

## Pipe Casing Injection for Corrosion Protection of Petroleum Pipeline **Pipe A**

### Project Specifics

#### Installation Dates

March 12-13, 2019

#### Environmental Conditions

Both casings had vent access within 50 feet of the shoulder of the highway. The top vent for Pipe A had standing water around the vent pipe. The ground near the Pipe A bottom vent was soft, but not saturated. Pipe A had visible water in the top vent, but not from the bottom vent. It had not rained the morning of the injection for Pipe A.

#### Details

Both pipe casings had vent pipes available, were not excavated, did not have excavated end seals, and were below the water table.

#### Pipeline Product(s)

Petroleum

#### Zerust Product(s) Used

Zerion® FVS

Zerion® PGH-300

Zerion® PGH-400

### Project Installation Overview

Using an air compressor, we tried to push out the water. We even tried using the air compressor and the pump in tandem to push/suck the water out of the casing. Approximately 100 gallons of water was displaced from the casing.

It was decided to try and pressure test the casing. Since the casing was filled with water, we figured it wouldn't hold any pressure, because in theory there should either be a hole in the casing or the seals have been compromised. Instead, the casing held 4.5 psi. The Energy Transfer Representative said they were fine with continuing the injection.

It was decided to use both the mud mixing pump and the 3-inch pump in tandem to create enough pumping pressure to generate a fast enough flow to produce a vacuum through the hopper. The mud mixing pump would pull the slurry out of the tank, and the trash pump would pull the slurry out of the hopper and push it into the casing. Even with the weight of the slurry, and the weight of the water in the casing, those two pumps gave enough pressure to create a vacuum in that hopper.



The issue now was that the hose clamps on the boot weren't strong enough. Because of the back pressure, we probably shot that vent/hose attachment off the vent about 5-7 times. In the end two additional hose clamps were added to hold the hose attachment to the casing. The entire volume of slurry in the tank was pumped, but only three pails of PGH-400 gel was added through the hopper. The installation was successfully completed.

## Pipe Casing Injection for Corrosion Protection of Petroleum Pipeline **Pipe B**

### Project Specifics

#### Installation Dates

March 12-13, 2019

#### Environmental Conditions

Both casings had vent access within 50 feet of the shoulder of the highway. Both vents for the Pipe B casing had standing water. Pipe B casing vents each had water above ground level. A severe thunderstorm had passed through the area the morning of the Pipe B casing injection.

#### Details

Both pipe casings had vent pipes available, were not excavated, did not have excavated end seals, and were below the water table.

#### Pipeline Product(s)

Petroleum

#### Zerust Product(s) Used

Zerion® FVS

Zerion® PGH-300

Zerion® PGH-400

### Project Installation Overview

The seals had been replaced two years prior to the injection. Originally, the 50% of the casing had been filled with wax. Two years ago, the casing had leaked and required a full rehabilitation. It is under strict FEMSA observation.

Originally, the client had planned to use wax again. The previous corrosion mitigation company asserted that they now require a 3-inch casing vent to inject their wax. This is why the bottom vent now has a 3-inch diameter. Unfortunately, the contractor's installation team did not receive this information until the day before the injection. The contractor was not able to find a way to cut and thread a 3-inch steel vent pipe. Instead, a 3-inch rubber boot with hose clamps was used to connect the discharge hose to the vent pipe.

An air compressor was used to conduct a pressure test. It was able to hold 3.5 psi. The assumption was that 5 psi was not reachable due to the amount of water in the casing. The client's representatives were fine with continuing the injection, nevertheless.



Because of the large amount of water in the casing, backpressure was generated during the injection. There was not enough pressure from the pump to be able to use the hopper. Four pails of PGH-300 gel had been added to the tank, and an additional 1.5 pails of PGH-400 was also added since it could not be added through the hopper. An additional 200 gallons of water was added to the tank to allow for the additional gel to be pumpable.

After 50% of the tank had been pumped, the mud mixing pump could not produce enough pressure to push the slurry. We were able to connect the 3-inch trash pump to the back of the tank. This trash pump proved to be capable of pumping in the remaining gel. The installation was successfully completed.