



FLC 2000 vs. KING COBRA

A field test was conducted comparing the performance of Derrick Equipment Company's Flo-Line® Cleaner 2000 4-panel shaker and Brandt's King Cobra shaker. This test took place at Cold Lake Weapons Range in Northeastern Alberta.

The superiority of the Derrick FLC 2000 was apparent during the drilling of both sections of the well.

Polymer Mud Test

For the horizontal section the gel/water mud used in the upper section of the hole was displaced with polymer mud. This polymer mud consisted of guar gum for viscosity and carrying capacity and starch for filtration control.

The combination of a difficult to screen polymer mud and the sticky tar sands was a good test of shaker performance under difficult screening conditions. For this test each shaker was screened as fine as possible while still being able to handle 100% of the flow. The Derrick shaker had two PMD+ DX110 and two PMD+ DX84 screens. The Brandt shaker had two Pinnacle 140 mesh and two 50 mesh screens. The results were as follows:

Mud Information

Mud Weight:	8.8 ppg
Water:	90%
Oil:	5%
Solids:	5%
PV/YP:	13/18
Mud type:	Polymer/Starch

Drilling Information

Depth:	1200 meters
ROP:	20-40 meters/hour
Pump Rate:	734 gpm
Hole Diameter:	10 ⁵ / ₈ "

Horizontal Section Results

Screen discard was caught and analyzed from each shaker. The samples were caught within two minutes of each other to minimize any change in cuttings return rate.

	Derrick FLC 2000	Brandt King Cobra
Solids discard	30.7 gph	2.6 gph
Cuttings dryness	35%	30%
Density of screen discard	12 ppg	11.5 ppg
Time to catch sample	60 seconds	120 seconds
Depth at time of test	1200 meters	1202 meters

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The Derrick shaker removed 12 times the amount of solids compared to the Brandt King Cobra yet the discard dryness from the Derrick shaker was higher (12 ppg vs. 11.5 ppg). Solids analysis showed the discard from the Derrick shaker to be 35% by volume solids and 65% liquid whereas the Brandt shaker's discard was 30% by volume solids and 70% liquid.

Tar Sands Test Results

While drilling the tar sands the flow was split evenly between the two shakers. The Derrick shaker had four PMD+ DX™250 screens installed. Several combinations were tried on the Brandt shaker with 140 mesh screens being ultimately selected for the test. At 555 meters depth, samples were taken of the screen discard from both shakers and analyzed by the on site mud engineer. The results were as follows:

Screen Discard Analysis	Derrick FLC 2000	Brandt King Cobra
Solids	46%	43.5%
Oil	17%	17%
Water	37%	39.5%
Screen Size	DX™250	XR 140

Mud Information

Mud weight: 9.0 ppg
 Water: 90%
 Oil: 3%
 Solids: 7%
 PV/YP: 10/4
 Mud type: gel mud

Drilling Information

Depth: 555 meters
 ROP: 20-30 meters/hour
 Pump Rate: 900 gpm
 Hole Diameter: 12 1/4"

Cuttings from the Derrick FLC 2000 were 5.7% dryer even though the FLC was running finer screens.

Conclusion:

The Derrick FLC 2000 4-panel shaker removed more drilled solids and, at the same time, produced a dryer solids discard than the Brandt King Cobra. While drilling the very sticky tar sand the Derrick shaker could handle screens fine enough so that there was no near size particle blinding and could operate with only an occasional adjustment of the deck angle. The Brandt shaker continually had problems with near size particle blinding or difficulty handling polymer mud. This required frequent screen changes and constant deck angle adjustment. The Derrick shaker was more user friendly and required little attention during the drilling operation.

The Derrick shaker removed more drilled solids and provided a dryer screen discharge. The Derrick shaker would provide substantially reduced drilling fluids and total drilling costs for the operator.



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