PowerMag® magnets recover debris at a ratio greater than 3:1 over competition

Location: Gulf of Mexico

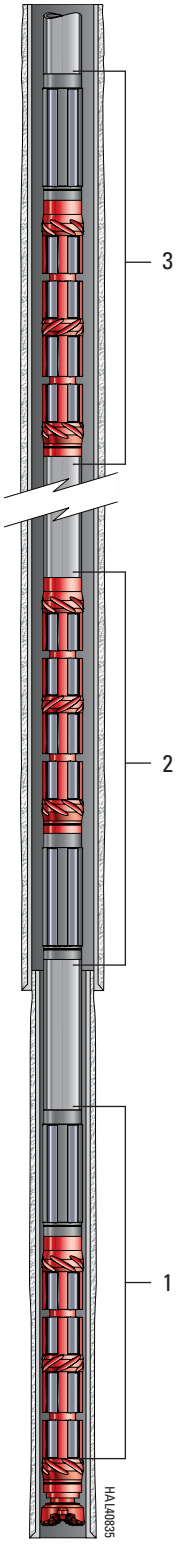
Overview

For a major operator in the Gulf of Mexico, Halliburton won its first opportunity to perform a deepwater displacement run. The water depth was 8,835 ft, and the well had a total depth of over 26,000 ft. Since Halliburton was replacing a long-standing competitor, the client requested a comparison between the competitor's magnets and Halliburton's magnets on this critical wellbore cleanout.

The Halliburton CleanWell® PowerMag® magnet was challenged to a direct comparison against the competitor's high-capacity "star" design magnets. For the displacement operation, a total of three magnet assemblies were planned to be run. Each assembly consisted of one PowerMag magnet and one competitor magnet, alternating between which magnet would run above the other. This was done to ensure that neither company had the advantage of encountering debris first while running in hole or during circulation.

PowerMag magnets are designed to collect large quantities of ferrous or non-ferrous materials that have become magnetically charged due to pipe rotation or movement during displacement, drilling, or intervention runs.

The tool is built from integral drill-collar bar stock to provide both high tensile and torsional values and a large ID to minimize pressure losses. The debris collection area consists of 20 long, recessed magnet sections with 2,800-in.^{2} of surface-collection area. Debris collection is generated by high-energy, extremely strong neodymium bar magnets. These features provide consistent debris recovery capacity in excess of 250 lb. The tool is ideal for applications such as window milling runs or displacements where a large amount of debris is expected.



Displacement Run Results

Assembly	Tools	Tool Size (in.)	Recovery (lb)
3	Competitor Magnet	10 3/4	50
	PowerMag® Magnet	10 3/4	159
2	PowerMag Magnet	10 3/4	159
	Competitor Magnet	10 3/4	47
1	Competitor Magnet	10 1/8	35
	PowerMag Magnet	10 1/8	116.5

CHALLENGE	SOLUTION	RESULT
Displacing a long-standing competitor through comparison of **our PowerMag magnet against their high capacity "star" design magnets**	**PowerMag magnets with high-energy, extremely strong neodymium bar magnets** designed to recover large quantities of ferrous or non-ferrous materials in excess of 250 lb	**PowerMag magnets outperformed competitor's magnets at ratio of greater than 3:1 in debris recovery.** Recoveries were below established maximum recovery amounts, indicating that all debris was removed from well.

Benefits

Halliburton PowerMag magnets outperformed the competitor's magnets at a ratio of greater than 3:1 relative to debris recovery for both wet (initial weight when tools are cleaned on rig floor) and dry (cleaned) debris weight. The outperformance was consistent regardless of whether the tool was at the top or bottom position in the assembly. All PowerMag magnet recoveries were below established maximum recovery amounts, indicating that all debris had been removed from the well and that the tools still had additional carrying capacity.

HAL40887

PowerMag® magnet from Assembly 1: 116.5 lb of metal fines

HAL40885

PowerMag® magnet from Assembly 3: 159 lb of metal fines