

Offshore Rehabilitation of Steel Flow Line Pulling 2 3/8" Thermoflex Through Multiple Diameters of Steel

Background: A company in Rockport Texas had an existing oil/brine/gas flow line between an offshore platform in the gulf and an on shore facility. The existing steel line approximately 14,000ft in length was comprised of four inch, six inch and eight inch steel pipe. The line had multiple leaks, and was repaired regularly. Because the well only produced 100bbl/day of fluid and 60MCF/day of gas, a 2 3/8" Thermoflex was determined to be suitable to pull through the existing line to create a new corrosion resistant line. Campbell Energy Services was the general contractor for the project.

Procedure: The line had to have a rope pulled through the 14,000ft in order to pull the pipe back through the existing steel line. The task was difficult because the pig blown through the line did get stuck from a few transitions from eight inch steel to four inch steel. These short length reductions in diameters were cut out and the pig continued to flow through the line. The line was also flooded with water to reduce the pull force required to pull the line. This force can be up to ninety percent less than pulling through a dry line. The rope was designed for a 20,000lb pulling capacity.



Setting the Pig in Place

Once the roped was pigged through the line, the pipe was staged on shore and pulled with a winch truck to the platform. It is much more convenient moving pipe around on shore versus on a barge. A pulling cone was attached to the lead and the winch below started to pull the pipe back. See figure 2 and 3.



Figure 2 Winch Truck



Figure 3: Pulling through the line

After the pipe was completely unspooled a second spool was set in place and a splice coupling was attached to the end of the first spools length and the beginning of the second. The splice coupling is a joint less system that is 1.5X the strength of the pipe. See figure 4. The first 9,000ft of pipe was pulled through in 3 hours with a maximum pull force of 1,800lbs.



Figure 4: Splice Coupling Assembly

The balance of the pipe was installed the next day. The pipe did pull through a restriction that hung the pipe up. The steel pipe section was cut out and the balance of the line was pulled through.

The line was then hydro tested at 1.5X MAOP of 500PSI (750Test Pressure)



Wellhead from Shore

The benefits Thermoflex® are:

- Extremely rapid low cost installation
- Light duty equipment because of lightweight pipe
- Corrosion Resistant
- Low pull forces required
- Saves Money!