



M-I L.L.C.

FASware, version 04.2

February 22, 2009

TANDEM FORM-A-SQUEEZE / FORM-A-SET AK MIXING AND SPOTTING PROCEDURES – weighted pill

This procedure is designed for 200 bbl FORM-A-SQUEEZE slurry and 200 bbl FORM-A-SET AK pill @ 11.1 ppg (400 bbls pumpable). The initial zone has been identified at 8969'. Assumes the bit is @ 8,320'.

Hi-Vis Spacer

- a. Water 90 bbls
- b. DUO-VIS 2 SXS
- c. M-I Bar 150 sxs – weight should be 11.1 ppg

*** The FORM-A-SQUEEZE and the FORM-A-SET AK pills can be mixed at the same time, in separate pits, in an effort to save mixing time. Ensure mixing hoppers do not contain synthetic fluid. Any synthetic fluid would contaminate the FORM-A-SET AK pill.

FORM-A-SQUEEZE slurry (210 bbls)

- a. Water 150 bbls
- b. FORM-A-SQUEEZE 400 sx
- c. M-I Bar 258 sx

The following FORM-A-SET AK pill material concentration is based on the anticipated BHT of 100° F:

FORM-A-SET AK (220 bbl)

PRODUCTS		
Water	183	bbl
FORM-A-SET RET	0	pails
FORM-A-SET AK	183	sx
DUO-VIS	6	sx
FORM-A-SET XL	19	cn/sx
M-I BAR	337	sx





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FORM-A-SET AK Mixing Procedure:

Mixing order to be followed and mixed in correct specified order. Any deviation must be communicated to Project Engineer:

FORM-A-SET AK Mixing Procedure continued:

1. Add 183 bbl Drill water.
2. Add 4 sxs of DUO-VIS to water.
3. Add one-half FORM-A-SET AK material (92 sx) to slurry.
4. Weight slurry to 11.1 ppg by adding M-I BAR (337 sx).
5. Add the remaining FORM-A-SET AK (91 sx) to slurry.
6. Add the remaining DUO-VIS (2 sx) as needed. This gives us approximately 1.5 ppb to suspend the barite. Has been approved by Randy Ray with Lab.
7. Do not deviate from this mixing procedure. It is critical to mix the pill as designed in this procedure. Any deviation may cause the pill to not function as designed.

**** All PPE should be worn while mixing this pill.**

FORM-A-SQUEEZE / FORM-A-SET AK Spotting & Squeezing Procedures:

The displacement rate for the entire pill is recommended @ 210 gpm. This rate has been reviewed and approved by the M-I tech group.

8. Annulars will be closed during displacement operation.
9. Pump 40 bbls Hi-Vis spacer into drill pipe. (210 gpm)
10. Pump 200 bbls of FORM-A-SQUEEZE into the drill pipe. (210 gpm). Shut down pumps.



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11. Add the **FORM-A-SET XL** to the **FORM-A-SET AK** pill to activate the material and mix for 5 – 10 minutes. This is the last step in activating the **FORM-A-SET AK** prior to pumping down hole. Add **FORM-A-SET XL** (19 sx) to the pill through the mixing hopper and mix thoroughly in order to get a homogenous mixture. Let stir for 5 – 10 minutes after all the XL has been added to slurry. ***Mix the XL only after the Hi-Vis spacer and the **FORM-A-SQUEEZE** have been pumped in drill pipe.
12. Pump 200 bbls of **FORM-A-SET AK** pill into the pipe.
13. Pump 40 bbls of the 11.1 ppg Hi-Vis spacer behind the **Form-A-Set AK** pill.
14. Using Halliburton cement unit, displace pills with 11.1 ppg **RHELIANT SBM at 210 gpm** until the FAS AK pill is 40 bbls below the drill bit. (this puts 64 bbls of FAS AK into the loss zone below the 18" shoe)
15. Slow pumps and start squeezing the remaining **FAS AK** pill that is in the casing at a rate of 0.5 bpm until 200 psi is achieved or until 25 bbls of FAS AK is left in the casing. Shut down and hold pressure. If pressure drops below 200 psi, pressure back up at 0.5 bpm to 200 psi. **Do not over displace , leave 25 bbls of FAS AK in casing.** Continue to hold remaining pressure until a total of 6 hours has elapsed since pumping the Form-A-Set AK into the drillstring.

[Note: According to lab results the pill should start setting after 2 hours and 29 minutes]

Safety Considerations:

1. Once the **FORM-A-SET AK** plug has been pumped out of the pit flush both the tank and associated mixing/ pump lines with as much fresh water as possible and send to reserve pit.
2. *Do not allow pill to mix with the mud in the active pits as this may crosslink the surface volume.*
3. ** All PPE should be worn while mixing this pill.