

HSR-Rand 11-14A: SSX and FH Remedial Cement

- 1 Call Foreman or Lead Operator at least 24 hr prior to rig move. If not already completed, request that they catch and remove plunger, isolate production equipment and remove any automation equipment prior to the rig showing up. Install perimeter fence as needed.
- 2 MIRU slickline. Fish plunger from lubricator. RIH and pull the bumper spring and standing valve if necessary. RBIH with sinker bars and tag bottom. Report findings. PBTB should be around 7946'. RDMO slickline.
- 3 MIRU WO rig and auxiliary equipment. Check pressures. ND tree and adapter flange, NU BOP.
- 4 PU landing joint. TIW valve on top and screw into the tbh hanger. Back out the lock down pins and pull up on tbh string to break any possible sand bridges, unseat landing joint and lay down.
- 5 MIRU EMI equipment. TOOH with 2-3/8", 4.7#, J-55 tbh. EMI tbh while standing back 227 joints of 2-3/8" tbh and LD 11 joints of 1-1/4" tbh (EOT at 7778'). Lay down joints with wall loss or penetrations >35%. Replace joints as necessary. Note joint number and depth of tubing leak(s) on production equipment failure report in OpenWells. Clearly mark all junk (red band) tubing sent to yard.
- 6 PU casing scraper for 4-1/4", 11.6# casing and TIH to 7430', Circulate all debris from wellbore with clean water. POOH and stand back tubing and LD scraper.
- 7 RIH on wireline with CCL and 4-1/2" RBP. Set RBP at +/- 6990' (collars at 6967' and 7008') and POOH. Dump bail 2 sx of sand on top of RBP and POOH. Pressure test RBP to 1,000 psi for 15 minutes.
- 8 RIH with CCL-GR-CBL-VDL. Run from top of RBP (and 2 sx of sand) to surface. Send CBL to Tyler Davis (Tyler.Davis@anadarko.com) for review to verify cement/perforation plans. If cement is present to 1130', then remedial cement isn't necessary. ND lubricator. In addition to normal handling of logs/job summaries, email copies of all cement job logs/job summaries and invoices to rscDJVendors@anadarko.com within 24 hours of the completion of the job.
- 9 Rig up one 3" line from the casing head annulus to work tank. Kill well with fresh water. ND BOP, ND tubing head. Install 4-1/2" 7.5K frac valve on 4-1/2" csg.
- 10 NU lubricator, PU CCL and perf guns. Correlate depth to CBL. PUH and shoot squeeze holes as per the following: 5115'-5116', 3 spf, 0.38" EHD. PUH and shoot circulation holes as per the following 4125'-4126', 3 spf, 0.6" EHD. POOH and LD guns. Referencing the CBL, ensure perforations are not made on a collar.
- 11 RIH and set CICR at 4965' (refer to CBL for collar depths). RDMO wireline.
- 12 PU stinger and RIH on 2-3/8" tbh. Sting into CICR at 4965'.
- 13 Establish circulation down tubing with biocide treated water. Note rate, pressure, volume pumped, and returns percent.
- 14 NU cement head (with configuration to drop a wiper plug) and RU cement services. Pump a 30 bbl (5 bbls water, 20 bbls SMS, 5 bbls water) spacer. Prepare to cement.
- 15 Mix and pump ~285 sx **G neat cement** + 1/4 #/sk cello flake + 0.4% dispersant + 0.4% anti-settling agent, mixed at 15.8 ppg and 1.15 cu ft/sk, into squeeze holes at 5115'. Displace cement 1.5 bbl short of CICR. Sting out of CICR, place 1/2 bbl of remaining cement on top of CICR. PUH to squeeze circulation holes at 4125'. Place remaining cement across holes. PUH 3 stands and reverse out. Design is for coverage from 5115' to 4125' in 7.88" hole including a 20% excess.
- 16 TOOH and stand back tbh. LD stinger.
- 17 Pressure test casing to 500 psi for 15 minutes in order to use the cement as a plug.
- 18 RIH with CCL and perf guns. Correlate depth to CBL. PUH and shoot squeeze holes as per the following: 1300'-1301', 3 spf, 0.38" EHD. POOH and LD guns.
- 19 PU and TIH retrievable packer for 4-1/2", 11.6, I-70 casing. Set packer at 500'. Establish injection/circulation before setting CICR. Note rate, pressure, volume pumped. Release packer and TOOH while standing back tubing and LD packer.
- 20 RIH and set CICR at 1200'. RDMO WL.

