

Engineer: Alex Caravaggio

Cell: 213-880-8119

Annular Fill (Remedial Cement), Packer, and WH

KUGEL V 18-4

- 1 Well needs a single stage annular fill from 1080' to 325', production packer and WH change.
- 2 WELL NEEDS GYRO.
- 3 MIRU Slickline. Pull bumper spring and tag bottom. Record tag depth in Open Wells. RD slickline.
- 4 Prepare location for base beam equipped rig. Install perimeter fence as needed.
- 5 Check and record bradenhead pressure. If bradenhead valve is not accessible, re-plumb so that valve is above GL. Blow down bradenhead and re-check pressure the next day. Repeat until pressure stays at 0 psi.
- 6 Contact COGCC to witness MIT.
- 7 MIRU WO rig. Spot 7600' (~242 jts) of 2-1/16" 3.25# tbg and 1200' of 1.66" 2.33# J-55 tubing.
- 8 Kill well as necessary with water and biocide. Attach a hardline from the bradenhead/surface casing valve to a flowback tank and blow down any Bradenhead pressure. If pressure does not blow down within 1 hour contact engineer, otherwise proceed.
- 9 ND wellhead. NU BOP.
- 10 PU 8-10' pup joint with TIW valve on top and screw into the tbg hanger. Unseat and LD the landing joint.
- 11 MIRU EMI services. EMI 2-1/16" tbg (well may not have any tbg in hole) while TOOH and tally while standing back. Lay down joints that have greater than 35% penetration or wall loss. Replace all joints that fail EMI testing. Document joint numbers and depth of bad tubing and create a Production Equipment Failure report in OpenWells. RDMO EMI services.
- 12 PU and RIH with (3.5", 7.7#) Bit and Scraper on 2-1/16" tbg to 7380'. TOOH. SB all 2-1/16" tbg. LD bit and scraper.
- 13 PU 10,000 psi rated from above and below RBP (3.5", 7.7#), retrieving head, and 2-1/16" tubing. Set RBP at +/- 7370'.
- 14 Release tbg from RBP and circulate all gas out of the hole. Pumping water with biocide, pressure test RBP and production casing to 1000 psi for 15 minutes. If pressure test passes, proceed; otherwise contact engineering.
- 15 Dump and spot 2 sx of sand on top of RBP and TOOH and SB 2-1/16" tubing.
- 16 ND BOP. ND wellhead. Un-land casing using a casing spear, not a lifting sub. Max pull shall be 100,000#. If unable to unland, contact Engineering. NU double entry flange (with 3-1/2" x 4-1/2" swedge) and BOP. Install 1.66" pipe rams.
- 17 PU 1.66" 2.33# J-55 10RD tubing and TIH between the 3-1/2" production casing and 8-5/8" surface casing/open hole to 1080' while continuously circulating. Make 2 sweeps of DF 20-20 while TIH. (annular volume ~58 bbl @ 1080') If unable to make it to 1080' call Engineering.
- 18 Circulate with the rig pump to condition the hole or until well is completely dead. Pump a final sweep of DF 20-20 at 1080' (annular volume ~58 bbls). Circulate a minimum of 1.5 annular volumes and ensure well is dead. If not able to circulate dead, contact engineering.
- 19 MIRU cementing services. Establish circulation and pump 20 bbl (5 bbls of water, 10 bbls of sodium silicate, and 5 bbls water) spacer, **315 sx (366 cf) 15.8 ppg 1.16 yield.** (based on 7.88" hole size + 60% excess from 1080'-582' and from 582' to 325' between 8-5/8" 24# surface casing and 3-1/2" 7.7# production casing). Attempt to cement from 1080'-325'. Plan for 3 hour pump time.
- 20 TOOH with 1.66" 2.3# J-55 10RD IJ tubing until EOT is at 250' and LD extra tbg. Circulate with freshwater 1.5 times the hole volume or until returns are clean. RDMO cementing services.
- 21 TOOH and LD all 1.66" 2.3# J-55 10RD IJ tubing. ND BOP and double entry flange. Use 3-1/2" casing spear to re-land 3-1/2" casing. NU WH and BOP. Install 2-1/16" pipe rams. Shut well in and WOC for a minimum of 24hrs.
- 22 MIRU wireline and run **CCL-GR-CBL-VDL from +/- 5000' (below the original TOC) to surface.** If the cement is not at or above 532', 50' inside the surface casing shoe, contact engineer. RDMO wireline services. In addition to normal

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handling, of logs/job summaries, email copies of all cement job logs/job summaries and invoices to DJVendors@anadarko.com within 24 hrs of the completion of the job.

- 23 PU and TIH with retrieving head and 2-1/16" tubing.
- 24 Circulate sand off of RBP. Pressure test casing to 1000 psi for 15 minutes. Latch onto and release RBP at +/- 7370'. Circulate gas out of hole. TOOH standing back all 2-1/16" tubing and LD RBP.
- 25 Rig up hydrotester and hydrotest tubing to 3,000 psi while TIH. PU & TIH with 3-1/2" Arrowset AS-1X packer rated to 10,000 psi (3-1/2", 7.7#), 2-1/16" XN nipple, and tbg to surface.
- 26 Set packer at +/- 7400'. Land tubing (EOT at packer). Verify XN nipple sizes and enter in Open Wells.
- 27 Load backside with packer fluid. (Julio Ramirez 970-518-2166 or Cesar Rodriguez 970-590-2682 with Reliable Services). Do not load hole with water out of the work tank.
- 28 RU rig lubricator. Broach tubing to XN seating nipple. RD rig lubricator. ND BOP.
- 29 Install 7-1/16" flanged 5000 psi tubing head adaptor with studed top, 2-1/16" flanged 5000 psi master valve, flanged 5000 psi 2-1/16" plunger lubricator (side outlets threaded). Make sure all wellhead valves are rated to 5,000 psi and all nipples are XXH. Document wellhead components in an OpenWells wellhead report.
- 30 Install 2-1/16" 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.
- 31 NU WH. RDMO WO rig. Return well to production team.