Protecting a 240-Foot Cased Pipeline with ZERUST® Zerion® Inhibitor Injection

ZERUST® Zerion® FVS Corrosion Inhibitor Powder with PGH-300 and PGH-400 Gel Powders

1. PROJECT OVERVIEW

Client	Global integrated oil & gas company		
Industry	Midstream / Pipelines	**Application Type**	Cased Pipe Crossings
Year	2022	**Location**	Quebec, Canada

Project Summary

A 240-foot cased pipeline crossing beneath a city street needed corrosion protection for the carrier pipe inside the casing, where water was believed to remain in the annular space after the end seals were retrofitted. ZERUST Integrity Solutions® supplied ZERUST® Zerion® inhibitor products, mixed into a solution and injected through the casing vent pipe to treat the annular space in place. The casing was pressure tested first, and the inhibitor concentration was increased to allow for the residual water. Injection continued until solution emerged at the opposite vent, confirming the annular space was filled.

Project Photos



Eductor hopper used to mix and inject the inhibitor solution at the casing vent.



Vent pipe with pressure gauge.

2. ASSET AND SITE DETAILS

General

Asset type	Cased pipeline (street crossing)
Casing length	240 ft
Casing diameter	24 in
Carrier pipe diameter	18 in
Annular space	Assumed partly water-filled before treatment
Vent pipes	Two 2 in vent pipes, one at each end of the casing
End seals	Retrofitted with new link seals and tape wrap
Elevation	Only a few centimeters of change between casing ends
Weather / environment	16 °C average, 60% humidity, sunny with some clouds

3. SOLUTION IMPLEMENTED

ZERUST® Products Used

- ZERUST® Zerion® FVS Corrosion Inhibitor Powder – 27 pails (405 kg) – mixed with water and injected into the casing annulus
- ZERUST® Zerion® PGH-300 Gel Powder – 15 pails (80 kg) – mixed with water and injected into the casing annulus
- ZERUST® Zerion® PGH-400 Gel Powder – 14 pails (80 kg) – mixed with water and injected into the casing annulus

Monitoring Equipment

- Pressure gauges – 2 – one at each end of the casing – read during pressure testing and throughout injection

Implementation Details

- **Preparation / inspection:** The casing end seals were retrofitted with new link seals and tape wrap before treatment. The casing was pressure tested to 15 psi and a large volume of water was discharged. Dewatering was stopped there to protect the seals, and a second test held 4.5 psi for one minute.
- **Installation method:** The inhibitor powders were mixed with potable water through an eductor and injected into the casing through a vent pipe. Pressure was monitored during injection, and injection stopped when liquid appeared at the opposite vent.
- **Crew and time required:** Completed over two days in October 2022.
- **Challenges and solutions:** Some water could not be pushed out without exceeding the pressure limit of the end seals. To allow for dilution, the solution concentration was increased from the planned 5% to 12%.

4. OUTCOME SUMMARY

Results

- Solution reached the opposite vent, confirming the annular space was filled; the final solution volume was about 2,020 gal.
- The casing held 4.5 psi for one minute in the second pressure test before injection.