

Date: September 23, 2020
Applicability: XEM
Issued By: Jack Rader

BACKGROUND INFORMATION

Current Gap joint construction on DPG, DGPS, and DDR probes is directly exposed to the environment. This exposure can lead to failures that are usually characterized by moisture penetrating the gap and shorting the tool. Once a gap joint fails, it is not reused and results in a loss to the part. The failures are often caught during the pre-run diagnostics or the post-run analysis of the PTK before a tool failure occurs while drilling ahead.

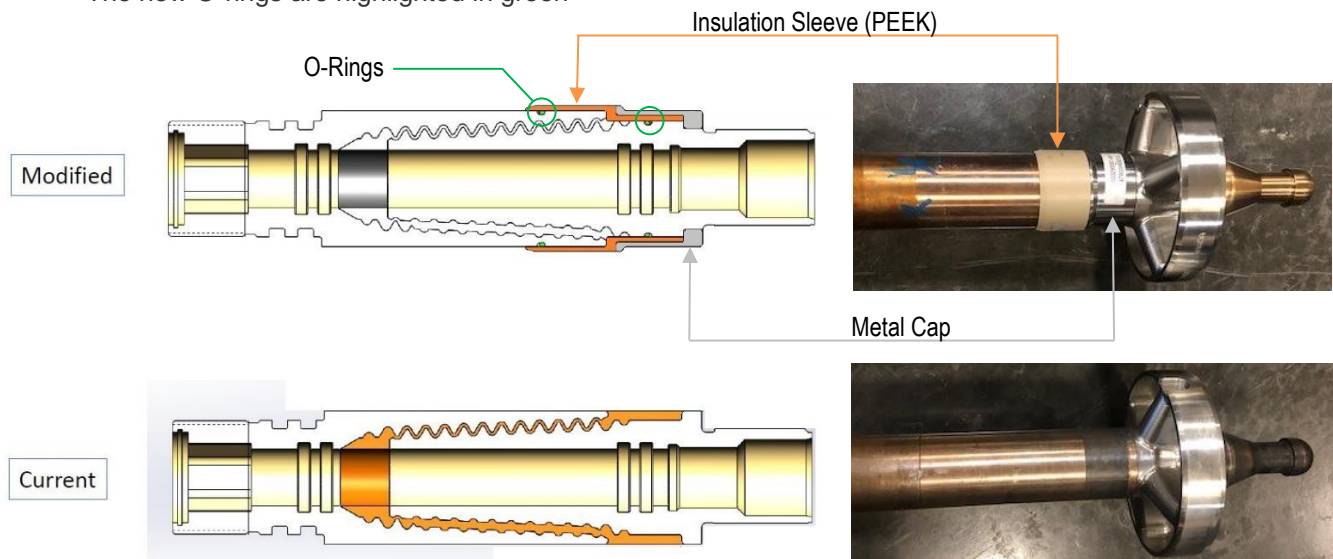
The modified gap joint has been tested in house under 16,500 psi up to 155°C with varying pressures at temperature without issue before being installed on existing DPGS probes for field testing.

PROCESS IMPROVEMENTS

The modified gap joint is no longer directly exposed to the downhole environment. It is protected by two O-Rings under the new peek sleeve on each side of where the gap is exposed. This type of installation has already been proven on a larger scale with the xBolt Gap Probe.

Below is a cross section and external view of the modified gap joint vs the standard gap joint.

- The new external insulation sleeve (PEEK) is highlighted in orange.
- The new external metal cap is highlighted in silver
- The new O-rings are highlighted in green



The modification can be done to any current gap joint that is in good condition. The gap joint is milled to accept the new insulations sleeve, O-rings, and metal cap before installation.

The new insulation sleeve creates a slightly larger diameter (1.875") than the barrel (1.75"). Additional precautions should be taken to avoid damaging the new PEEK that now protrudes from the tool below the landing spider.

MOVING FORWARD

Modified gap joints will be tested in both air and mud drilling environments to confirm field viability before moving forward with this update.