Operators Save ~USD 3.3M in One Year with Environmentally Safe Offshore Wastewater Disposal

BARAH$_2$O® SLOP UNIT PROVIDES EFFICIENT, COST-EFFECTIVE ALTERNATIVE TO ONSHORE TREATMENT FACILITIES

OFFSHORE NORWAY

CHALLENGE

- High volumes of wastewater (slop) generated on large, modern, closed-drain rigs
- Existing onshore supply base facilities and treatment facilities at capacity limits
- Transition to treating waste offshore, on the rig, while minimizing waste

SOLUTION

Halliburton Baroid recommended the following engineered solution:

- BaraH2O® Slop Unit for point-of-origin waste treatment
- Online monitoring of discharge water to detect oil in water
- Rig vacuum unit and vacuum lines for full rig coverage

RESULTS

Achieved the following results over a one-year period:

- Treated a slop volume of 17,961 m3 offshore for a single rig, discharging 17,679 m3 of clean water
- Sent 98% less volume of slop to shore for storage, treatment, and disposal
- Saved the operator approximately USD 3.3M (NOK 28.6M) in net onshore treatment cost

OVERVIEW

Major operators in Norway were planning their 2021 drilling campaign, which involved exploration wells, appraisal wells on new licenses, as well as mature fields in the North Sea, Norwegian Sea, and the Barents Sea; and sub-letting the rig to another operator for an additional well in the Barents Sea. The campaign's primary focus was on the immediate development of three mature fields, while also prospecting new fields and licenses to increase oil reserves for planned future development.

CHALLENGE

Since 2018, Norway has seen a steady rise in the volume of slop sent to shore for treatment and disposal. At any given time, the capacity of treatment facilities to receive and treat waste onshore varies with location and the current activity at each location. The large slop volumes have also resulted in a significant reduction in available storage capacity along the Norwegian coastline.

Additionally, much of the increased demand has taken place in areas of Norway where the treatment capability is underdeveloped. Increased volumes combined with logistical challenges and limited treatment capacity in certain areas have put further strain on slop storage and treatment.

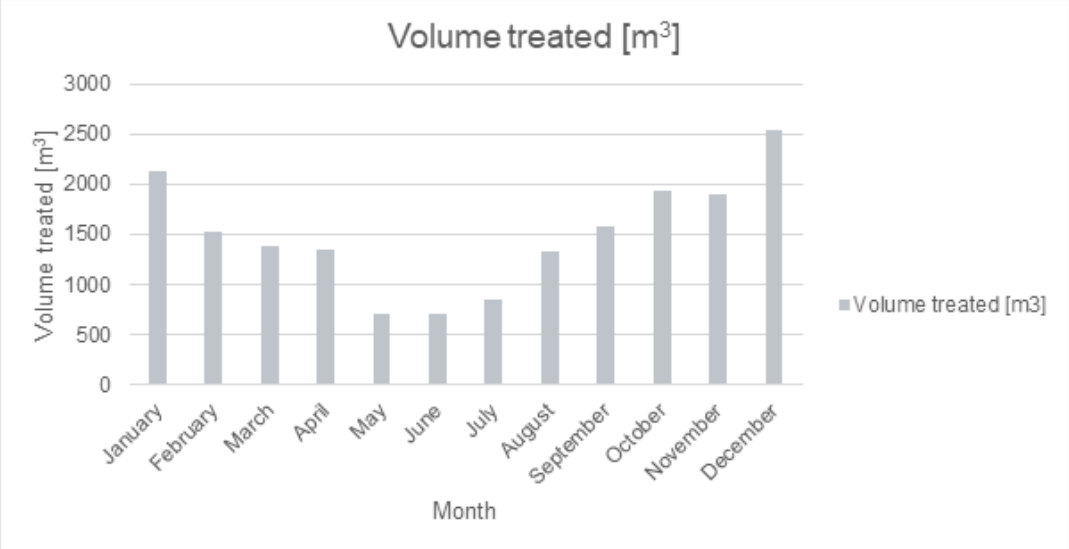
SOLUTION

To address this challenge, Halliburton Baroid proposed a BaraH$_2$O Slop Unit to treat drilling slop at the rig site. The rig contractor was originally to supply slop treatment equipment. However, after discussions with the customer, highlighting the BaraH$_2$O unit's inherent treatment capacity and the Baroid team's experience from previous projects, this innovative solution was selected.

A rig survey addressed the entire rig setup, identifying opportunities for overall improvements. Vacuum lines were installed at multiple locations on the rig to collect slop for treatment. The BaraH$_2$O Slop Unit was installed in a dedicated area, with customized pipelines to maximize efficiency. Furthermore, as the rig was to be moved between the North Sea and the Barents Sea, all pipelines and equipment were heat-traced and insulated to withstand extremely cold winter temperatures in this region.

RESULTS

During the first year (2021), the daily treatment volumes ranged from four to 306 m3, as required. In 2021 alone, a total of 17,961 m3 (112,957 bbl) was treated, resulting in 17,679 m3 (111,187 bbl) of clean water ready for discharge, with a mere 281 m3 (1,770 bbl) of residual waste sent to shore for storage, treatment, and disposal. In summary, there was a >98% reduction in the volume sent to shore—including both operators using the rig. The cumulative net treatment cost savings for 2021 was USD 3.27M (NOK 28.6M).



Shows monthly volumes treated in 2021, ranging from 706 m3 (4,440 bbl) in June to 2,548 m3 (16,024 bbl) in December.

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