HYDRAWASH™ - a new approach to get cement behind casing without milling.

Arne G. Larsen
Â Started in Tananger in 2008

Â Design and develop safe and flawless products and solutions

Â Our technologies will give:

- Improved HS&E results
- Increased operation efficiency
- Increased production
- Cost efficient solutions
CASING
FORMATION
ANNULUS:

Å FORMATION
Å CEMENT
Å MUD
Å BARYTE
Å DEBRIE
WASH
CEMENT ENTIRE CROSSECTION
HydraWell™

PRODUCT REPORT

HydraWash™

DESCRIPTION/APPLICATION:
The HydraWash™ system was developed to enable plugging a well without performing any milling concrete. The HydraWash™ system consists of a HydraWash™ Jetting Tool and a HydraWash™ Cement Banger which are run as one tool into the well. The HydraWash™Jetting Tool is used to wash and dean out debris in the annulus behind a perforated casing. The HydraWash™Tool is converted into a HydraWash™Cement Banger to enable placing plugging material in the well’s entire cross section and hence, establishing a barrier in the well for BHA or sidetrack purposes.

The HydraWash™Jetting Tool insures optimum conditions in the casing annulus prior to placing the plugging material in the cross section. To prevent surging the well while running in hole, the HydraWash™Jetting Tool has incorporated several large bypass channels that will divert the mud from below the tool to above the tool opposing cups. These channels will allow the usage of annulus or driftpipe activated TGP guns below the tool.

After completing the washing sequence and placing the spacer in the annulus, the HydraWash™Jetting Tool is disconected and left in the well below the perforated section forming a base for the upcoming plugging operation. After disconencting, the top part of the HydraWash™ Tool is converted into a large 10” HydraWash™Cement Spanger.

OPERATION:
The HydraWash™ tool is connected to TGP guns and the workstring. When running in hole, full circulation thru the HydraWash™ Tool is possible.

After TGP per formation, the washing feature is activated by dropping a ball that closes off the bypass channels. The perforated interval is washed as per detailed HydraWell Intervention washing procedure until sufficient pumping rates are achieved.

A larger ball is dropped to activate the hydraulic release system that separates the HydraWash™Jetting Tool from the Cement Spanger. The plugging material can now be pumped.

FEATURES/BENEFITS:
• One trip, one system
• No milling required
• Allows full flow when tripping in and out
• Simple design and operation
• Easy for plugging material
• Available for all casing sizes
PERFORATE
WASHING
TOP TO BTM
BTM TO TOP
WASHING TOP TO BTM BTM TO TOP
CEMENTING
DRILL OUT CMT
CEMENT EVALUATION TOOL
VERDICT:

HIGH BOND QUALITY

HYDRAULIC ISOLATION
Å SINGLE RUN SYSTEM
Å NO SWARF
Å NO VISCOUS MILLING FLUID
Å SIGNIFICANTLY LESS RIG TIME
Å ROBUST
Å CONFIRM WELL INTEGRITY
ÅTUBULARS
ÅCOILED TUBING
ÅRIG
ÅRIGLESS
### RESULTS TO DATE:

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Total plugs 12  June 2011

ConocoPhillips contact person: Thomas E. Ferg
A  SECTION MILLING:
1) SECTION MILL 50M/165FT
2) CLEAN OUT
3) UNDERREAM 50M/165FT
4) CEMENT

B  PERF & WASH (2-TRIP):
1) PERFORATE 50M/165FT
2) Wash & Cement

C  PERF & WASH (1-TRIP):
1) PERFORATE 50M/165FT,
   Wash & Cement
FIRST AND SECOND ONE TRIP HYDRAWASHÈ

Operation:
RIH WITH TCP AND HYDRAWASHÈ
PERFORATE
WASH 19 HRS / 17 HRS
RELEASE HYDRAWASHÈ
CEMENTING
WOC 12 HRS
CMT STINGER AT SURFACE

TOTAL TIME 70.5 HRS / 65.0 HRS
RESULTS TO DATE:

RIG DAYS SAVINGS: 74 DAYS
TWO TRIPS 6 DAYS / PLUG = 60 DAYS
ONE TRIP SYSTEM 7 DAYS / PLUG = 14 DAYS
The HydraWash Technology:

- Improved HS&E results
- Increased operation efficiency
- Cost efficient solutions
ANY QUESTIONS OR LUNCH?