



SACRIFICIAL ANODE SLEDS INSTALLED ON TUBULAR BELLS FLOWLINES: MISSISSIPPI CANYON, GULF OF MEXICO

Deepwater used custom Dual RetroClamps™ to attach anode sleds in deep-water field.

Deepwater Corrosion Services was contracted to oversee installation of a custom pipeline Dual RetroClamp™ to connect sacrificial anode sleds to production flowlines. Both pipelines are located in approximately 4500ft of seawater in the Mississippi Canyon area of the Gulf of Mexico.

Each cathodic protection (CP) system consisted of one sacrificial anode sled (provided by the operator), and two Deepwater custom dual RetroClamps™. These two elements of the system were electrically connected using dual 4/0 tieback cables.

Due to the thickness of the 5LPP coating, Deepwater provided a RetroReader™ system to indicate when the clamps had made contact with the pipeline. When the clamp contact screw connects with the pipeline, a drop in the potential displayed on the RetroReader™ indicates that the clamp is electrically grounded to the pipeline. The Dual RetroClamps™ were designed with two other indicators that the contact screw had made contact with the pipe. These indicators are the easy removal of the orange spacer plate in between clamp plates and the straightening of the fibers in the wire rope handle as it was being turned by the ROV.

A Deepwater technician performed the connection of the RetroClamps™ to the anode sleds topside, and the RetroClamps™ were hung with rope from the anode sleds so the ROVs would be able to easily access them.

The vessel crane lowered the anode sleds into position on the sea bed using an ROV to position them. The ROV then removed the RetroClamp™ from the anode sled and set it on the pipeline. One ROV tightened the stabilizing cradle and contact screw and filmed the RetroReader™ display while another ROV filmed the spacer plate, contact screw, and wire rope handle.

Two anode sleds and four Dual RetroClamps™ were installed, achieving all goals for the CP retrofit of the two pipelines.

More info at www.stoprust.com



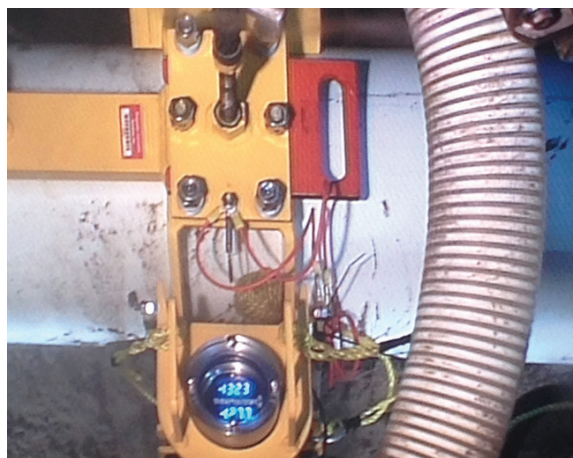
NOT-SO-TOUGH SLEDDING
The anode sleds will provide flowlines with CP once they're connected..



RETROREADER™ BEFORE DEPLOYMENT
The reader will verify electrical connection through the flowlines' coating.



CLAMPED DOWN
Here's the dual clamp assembly after installation on a flow line. The contact tip provides connection when tightened.



WELL-CONNECTED
The readout verifies when contact is made by the contact tip. (Handle is at top)