

April 6, 2010

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

This procedure is designed for 120 bbl **FORM-A-SQUEEZE** slurry and 180 bbl **FORM-A-SET AK** pill @ 14.0 ppg (300 bbls pumpable). The initial loss zone has not been identified but is suspected on bottom @ 18,260'. This procedure assumes the bit is @ 14,937'.

*** The **FORM-A-SET AK** pill will be mixed in pit #5. Ensure mixing hoppers do not contain synthetic fluid. Any synthetic fluid would contaminate the **FORM-A-SET AK** pill.

FORM-A-SQUEEZE slurry has already been prepared (200 bbls)

The following **FORM-A-SET AK** pill material concentration is based on the anticipated BHT of 160° F:

FORM-A-SET AK (240 bbl)

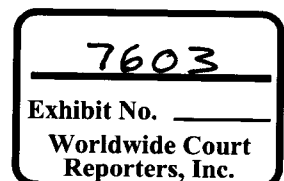
PRODUCTS		
Water - bbls	175	bbl
FORM-A-SET RET - 5 GAL PAIL	21	pails
FORM-A-SET AK - 25 LB BAG	175	sx
DUO-VIS - 55 LB SACK (25 KG)	3	sx
FORM-A-SET XL - 12 GAL CAN	17	cn/sx
M-I BAR - BULK	752	sx

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 175 bbl Drill water.
2. Add 21 pails of **FORM-A-SET RET** to water.
3. Add 2 sxs of **DUO-VIS** to water.



FORM-A-SET AK Mixing Procedure continued:

4. Add one-half **FORM-A-SET AK** material (88 sx) to slurry.
5. Weight slurry to 14.0 ppg by adding **M-I BAR** (752 sx).
6. Add the remaining **FORM-A-SET AK** (87 sx) to slurry.
7. Add the remaining **DUO-VIS** (1 sx) if needed. This gives us approximately .69 ppb to suspend the barite.
8. 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 updated displacement rates have been reviewed and approved by the M-I tech group.

To prevent losing prime on pumps while "picking-up pills" into drill string prior to displacing, the pills can be pumped at 9.5 bpm (400 gpm). Once pills are in the drill string, displace at recommended rate of 6 bpm.

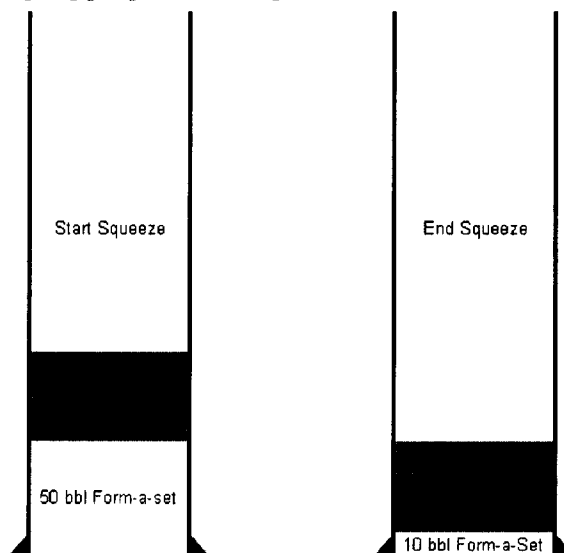
9. Annulars will be closed during displacement operation.
10. Pump 80 bbls of **FORM-A-SQUEEZE** into the drill pipe (9.5 bpm). Shut down pumps.
11. ***Mix the XL only after the first 80 bbls of the **FORM-A-SQUEEZE** has been pumped in drill pipe. Add the **FORM-A-SET XL** to the **FORM-A-SET AK** pill 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** (17 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.
12. Pump 180 bbls of **FORM-A-SET AK** pill into the pipe (9.5 bpm).
13. Pump 40 bbls of the **FORM-A-SQUEEZE** as spacer behind the **Form-A-Set AK** pill (9.5 bpm) into the drill pipe.
14. Using Halliburton cement unit, displace pills with 14.0 ppg **RHELIANT SBM** at 6 bpm until a total of 90 bbls remains in the 9-7/8" casing (50 bbls Form-a-set + 40 bbls Form-a-squeeze).
 - 6 bpm displacement rate should start once all 300 bbls of the pill is inside casing.

Spotting Procedure Continued:

15. Start squeezing at a rate of 0.5 bpm down the drill pipe with 14.0 ppg SOBMs until 200 psi is achieved or **40 bbl** of the **Form-a-set** pill has been **squeezed away**.
- If 200 psi is achieved before pumping 40 bbls, shut down and hold pressure. If pressure drops below 200 psi, pressure back up at **0.5 bpm** to 200 psi and continue to hold. Repeat as necessary.
 - If 200 psi is not achieved, squeeze until **10 bbls** of Form-a-set is **left in the 9 $\frac{7}{8}$ ' liner** (total 50 bbls in casing = **40 bbls Form-a-squeeze** + **10 bbls Form-a-set**).
 - If no pressure is encountered after squeezing 40 bbls shut down and wait 6 hrs for pill to set. After waiting 6 hours proceed with well operations outlined by Drilling Engineer.
 - **Do not over displace** in any case.

[Note: According to lab results the pill should start setting after 108 minutes have elapsed.]

***If during the pumping of the tandem pill pressure starts to build up, the pill must be cleared from drill string to avoid setting up and plugging drill string.



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.