

# MD-3 Shale Shakers Save 7 Days, USD 1,680,000 per Job on Remote Rig in North Slope, Alaska

Improved solids-control efficiency enables faster drilling rates, decreases HSE risk, and reduces transportation requirements

## CHALLENGE

Increase solids-control performance and overall drilling efficiency while minimizing rig time and costs on remote North Slope rig.

## SOLUTION

Replace conventional shale shakers with MD-3<sup>†</sup> triple-deck shale shakers.

## RESULTS

- Increased the return of fluid to the active system, reducing the frequency of mud rebuild.
- Removed solids more efficiently and decreased occurrence of screen blinding.
- Saved rig time and decreased risk for personnel as a result of shakers' lightweight, easy-to-install screens.
- Improved screen life through proper mesh size placement and the use of SNAP-LOK<sup>†</sup> plug screen-repair system.
- Decreased fluid per day by 90% because less dilution was required.
- Saved one week valued at USD 1,680,000 on conventional-profile wells and 10 days valued at USD 2,400,000 on extended-reach wells.

**"These three MD-3 shakers can do what five average shakers can."**

Tool pusher  
North Slope operation



## Boost drilling efficiency by improving solids-control performance

Because drilling fluid is the first thing to contact the formation, keeping the fluid clean is critical. Solids in the fluid can shear through tools and cause damage, even to the pumps. After passing through the bit, the solids become finer and difficult, if not impossible, to remove. The best option is removing as much solids as possible from the mud before it returns to the active system.

An operator on the Alaskan North Slope was experiencing drilling performance issues for one of its island rigs, which was accessible only by ice-road vehicle, barge, or helicopter. The drilling fluid contained a high percentage of solids, and the rig's drilling efficiency suffered. These two problems increased costs because more dilution was required. The operator was using conventional single-deck shale shakers, which were experiencing screen blinding and were unable to accommodate the flow rates needed for drilling. As a result of poor solids control, wellbore stability was continually in jeopardy.

The operator required the well's first two sections to be drilled with water-base drilling fluid and the last two sections drilled with mineral-oil-base drilling fluid, which costs approximately USD 550 per barrel and raised rig costs to nearly USD 10,000 per hour. The operator sought a way to cost-effectively improve drilling efficiency and called on M-I SWACO to collaborate on a solution.

## Install MD-3 shakers for high efficiency in a small footprint

M-I SWACO suggested using MD-3 triple-deck shale shakers to meet the operator's drilling demands. The technology features three decks offered in a parallel or series configuration as well as automated deck-angle adjustments. Each shaker uses 18 screens that are less than 15 lbm each, enabling faster and more simplified installation and changeout. Screens are easily changed out by releasing air through the automated control panel and pulling the screens out from the front of the shaker. The screens of the MD-3 shale shaker are compatible with the SNAP-LOK plug screen-repair system, which can be used to repair up to 20% of the screened surface area.

## Save significant costs, rig time, and personnel risk

Three MD-3 shakers were used in a series configuration—the bottom decks were fitted with 400, 325, and 105 mesh screens; the middle with 270, 230, and 84 mesh screens; and the top with 84, 50, 38, and 24 mesh screens. The multiple layers with different mesh sizes enabled more efficient solids removal and decreased screen blinding.

The screens of the MD-3 shaker provided additional benefits. The lightweight screens decreased HSE risk by saving personnel from straining for hard-to-reach screens or wedges. Screen life was extended as a result of the SNAP-LOK system as well as proper mesh-size placement.

Cost savings can be seen in several areas including drilling fluid savings, rig day rates, and improved drilling efficiency. Before the MD-3 shakers were installed, the drilling fluid was diluted to 500 bbl/d to reduce solids concentration. Because the drilling fluid is cleaned better over the three levels of separation, the only base fluid additions needed were 15–20 bbl/h of water on the water-base mud sections and about 10 bbl/h of oil on the oil-base mud sections to maintain volume. On average wells, the MD-3 shakers contributed to the saving of one rig week valued at USD 1,680,000. On extended-reach operations, the MD-3 shakers saved 10 days valued at USD 2,400,000.

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Solids Control