

LMP Shearing Unit Doubles Process Rate, Delivers In-Spec OBM, Saving Over USD 400,000

CASPIAN SEA

CHALLENGES

BP wanted to improve fluid shearing for its Caspian Sea operations:

- » Competitor unit was slow
- » Pressure control system posed risks

SOLUTION

The Halliburton shearing unit offered almost twice the process rate, and featured a pressure control/monitoring system that improved safety.

RESULTS

The Halliburton unit provided process rates up to 6 bpm and delivered the desired fluid specifications.

- » Fluid arrived at rigsite in optimal condition
- » Estimated savings, including potential rig time, exceed exceeded USD 2 million

OVERVIEW

BP Exploration Ltd. wanted to improve fluid shearing services for its Caspian Sea operations in Azerbaijan, including:

- » Increasing shearing flow rate
- » Installing a continuously controlled pressure system
- » Reducing sound impact
- » Achieving cost savings

The previous shear unit used at the site's liquid mud plant (LMP) had created significant exposure to a high-pressure hazard while providing a limited flow rate, and it operated at excessive noise levels.

HALLIBURTON SHEARING UNIT NEARLY DOUBLES PASS-THROUGH RATE

Baroid Surface Solutions™ (BSS) proposed the installation of the Halliburton high-pressure shear unit at the LMP.

The soundproofed HT-400™ DNV-rated pump skid features an electronic control system and a continuous real-time monitoring system. It is a rugged and versatile unit rated at 800 hp, with an excellent performance record for millions of hours of service.

The shearing unit is designed and built to an exacting material and weld manufacturing process. Fluid passing through the shearing unit undergoes the same forces as when going through a drill bit in wellbore conditions. This saves rigsite time that might be required to condition the fluid for operations. The configuration of the shearing unit is shown in the photos on the following page.



HALL57343



Skid-mounted, soundproofed Halliburton high-pressure shear unit installed at the LMP

The shearing unit can process a wide range of oil- and synthetic-based fluids at rates up to 6 bpm, and it handles weighted fluids without damaging or altering fluid properties.

The table below compares the specifications achieved with a high-speed lab mixer to those obtained with the BSS shearing unit:

Low-Toxicity Oil-Based Mud (OBM) (1.2 sg)	Yield Point	Electrical Stability
Before shearing	12	322
Shearing with high-speed lab mixer	17	512
One pass shearing @ 2,200 psi	18	637

MORE THAN 100,000 BBL PROCESSED WITH COST SAVINGS OF OVER USD 400,000

When the new shearing unit was placed into operation, BP noted that the desired fluid specifications could be achieved with one pass-through at almost double the previous flow rate. This significantly reduced time spent shearing.

The immediate transmission kick-out feature improved safety performance during the shearing process, setting high pressure at 3,000 psi and low pressure at 105 psi to avoid exposure to a potential hazard. The noise impact was decreased by 6 percent with the sound enclosure built for the skid.

BP was pleased with the resulting sheared fluid specs, higher flow rate, and improved shearing time. Results included:

- » USD 453,472 actual savings on a per bbl process charge compared to previously operated competitor’s unit
- » USD 2.1 million potential rig time savings, considering shearing at the LMP vs. through the drill bit

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