


Technical Bulletin

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250-HMIS-475 Quill Fatigue Crack

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BACKGROUND INFORMATION:

TESCO's 250T HMI top drives experience the highest level of stress of any of our top drive units. This is particularly true in North America, where our customers continue to push the limits of our equipment as they drill ever more difficult directional and horizontal wells. TESCO has received reports of cracks in the root of the lower load nut grooves on a number of 250T HMI quills. In most instances these cracks have been discovered during routine (250 day) inspections. One instance was reported in which the damage from a crack has resulted in fluid loss during operation. No instances of quill separation have been reported to date. Figure 1 shows the location of a typical crack.

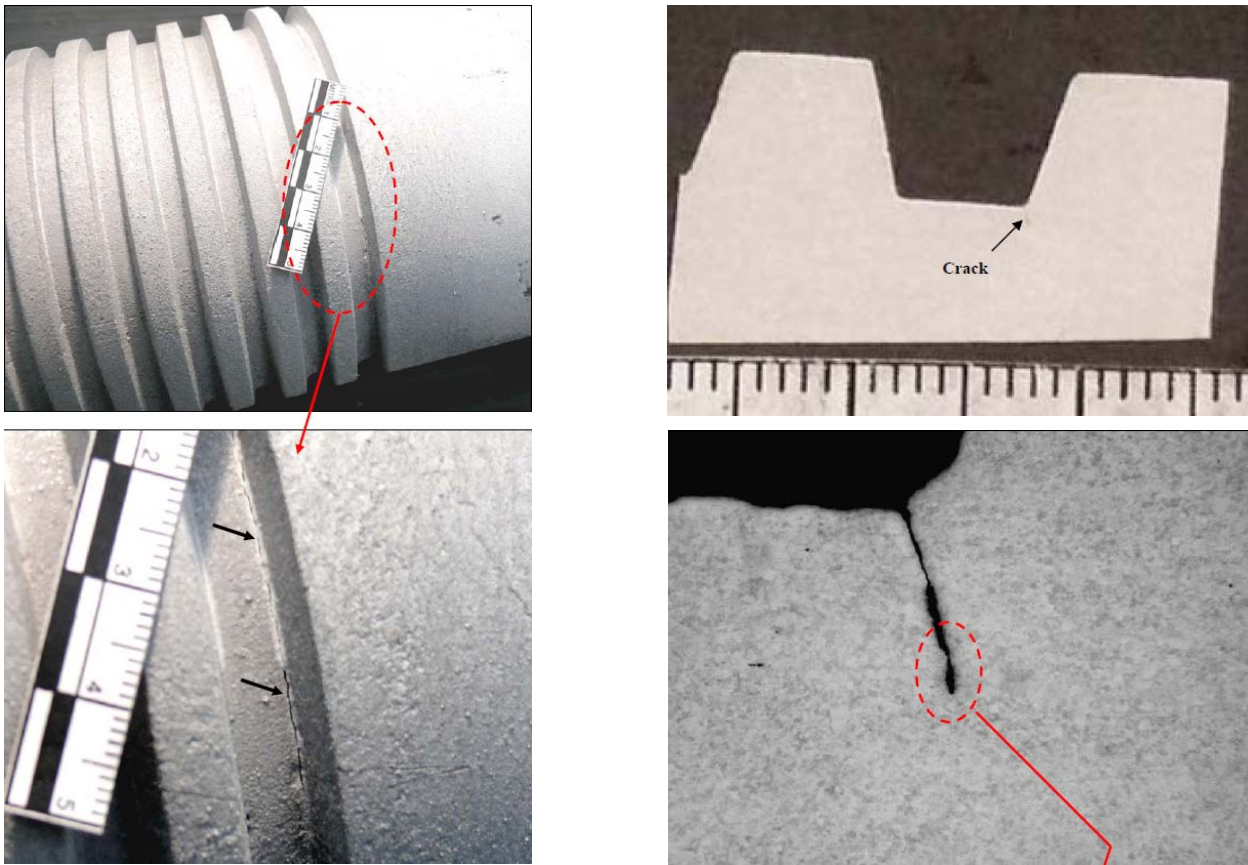


Figure 1 - Example of crack indications and section view of crack

Quills that have experienced a crack were sent for both metallurgical analysis and for an assessment of crack initiation/propagation mechanism. The results of these third party analyses suggest that the cause of the crack is not related to a material (metallurgical) defect, but is the result of fatigue.

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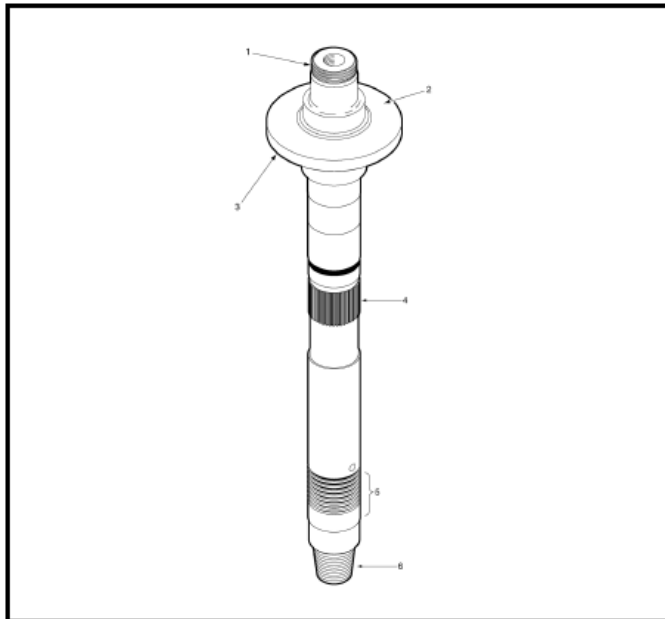
An engineering review of the design has been initiated and TESCO is currently working to qualify a modification to the load nut groove whereby the radius of the sharp corner in the root of the groove is increased and the stress concentration factor is reduced resulting in increased fatigue life performance.

AFFECTED PRODUCT:

This bulletin applies to all 250T HMI top drives up to and including Unit Number 867, our latest production unit.

ACTION REQUIRED:

This bulletin is being released to provide advanced notification of a potential design change and inform of a modification of the inspection schedule for operating units. TESCO recommends that the frequency of load nut groove inspection (item 5 in Figure 2) be increased. Instead of the current 250 operating day inspection, it is recommended that the load nut groove be inspected as part of the regularly scheduled 60 day inspection interval. This shorter interval will make this activity coincide with the 60 operating day pin inspection (item 6 in Figure 2) so that both can be conveniently performed at the same time.



Point	Name	Frequency (Operating Days) and Inspection Type*				
		Every 60	At 250	At 500	At 750	At 1000
1	Threads and bore	—	A	A	A	C
2	Upper thrust surface	—	—	—	—	C
3	Lower thrust surface	—	—	—	—	C
4	Splines	—	—	—	—	C
5	Load nut grooves	A,B	A,B	A,B	A,B	C
6	Quill pin end (also refer to "Threaded Connections" on page 28)	A,B	—	—	—	C

*Refer to Table 3-1 on page 19 for inspection type details

Figure 2 – Modified HMI Quill Inspection Schedule

Where an inspection is performed and no cracks are found TESCO recommends continuing operation with the existing quill. In the event that a crack is found, discontinue operations and contact your local TESCO representative to properly address the situation.