

### SWD INFRASTRUCTURE & FACILITY



#### SCOPE:

- EPCM
- COMMISSIONING & STARTUP
- GATHERING SYSTEM
- 120,000 BPD SALT WATER DISPOSAL

#### BASIN:

DELAWARE - TX

#### THE CHALLENGE

Halker was tasked with coordinating the design of the Water Gathering Infrastructure with the contractors responsible for the Oil & Gas Infrastructure and Electrical Grid. The Hydraulic model was developed based on a constantly changing production forecast with a total build-out of 8 separate SWDs over 5 different development areas. The gathering system was designed with the below ground system being HDPE while the above ground fittings (Valves/flanges) at riser stations and pig launchers/receivers were designed with stainless steel.

The Salt Water Disposal Facility required 12 hours of storage and a fully automated process of filtering sand from produced water, recovering skim oil, recovering gas breakout, and disposing treated water into injection wells. Due to the nature of the upstream separation, the SWD facility was required to handle a 3-phase mixture of water, trace oil volumes, sand, and gas breakout. The SWD was designed with an injection capacity of 120,000 BPD and short term surge capacity of 150,000 BPD.

#### THE SOLUTION

The pipeline infrastructure was modeled using PIPESIM™ for 3-phase hydraulic modeling. The model was evaluated based on a staged construction of the Gathering System to overlap with the online date of new SWDs. Results showed during which time the gathering system required additional takeaway capacity or the need for looping. Additional hydraulic surge analysis was performed due to concerns with the Automated Safety System Isolating the pipeline from the SWD facility. The design of the Gathering System required consideration to minimize riser footprint while allowing for adequate distances for HDPE / SS Fittings.

The incoming fluid to the SWD is processed through a 2-phase separator to allow gas breakout and a preliminary sand filtering. The gas from the 2-phase separators is sent to VRUs and the emulsion is pumped to liquid- filled 3-phase separators to separate the oil, water, and sand. Sand was pumped to solids- handling systems while, skim oil pumped to neighboring processing facilities and water injected into shallow and deep injection wells. A large inlet storage tank was also included in the design. Facility designs were developed based upon various industry standards and practices including ASME, AISC, IBC, ACI, ASCE, API, and NFPA.

#### THE RESULT

Halker produced several deliverables across multiple disciplines to assist in the design, construction, commissioning, and startup of the pipeline and SWD facility. Halker provided P&IDs, hydraulic calculations, safety recommendations, 3D modeling in CAD, construction documents, equipment sizing & procurement, controls, and automation. Halker continued to provide deliverables and support during construction, commissioning, start-up, and operation to ensure safe and timely completion of the facilities. By providing our client with a single point of engineering, we were able streamline construction and commissioning time by addressing RFIs and schedule pinch points.

# HALKER

## WHY HALKER?

Halker uses a people-first approach to every step of project execution, assembling the best teams, gathering input from everyone, and leveraging the power of this open and inclusive environment to develop industry-leading designs. We leverage process, methodology, standards and policy to scale productivity and continually improve quality and efficiency.

Given our broad background in engineered solutions, we understand the factors beyond project objectives that go into everything we work on, including evolving regulations and environmental impacts. By addressing these aspects head-on at the start of every project, Halker is better able to design effective, compliant projects and reduce rework.

We dig deep to fully understand your strategic objectives and what you need to accomplish. This sets Halker up to deliver fit-for-purpose solutions as well as additional, value-added project approaches that make a real difference to your bottom line.

To find out more about how Halker can help move your project forward in a safe, professionally engineered and optimized manner, contact us today.

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