

August 23, 2013

Product Inspection Report # 13-537 2013 08-23

Dreco Energy Services ULC O/A  
Rig Solutions  
6415-75 ST  
Edmonton, Alberta  
T6E 0T3, Canada

Dreco PO# 219947  
Doering Project ID 13-537

In response to external oil leak on Doering Valve assembly No. 1202199, Lot 2012-K

Examination of component 84B0316361SS Doering Cartridge Valve, Lot 2012-K.

Revealed failed SAE-10 O-Ring (-910). Picture of O-Ring in the failed mode is on file.

Valve was cleaned. Damaged O-Ring was replaced.

Additionally, all external O-Rings were replaced in subject valve and all valves in the 1202199 assembly.

All valves were tested and passed.

Before re-installing valves in manifold, the manifold was cleaned and inspected. Inspection revealed no material or workmanship discrepancies.

Examiner noted that the residual oil in the manifold when received did not appear to be clean. The residual oil was not from Doering Company. The oil was not tested but the examiner and a supervisor agreed that the oil felt that it contained grit contamination, foreign object debris (FOD).

**Corrective Actions:**

Doering Company reviewed assembly practices to assure that O-Rings will not be damaged during the installation of the cartridge valves into the 1202199 Manifold/Valve assembly.

Examiner: Gary Johnson

Supervisors: Jon Boughner & Jon Strack

Report by: Russell F. Doering, President of Doering Company