connections that could potentially fail if they were used towards the upper end of their operational limits. (i.e. High levels of tension/torsion/number of cycles).

In some cases, subsequent discussions have found companies that are doing their own inspections “in house”. There may also be pressure to try and increase the life of tools by accepting some defects and refacing / dressing damaged connections rather than recutting...

Guidance for Inspectors

In addition to the capture of key dimensions, good judgment and discretion must be exercised in field examination of connections. For example, when it comes to assessing damage or defects, their location and potential affect on the connection integrity must be considered rather than just their “size”.

For example:

Pit depth cannot be easily accurately measured and the effect of pitting in terms of fatigue is difficult for the inspector to assess. Where pitting depth is specified in NS-2™ it is provided as a guide to aid inspection - the inspector should become adept at visually estimating pitting depth, the surface area it covers and its location, it does not necessarily require physical measurement.

Where there are guidelines for thread damage, the inspector's judgement is also important. Although most inspection standards specify damage 1½” along a thread helix, this should be seen as an arbitrary guide figure - if serious damage is found covering only ½” along a thread helix such that it could interfere with make-up then it must be rejected. The disposition of a defect depends upon the knowledge and experience of the inspector.

More info:

For more information or assistance, contact Fearnley Procter Drill String Engineering at DShelp@fp-g.com

EXAMPLE: Corrosion pitting in a pin connection stress relief groove



The inspector felt that this pin connection was acceptable to use because “the pits are not 1/32” deep”. He had possibly not appreciated that the cumulative affect of this circumferential line of pits could be quite significant and lead to a crack developing.

Note: The stress relief groove is designed to remove stress raisers in this area of the pin connection which is susceptible to fatigue related failures in rotating applications.