

## STRESS-SHIELD™ Engineering Method

### Deepwater Casing Running without Mud Losses

#### Customer Challenge

While running deepwater casing, lost returns generally occur as a result of a naturally narrow mud weight window and usually results in cementing without returns. Induced mud losses while running casing can greatly compromise the needed zonal isolation and create a safety issue. Mud loss may even begin when casing is run into an open hole. In this case history, a major operator's total mud loss in an immediately previous well was approximately 5000 bbl of SBM.

#### STRESS-SHIELD Engineering Method and Solution

STRESS-SHIELD Engineering Method is a specially engineered process to strengthen the wellbore by converting mud or cement slurry to a non-fracturing fluid. This customized conversion is achieved by promoting the timely formation of a tight particulate seal for an incipient fracture to prevent its further growth.

For robust conversion engineering at a rigsite, premium granular LCM products, BaraShield™-663 and BaraShield™-664, are manufactured for a quantified fast fracture sealing capability at various concentrations. When a rock mechanics evaluation of a weak wellbore determines that a required level of fast sealing is needed, a minimum conversion concentration of the products in the mud or cement slurry to be converted is then predefined. At levels above this minimum concentration for each spurt loss control, the fluid can form a seal before the fracture opens too wide and become a non-fracturing fluid.

Because of massive mud losses while running casing and cementing in an immediately previous deepwater Gulf of Mexico well for the 13 5/8-in. casing and 11 7/8-in liner, the operator accepted STRESS-SHIELD Engineering Method for a new well in the area for these two strings. Rock mechanical properties, based on log analysis of a previous well, were obtained. A minimum BaraShield-664 concentration was defined on the basis of the rock properties to control a maximum allowed spurt loss for each string. The synthetic based mud then was treated with BaraShield-664 above the concentration, adjusted for rheology and quality controlled for the needed spurt loss control. After the interval was drilled, a volume of the converted mud was pumped in the openhole just before pulling out of hole to cover the entire openhole section. The casing was then run to the bottom, followed by cementing operations. Before cementing, another volume of the converted mud was pumped ahead of the cement spacer. This process was successfully applied to both the 13 5/8-in. casing and 11 7/8-in. with no issues.

Only approximately 300 barrels of mud were lost, as compared to thousands of barrels of mud losses for the previous well for these two strings. This process resulted in great savings and excellent safety performance.

#### Contact

For additional information about STRESS-SHIELD Engineering Method, contact Max Wang by phone at 281-450-4944 or by email at [max.wang@sharp-rock.com](mailto:max.wang@sharp-rock.com) or go to [www.sharp-rock.us](http://www.sharp-rock.us).

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