

# Custom Dual Solids Control Systems on Drillship Maintain High-Rate Processing Over Five-Well Program with Zero NPT

DEEPWATER GULF OF MEXICO

## CHALLENGE

- » Design, install, and operate a high-efficiency solids control system on a new deepwater drillship
- » Deliver OOC values below regulatory limit of 6.9 percent
- » Recover and condition SBM for reuse in active mud system
- » Maintain continuous operations with zero NPT

## SOLUTION

- » Prepare detailed rig survey at shipyard to optimize SCE design
- » Provide a customized SCE system with two BaraG-Force™ V133 vertical cuttings dryers and two DE-7200 centrifuges
- » Incorporate component redundancy to support non-stop processing

## RESULT

- » Achieved zero NPT over three-year contract
- » Attained OOC values nearly 50 percent below regulatory limit
- » Delivered significant cost savings on SBM reuse and maintenance
- » Lowered overall waste volumes

## LARGE HOLE SIZES AND FAST ROPS DEMAND HIGH-RATE CUTTINGS PROCESSING

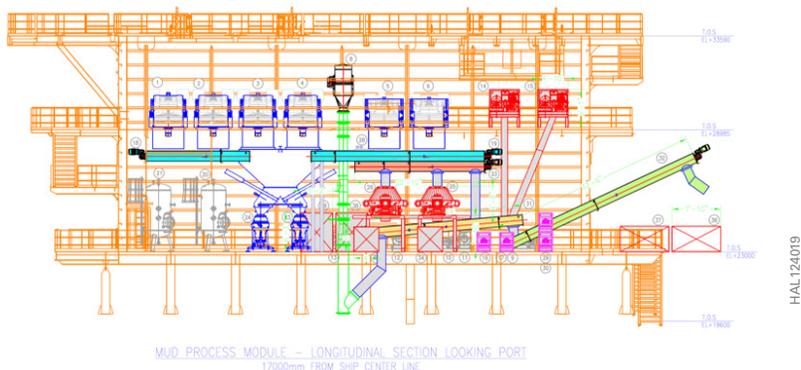
A major deepwater operator in the Gulf of Mexico asked Baroid separation solutions to design, install, and operate a solids control equipment (SCE) system for a new deepwater drillship while in the shipyard. The selected SCE components would be required to process a large volume of drill cuttings generated while drilling with synthetic-based mud (SBM) at high rates of penetration (ROPs) in large-diameter intervals.

In the Gulf of Mexico, SBM cuttings can only be discharged overboard if the oil on cuttings (OOC) value is reduced below the 6.9 percent limit enforced by regulators. The SBM recovered during the separation process would be conditioned and returned to the active system. Continuous drilling at high ROPs meant that the SCE system had to perform reliably with zero nonproductive time (NPT).

The installation of the selected SCE system would begin at the South Korean shipyard and be completed while the rig was in transit to the Gulf of Mexico. The operator’s drilling campaign would comprise five wells to be drilled over a three-year contract.

Each rig is unique, so every separation system installation would require a detailed rig survey to determine the optimal equipment fit and drilled cuttings flow paths to maximize efficiency and increase value. The Baroid separation solution team would be active in all phases of the design-install sequence and would stay with the rig throughout the five-well drilling program.

Mud Process Module Schematic – Rig Port Side



Flow path from shakers (upper left) via augers to cuttings dryers. Centrifuges installed on pits (upper right) with discharge via auger to cuttings catch box.

Dual solids control systems minimize OOC and recover more than 10,000 bbl of SBM, with zero NPT

### **DUAL SOLIDS CONTROL AND SBM RECOVERY SYSTEMS PREVENT NPT, LOWER COSTS**

The robust system installed for the contract included key component redundancy to ensure that no downtime occurred. The most essential components were two BaraG-Force™ V133 vertical cuttings dryers and two DE-7200 centrifuges, with the capability of alternating between equipment sets to allow for maintenance on one set of equipment while the other continued processing.

The Baroid technical team was confident that the dual systems would yield OOC values significantly below the required 6.9 percent. Achieving a lower OOC would translate into higher volumes of SBM recovered and reused in the active mud system after being polished by the DE-7200 centrifuges. This would help the operator reduce overall waste volumes while lowering drilling fluid maintenance costs.

### **AVERAGE OOC OF 3.42 PERCENT OVER FIVE WELLS ENSURES HIGH SBM REUSE**

The average volume of cuttings produced per well over the five-well operation was 8,500 bbl, with one well generating more than 16,000 bbl of cuttings.

The average OOC value achieved over the three-year campaign was 3.42 percent, nearly 50 percent below the 6.9 percent limit. The long-term operation was completed with zero NPT.

On average, over the five-well operation, the separation equipment returned 2,100 bbl of SBM to the active mud system, with a maximum recovery of 3,219 bbl on a single well. The value of the SBM returned to the active system for reuse is estimated to be equivalent to 50 percent of the cost of the separation services for all five wells over three years, significantly reducing the operator's total cost of ownership.

After the drillship was released by the operator and moved to a new contract, the BSS system was retained on board for work offshore West Africa.

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