

ENVIROUNIT System Saves Total E&P USD 6 Million in Slop Water Processing Offshore Republic of Congo

Slop water treatment system reduces waste stream by 97% during first 14 months and 18 wells on a 45-well deepwater development project

CHALLENGE

Reduce waste disposal volumes and expenses for processing, transporting, and treating slop water waste offshore Republic of Congo.

SOLUTION

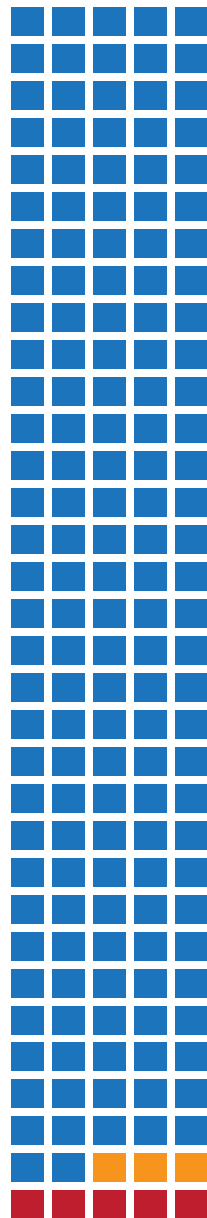
Deploy ENVIROUNIT* offshore slop water treatment system to reduce waste shipments to shore, meet discharge requirements, and recover valuable drilling fluids for reuse.

RESULTS

- Saved USD 6 million in 14 months on first 18 wells, with estimated USD 30 million projected savings over project life.
- Reduced waste stream by 97%.



Results of ENVIROUNIT System Processing 16,500 m³ of Slop Water



■ Treated and overboarded
■ Captured for reuse
■ Transported to shore for landfill disposal

Each square represents 100 m³ of slop water.

Reduce costs and improve QHSE of offshore slop water treatment

For a 45-well deepwater development project offshore Republic of Congo, Total E&P Congo sought a cost-effective solution for treatment, transportation, and disposal of slop water. Its two rigs—the *Tungsten Explorer* and *Ocean Rig Apollo*—were located approximately 100 km [62 mi] from the nearest supply base, presenting logistical challenges and expensive treatment and disposal options. Additionally, collection of up to 80 m³ [503 bbl] of deck water during the rainy season further complicated waste disposal operations.

The lack of slop water treatment units in the region forced Total to collect waste in skips or dedicated pits. As storage filled up, waste was transported to an onshore third-party facility for treatment at a cost of USD 500 per metric ton. Transporting slop water waste to shore in skips typically involved numerous units and required ample supply vessel deck space. In addition, bulk shipments require that the vessel’s tanks be cleaned after offloading. Movement of containment fluids and the use of crane lifts also added to QHSE considerations. Total requested a slop water treatment solution that would minimize offshore drilling waste, recover valuable drilling fluids for reuse, reduce personnel, lower safety risks, and lessen transportation and environmental footprint.

Deploy efficient ENVIROUNIT system to meet objectives

M-I SWACO fluid processing specialists recommended the ENVIROUNIT offshore slop water treatment system to reduce waste shipments to shore and recover valuable drilling fluids. The system uses a four-stage process to decrease slop water treatment costs and time:

- In the separation and emulsion-breaking stage, the system recovers oil-base and synthetic-base fluid for reuse.
- Recovered water is then mixed with a flocculant to eliminate hydrocarbons and other contamination from the water.
- Then, the water undergoes a three-step polishing filtration to guarantee discharge quality, and the water is tested to meet regulatory limits before being discharged overboard.
- In a final dewatering stage, sludge from flocculation is processed through a filter press for drying. The filter press increases the dry substance volume from 2% to up to 70% and reduces the overall waste volume by more than 90% of its original slop water volume compared with conventional techniques.

CASE STUDY: ENVIROUNIT system saves Total USD 6 million in slop water processing offshore Republic of the Congo

Saved USD 6 million in slop water processing

Treated water was discharged when the total percentage of hydrocarbons was below the 30-ppm limit set by Total with an average of 17 ppm. The ENVIROUNIT system provided overall improvement in the QHSE program by minimizing contaminated fluid transfers from the rig to the waste management facility and reducing crane lifts of skips and confined space entry for tank cleaning. The potential for spills, the number of vessel trips for transporting to shore, and the environmental footprint of the operations were also significantly reduced.

After 14 months, Total saved USD 6 million in processing expenses for 16,500 m³ [103,782 bbl] of slop water. Approximately 315 m³ [1,981 bbl] of synthetic-base drilling fluid was captured for reuse in the active mud system. Only 530 m³ [3,334 bbl] of waste was sent to shore for disposal.

Compared with a conventional slop management system, the overall waste stream was reduced by 97%. Average monthly savings for Total exceed USD 300,000. Savings for the entire five-year drilling campaign has been calculated at USD 4 million per year and estimated USD 30 million overall.



The ENVIROUNIT system provides a rig-based, modular solution for treating and recycling waste and recovering drilling fluid at remote deepwater wells.



The compact ENVIROUNIT system reduces costs of onshore disposal while meeting discharge regulations. The unit treated 16,500 m³ of slop water offshore Republic of the Congo, recovering approximately 315 m³ of synthetic-base drilling fluid for reuse in the active mud system. Only 530 m³ of waste was sent to shore for disposal.



The system provided overall improvement in the QHSE program, helping to reduce transfer of contaminated fluid and decreasing the need for crane lifts of skips and confined space entry for tank cleaning.

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