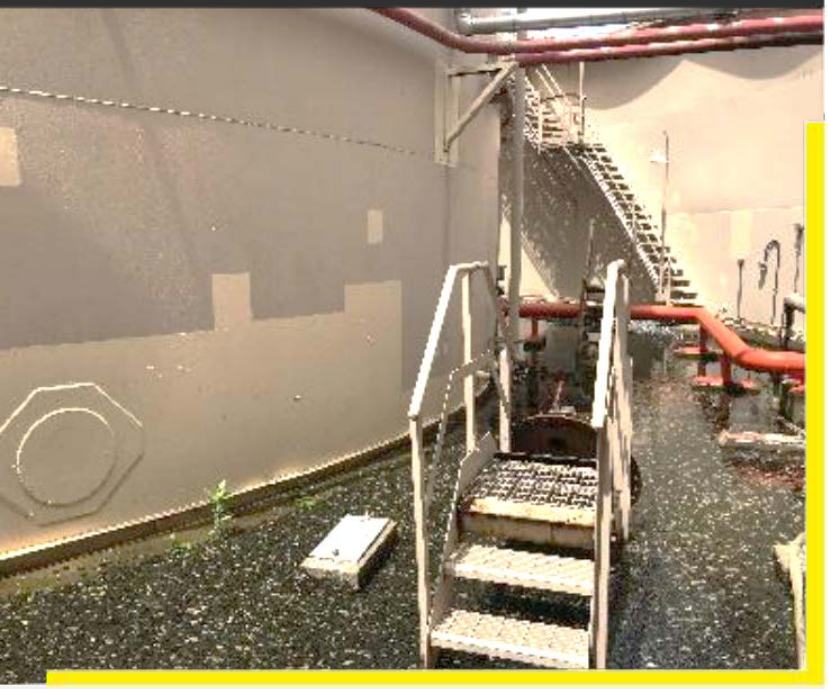
Zerust® Underside Injection Inhibitor Delivery System (IDS)



CLIENT APPLICATION
Underside Injection | July 2018

Project Summary:
- Zerust Oil & Gas was awarded a project encompassing the injection of a corrosion inhibiting solution through ports located between the old and new floors “dead-shell” of the ignition oil tank for protection of the underside floor plates from soil-side corrosion.
- The tank had a double bottom with a sand fill between the floors.
- Corrosion rate monitoring “Electrical Resistance” (ER) probes were also installed to monitor the replenishment timeline of the inhibitor.

Goals and Objectives:
- Supervision of the preparation of tank ports for corrosion inhibitor slurry injection, during the injection of corrosion inhibitor slurry, and during the preparation of ports for installation of ER probes and enclosures

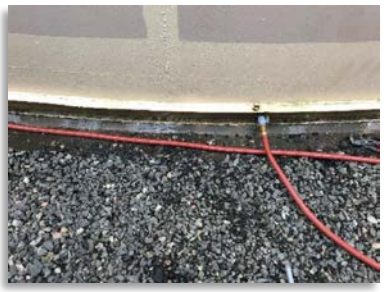
Product(s) Used:
- Zerion® FVS-B15 Corrosion Inhibitor Powder

Procedures:
- Injection ports were identified for corrosion inhibitor installation and materials for injection were gathered.
- Five (5) total ports were found to be installed through the dead-shell with only three (3) used for injection. The corrosion inhibitor was mixed, per the batch schedule in a tote and injected using an inline centrifugal pump.

Zerust® OIL & GAS
WORLDWIDE CORROSION SOLUTIONS

Procedures Continued:
- A total of approximately 525-gallons of corrosion inhibitor slurry was injected through the three (3) ports installed in the dead-shell in two batches.
- Injection equipment was setup to connect to all three ports so that slurry was applied at the same time.
- After the corrosion inhibitor was applied, two (2) ER probes were installed for monitoring of the replenishment timeline of the inhibitor.
- The probes were fitted inside a watertight electrical enclosure that maintained the ports leak detection capability and allows for easy probe access for inspection.

Dead Shell with Leak Port



Injection Port

Pump for Injection

Tank 2

Conclusions/Solution:
- The project was completed successfully and in according to the planned schedule with all nineteen (19) pails of corrosion inhibitor injected through the dead-shell in two (2) batches for a total of 525-gallons of corrosion inhibitor slurry applied.
- Corrosion rate monitoring technologies were implemented for this tank that consisted of two (2) ER probes installed in the ports in the dead-shell.
- The probes were positioned inside an enclosure to protect the cable and for easy access for probe readings and inspection.
- It is recommended that data from the installed ER probes is collected on a frequent interval to be determined by the client for monitoring of the lifespan of the applied inhibitor compound. No further issues were observed.