

# ENVIRONMENT Gives Offshore Operator Major Reductions in Onshore Disposal of Slop Water

“The ENVIRONMENT supplied by M-I SWACO allowed us to treat our slop water effectively offshore, and resulted in a significant reduction in our net disposal costs over the one well. I want this unit on my next well!”

Drilling Superintendent



### THE PROBLEM

In the Norwegian North Sea, slop water containing more than 40 mg/L of hydrocarbons can not be discharged overboard, and hauling this waste to shore is expensive.

### THE SITUATION

This operator was running an oil-base system but did not want the expense of hauling the slop water to shore.

### THE SOLUTION

M-I SWACO installed an ENVIRONMENT onboard this well to clean as much of the water as possible to an acceptable level for discharge and recover the OBM.

### The Situation

Well Information	
Location:	Norwegian Sector, North Sea
Rig Name:	Deep Sea Delta
Spud Date:	2004
Interval Drilled:	311.2- and 215.9-mm (12¼- and 8½-in.) hole for a total of 1,904 m (6,247 ft)
Mud type:	VERSAVERT*

### The Situation

Norwegian regulations require that the hydrocarbon content of water discharged overboard must be lower than 40 mg/L. Drilling with Oil-Base Drilling Fluids (OBM) generates waste streams often referred to as “slop water.” A typical well will generate about 300 m<sup>3</sup> (79,252 gal) of slop water — the byproduct of cleaning the drill floor, shaker room, pump room and mud pits. Due to contamination by hydrocarbons from the OBM, these slops are not suitable for overboard discharge. The cost of collecting this water, shipping it to shore and disposing of it as hazardous waste can be considerable.

### The Solution

To address these concerns, M-I SWACO\* worked with the off-shore operator to develop an ENVIRONMENT to treat the slop water offshore to meet the discharge criteria, thereby reducing the costs associated with collection, transportation and onshore disposal. The ENVIRONMENT\* consists of two 6.1-m (20-ft) containers that are fitted with processing tanks, pumps, agitators and filtration equipment. The system is designed to discharge water within the regulatory limits and to recover the OBM for re-introduction into the circulating mud system.

Chemical treatment starts the process of separating the water from the oil-base drilling fluid. The water then passes through filtration equipment to ensure that all traces of hydrocarbons are reduced to a level acceptable for discharge overboard.

For this particular well, M-I SWACO had the two containers installed on the deck of the rig, one atop the other, and used the entire time OBM was on the rig. Fully trained engineers from M-I SWACO operated the unit and assisted rig personnel in the operation and maintenance of the shale shakers and vacuum units.

## THE RESULTS

Previous wells generated an average of 300 m<sup>3</sup> (79,252 gal) of slops that had to be hauled ashore for disposal. Results with the ENVIROUNIT were much better:

- Volume of slop water processed . . . . . 287 m<sup>3</sup>  
(75,817 gal)
- Volume of slop water sent to shore for disposal . . . . . 60 m<sup>3</sup>  
(15,850 gal)
- Volume of water discharged . . . . . 236 m<sup>3</sup>  
(62,345 gal)
- Volume of OBM recovered for reuse . . . . . 20 m<sup>3</sup>  
(5,283 gal)
- Volume of waste returned to shore for disposal. . . . . 1.5 m<sup>3</sup>  
(3,038 gal)

## The Results

The ENVIROUNIT operated on the rig for a total of 61 days, treating a total of 287 m<sup>3</sup> (75,817 gal) of slops. Because of limitations in storage capacity and processing rate, some 60 m<sup>3</sup> (15,850 gal) of slops had to be shipped to shore for disposal. In addition, another 11.5 m<sup>3</sup> (3,038 gal) of waste in the form of sludge were hauled to shore for disposal. The hydrocarbon content in the water discharged to sea was measured by a third party, and was recorded at a maximum of 24 mg/L.

## Summary

While previous wells generated an average of 300 m<sup>3</sup> (79,252 gal) of slops that had to be hauled ashore for disposal, this well turned in some impressive reductions:

- Volume of slop water processed . . . . . 287 m<sup>3</sup> (75,817 gal)
- Volume of slop water sent to shore for disposal . . . . . 60 m<sup>3</sup> (15,850 gal)
- Volume of water discharged . . . . . 236 m<sup>3</sup> (62,345 gal)
- Volume of OBM recovered for reuse . . . . . 20 m<sup>3</sup> (5,283 gal)
- Volume of waste returned to shore for disposal. . . . . 11.5 m<sup>3</sup> (3,038 gal)

## Questions? We'll be glad to answer them.

If you'd like to know more about the ENVIROUNIT and how it's performing for our other customers, please call the M-I SWACO office nearest you.



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