



BaraH₂O™ Slop Treatment Unit Delivers Cost Reduction and Operational Efficiencies

UNIT PROVIDES ENVIRONMENTALLY RESPONSIBLE ALTERNATIVE TO SHIPPING WASTEWATER TO SHORE FOR TREATMENT

UK NORTH SEA

CHALLENGE

Provide a solution that would enable a North Sea operator to reduce the volume of waste being shipped to shore for treatment, while also providing cost savings, operational efficiencies, and environmental risk mitigation

SOLUTION

BaraH₂O™ offshore slops treatment unit to reduce the volume of waste being shipped to shore for treatment

RESULTS

- » Provided environmentally responsible alternative to shipping wastewater to shore for treatment
- » Saved approximately USD 875,000 in costs related to waste treatment

OVERVIEW

The North Sea is recognized as one of the core global oil and gas provinces, attracting major investments and leading technologies over many decades. Now, as the province is reaching maturity, the focus is increasingly shifting to brownfield development, thus demanding new, lower-cost operating models. In this environment, agile and innovative technical solutions are needed to help drive down costs, promote business efficiency, and extend field life.

**SAVED NEARLY
USD 875,000
IN COSTS RELATED TO
WASTE TREATMENT**

CHALLENGE

Environmental regulations have always been carefully enforced in the North Sea, with nearly all drilling-related waste being shipped to shore for treatment, incurring significant costs. The regulations do allow treated water-based fluids to be discharged directly to sea from the drilling rigs, provided strict specifications are met. In a great many cases, however, the rigs either do not have the necessary equipment or space for retrofitting units to allow them to meet discharge criteria. A North Sea operator needed to find a solution that would reduce the volume of waste being shipped to shore.

SOLUTION

Halliburton, working closely with this operator, proposed the installation of a BaraH₂O™ offshore slops treatment unit on board an ultra-deepwater semi-sub drilling rig, to substantially reduce the volume of waste shipped to shore. The BaraH₂O unit is fully modularized in a 20-foot (6-meter) container, thus minimizing its footprint on the rig. The unit is extremely efficient and solids tolerant, typically reducing wastewater shipment volumes by 95 percent by producing clean water for discharge. Treatment rates range between 50–95 bbl/hr (8–15 m³/hr), using a combination of chemical treatment and dissolved air flotation (DAF) processes. Water quality exiting the unit is continuously monitored for total petroleum hydrocarbons (TPH) by using an in-line device, the EX1000 oil-in-water analyzer.

A BaraH₂O unit was successfully and safely installed on the rig. For this customer's application, the unit processed and discharged 35,147 bbl (5,588 m³) of water-based waste deriving from drilling and completion operations, rig cleaning, and contaminated rainwater. This volume represented a very significant win for the customer in terms of cost savings, operational efficiencies, and environmental risk mitigation; it avoided the time-consuming, risky, and costly rig-to-ship transfer and onshore treatment of an equivalent volume of contaminated waste fluid.

These cost savings, and the direct and indirect operational efficiencies achieved are extremely important for the sustainability of brownfield developments in maturing provinces like the North Sea.

RESULTS

The Baroid BaraH₂O unit allowed the customer to achieve real and significant cost savings. Almost USD 875,000 in waste-treatment costs were saved from the unit's operation, making it a very viable and environmentally responsible alternative to shipping wastewater to shore for treatment. These cost savings, along with the direct and indirect operational efficiencies achieved, are extremely important for the sustainability of brownfield developments in maturing provinces like the North Sea.

The direct economic value created by the BaraH₂O unit can be summarized as follows:

- » USD 799,084 saved in avoided onshore treatment and disposal costs
- » USD 5,616 saved in avoided onshore tank cleaning costs
- » USD 62,920 saved in avoided transportation costs
- » USD 6,292 saved in avoided waste consignment note costs

Total Costs for Shipping Onshore

Slops Disposal Cost	832,110 USD
Tank Cleaning	5,848 USD
Transport	65,521 USD
Consignment Notes	6,552 USD
Total	£ 672,240

Total Costs for Processing Onshore

Baroid Surface Solutions Operator	127,264 USD
Unit Operations	227,142 USD
Hose Package	7,684 USD
Lab Equipment	21,264 USD
Total	£ 283,184