

# Water-based LiquiGel® Pig Train Restores Flow Rates in Permian Basin

Startup engineering requirements specified that produced water flow rates should be equal to or faster than the production flowrate. Lesser flowrates would impede production and ultimately create problems in the production schedule and budget. After a considerable production timeline, the operator began to experience severe flow assurance issues on the produced water pipeline as the result of solids buildup.

## SOLUTION

Flow assurance modeling demanded a multi-sequence pig train consisting of LiquiGel® Pigs and chemical applications:

- AquaGel: chemical properties mirror liquid characteristics; ideal for solids transport.
- SoliGel: chemical properties mirror solid characteristics, but contain memory shape capabilities; ideal for multi-diameter and pipe seal requirements.
- Solvent Chemical: chemical properties applicable for paraffin.

## PLAN OF EXECUTION

- 1. Project Pre-planning**
  - a. Asset system details, project specifications, and scope of work were communicated from individual headquarters.
  - b. Utilized flow assurance models and historical methods to achieve an approved engineering plan.
- 2. Project Preparation and Set-up**
  - a. Planned execution schedule around client shut-in schedule.
  - b. LiquiGel® products were prepared and ready for install prior to mobilization.
  - c. Provided specialized gel pigging technicians and on-site gel pig casting.
- 3. Project Execution**
  - a. SIMOPS operations alongside client-supplied contractor.
  - b. Successfully cleaned HDPE segment with a combined approach of SoliGel for fluid interfacing, AquaGel for debris removal, and chemical solvent for paraffin and scale removal.

## TECHNICAL ACHIEVEMENTS & BENEFITS

- Successfully received all LiquiGel® products through one 4 inch receiving port.
- AquaGel properties and data acquisition system delivered a restriction profile within the pipeline.
- Combined LiquiGel® Pig train dissolved and removed all suspended solids out of the pipeline.

## LOCATION

West Texas (US)

## SPECIFICATIONS

**Diameter: 8 inch**  
**Length: 4 miles**  
**Pipe Schedule: DR9 HDPE**  
**MAOP: 190 psi**

## SCOPE OF WORK

**Provide a low pressure, fair cost flow assurance solution that removes scale and paraffin.**

## CHALLENGE

- **Low pressure HDPE.**
- **Limited data on the actual characteristics of the said restriction.**
- **Reduced diameter termination tie-in point (4").**
- **Lateral connections with the produced water HDPE system.**
- **Fast response.**
- **Flow assurance modeling demanded a multi-sequence pig train consisting of LiquiGel® Pigs and chemical applications.**