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- 21 PU stinger and RIH on 2-3/8" tbg. Sting into retainer at 1200' (refer to CBL ran earlier for collar depths).
- 22 RU cementer. Prepare and pump 190 sx Type III w/ ¼ #/sk cello flake mixed at 14 ppg and 1.53 cu ft/sk into squeeze holes at 1300'. Displace cement ½ bbl short of CICR. Sting out of CICR, place remaining cement on top of CICR. PUH 1 std and reverse out. Design is for coverage from 1300' to 535' in 12.25" hole from 535' to 585' and 7-7/8" hole from 585' to 1300' including 20% excess.
- 23 TOO H and stand back tbg. LD stinger. WOC for 48 hours minimum.
- 24 TIH with 3-7/8" bit on 2-3/8" tbg. Drill through cement down to at least 1400'.
- 25 Pressure test squeeze perforations to 1000 psi for 15 minutes. If pressure test passes, proceed.
- 26 Continue to drill through cement and CICR down past perforations at 4125' to at least 5150'. Pressure test squeeze perforations to 1000 psi for 15 minutes. If pressure test passes, proceed.
- 27 MIRU wire line and run CCL-GR-CBL-VDL from top of RBP at 7000' (and 2 sx of sand) to surface. In addition to normal handling of logs/job summaries, email copies of all cement job logs/job summaries and invoices to rscDJVendors@anadarko.com and Tyler.Davis@anadarko.com within 24 hours of the completion of the job. RDMO wireline.
- 28 RIH and retrieve RBP at 7000'. POOH and LD RBP.
- 29 PU 2-3/8" NC, 2-3/8" XN nipple (be sure nipple is correctly input into OpenWells), 8 joints of 2-3/8" tbg, Arrowset AS-1X packer rated to 10,000 psi, and remaining 208 joints of 2-3/8" 4.7# J-55 tbg to surface. Hydrotest tubing to 6,000 psi while TIH. Set packer at +/- 6,820' (collars located at 6,800' and 6,842'). Land EOT at +/- 7,075' (just above Niobrara fm).
- 30 Load 2-3/8" x 4-1/2" annulus with biocide treated water and pressure test to 1,000 psi for 15 minutes to be sure packer is set properly.
- 31 RU rig lubricator. Broach tubing to seating nipple. RD rig lubricator. ND BOP.
- 32 Install 7-1/16" x 2-3/8" 5,000 psi tubing head adaptor with new 5,000 psi master valve with flanged 2-3/8" EUE companion flange on top. Make sure all wellhead valves are rated to 5,000 psi.
- 33 Install 2-3/8" pup joint above the master valve. Pressure test the tubing head from below the tubing head through the master valve to 5,000 psi using hydrotester. RDMO hydrotester.
- 34 RDMO WO rig. Return well to production team.
- 35 END OF SAFETY PREP STEPS. BELOW ARE STEPS FOR UN-PREPPING THE WELL**
- 36 When notification is sent to un-prep the well, MIRU WO rig. Kill well as necessary with water and biocide. ND wellhead. NU BOP.
- 37 Unland 2-3/8" tbg and lay down landing joint.
- 38 Release Arrowset AS-1X packer (4-1/2", 11.6, I-70 casing) and add joints of tubing to tag top of liner for fill above 7441'. Note tagged depth. TOO H standing back all 2-3/8" tubing and LD packer. Return packer to shop it was purchased from and have the packer redressed.
- 39 If sand fill is tagged above 7,441' then either bail or reverse circulate to cleanout well to 7441'. Otherwise proceed to next step.
- 40 PU 2-3/8" NC, 2-3/8" XN nipple (be sure nipple is correctly input into OpenWells), and 2-3/8" 4.7# J-55 tbg to surface. Land EOT at +/- 7,410' (one joint above top of liner).
- 41 RU rig lubricator. Broach tubing to XN seating nipple. RD rig lubricator. ND BOP. NU WH.
- 42 Install 7-1/16" x 5,000 psi tubing head adaptor and 5,000 psi master valve with flanged 2-3/8" connection. Make sure all wellhead valves are rated to 5,000 psi.
- 43 Install 2-3/8" pup joint above the master valve. Pressure test the tubing head from below the tubing head through the master valve to 5,000 psi using hydrotester. If wellhead does not pressure test, replace wellhead/ wellhead valves as necessary with 5,000 psi rated equipment. NU WH.
- 44 RDMO WO rig.
- 45 Return well to production team.