



# CLEAR SOLUTIONS for complex fluids

## NEMOH® Nomadic Environmental Media Operated Host Flowline Application



### CHALLENGE

- Faced with simultaneous operations on an offshore facility and lack of deck space, processing inhibited seawater in a deep-water flowline in preparation for bringing new offshore deep-water oil & gas facility online in the Gulf of Mexico (GOM)



### SOLUTION

- NEMOH® Nomadic Environmental Media Operated Host technology to process the Inhibited Seawater using an Adsorbent Media to remove and neutralize the chemistry in the flooded flowline, allowing treated seawater to be discharged while meeting compliance requirements



### RESULTS

- The chemistry in the seawater was properly neutralized and removed to allow for treated seawater to be successfully discharged at sea in accordance with Regulatory Permitting Requirements

# NEMOH® Nomadic Environmental Media Operated Host Flowline Application

## CHALLENGE

Deepwater flowlines of an offshore facility in the GOM were installed and flooded with chemically treated seawater for preservation purposes to mitigate pipe corrosion and to inhibit bacteria growth. The flowlines needed to be placed into service after remaining idle for 2.6 years. Options to remove the inhibited preservation fluid were evaluated, options studied were (1) recover inhibited seawater for proper disposal at shore base facility (2) process inhibited seawater on site to remove toxicity of the chemistry so that it could be discharged into marine environment safely and within compliance of regulatory authorities' permitting discharge requirements.

The option of recovering the fluid for proper disposal at a shore base facility was not feasible due to logistics, technical challenges associated with the deep-water operations at water depths in excess of -6,340 ft, proved to be cost prohibitive. An alternative means was needed to bring the flowlines into service. The only practical solution was to process the fluids in the flowlines on location, however the Topside Facility had multiple simultaneous operations in progress requiring a significant amount of Marine Vessel Support. As a result, treating the fluid on Topside Facility or on a Marine Support Vessels position near the Topside Facility was not an option due to the activity that was in progress. The only other option was to perform this operation subsea near the subsea well heads.

## CETCO SOLUTION

The client reached out to CETCO Energy Services (CETCO), a company known for providing novel solutions to complex problems. It was soon realized this was very good application for CETCO's patented NEMOH® Nomadic Environmental Media Operated Host Subsea technology designed to be operated on seafloor.

In the solution, the flowline could be treated during the Nitrogen Displacement Phase of operation to de-water the flowline while using the existing Dive Support Vessel and ROV to deploy, operate and recover the NEMOH® unit to process the preservation fluid in

the flowline during this phase of operation. By incorporating the treatment process with the Nitrogen Displacement Operations, the processing of the inhibited fluid via NEMOH® Nomadic Environmental Media Operated Host technology would not add any significant time to place flowline into service.

## RESULTS

The flowline was successfully de-watered, and the chemically treated seawater was neutralized and discharged on seafloor as planned. All operations were completed using resources that were already assigned to the job. The ROV Operation to operate NEMOH® unit at desired flow rate did not add any significant cost or delay to the job. This operation was far less expensive than alternative treatment operations evaluated for this operation.

