

## DUAL STAGE ANNULAR FILL PROCEDURE

### SEBOLD DOROTHY UNIT TRUE 1

Step	Description of work
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| 1.  | Well needs dual stage annular fill from 4850' - 4350' and from 1560' to 895', a packer, and 5K well head upgrade.  |
| 2.  | Well has gyro on 11/6/2012.  |
| 3.  | Unable to find collar data for well. Possible adjustment may be necessary. Call on-call engineer should issues arise.  |
| 4.  | MIRU Slickline. Pull bumper spring and tag bottom. Record tag depth in Open Wells. RD slickline.   |
| 5.  | Prepare location for base beam equipped rig. Install perimeter fence as needed.  |
| 6.  | 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.  |
| 7.  | Spot 25 jts of 2-3/8" 4.7# J-55 8RD EUE tubing and spot 4860' (~155 jts) of 1.66" 2.33# J-55 10RD tbg.   |
| 8.  | MIRU WO rig. Kill well as necessary with water and biocide.  |
| 9.  | ND wellhead. NU BOP.   |
| 10. | PU tubing. Unseat and LD the landing joint.  |
| 11. | MIRU EMI services. EMI 2-3/8" tbg (249 joints landed at 8014') 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 10,000 psi rated from above and below RBP (5.5", 17#, J-55), retrieving head, and 2-3/8" tubing. Set RBP at +/- 7400' (no collar data).   |
| 13. | 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.   |
| 14. | Circulate 2 sx of sand on top of RBP and TOOH and SB all 2-3/8" tubing.  |
| 15. | MIRU WL. Run CCL-GR-CBL-VDL from 7400' to surface to confirm cement (no CBL records). Discuss log with engineering. Cementing plans could change pending cement top. Well needs Sussex coverage to 4352'.  |
| 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 and BOP. Install 1.66" pipe rams.  |
| 17. | RU hydrotesters. PU 1.66" 2.33# J-55 10RD tubing and TIH between the 5-1/2" production casing and 8-5/8" surface casing/open hole to 4850' while continuously circulating and hydrotesting to 3000 psi. RD hydrotesters.   |
| 18. | Make 2 sweeps of DF 20-20 while TIH. If unable to make it to 4850' contact Engineering. Circulate with the rig pump to condition the hole or until well is completely dead. Pump a final sweep of DF 20-20 at 4850'. Circulate a minimum of 1.5 annular volumes and ensure well is dead. If not able to circulate dead, contact engineering.             |

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19. RU Cementers. Precede cement with 20 bbl (5 bbls of water, 10 bbls of sodium silicate, and 5 bbls water) spacer. **Pump Sussex Annular Fill:** 360 sx (428.9 cu.ft.) with Polyflake assumed at 14.2 ppg and 1.2 cf/sk. (500' in-between 12.5" OH (from caliper log) with 20% excess and 5-1/2" production casing). Cement is estimated to cover 4850'-4350' . Plan for 3 hour pump time. RD cementers.
20. PUH with 1.66" 2.3# J-55 10RD IJ tubing to 4150'. LD remaining tbg. Circulate with freshwater 1.5 times the hole volume or until returns are clean.
21. PUH to 1560'. LD remaining tubing.
22. RU Cementers. Precede cement with 10 bbl fresh water spacer. **Pump Fox Hills Annular Fill:** 240 sx (285.7 cu.ft.) with Polyflake assumed at 14.2 ppg and 1.2 cf/sk. (615' in-between 7.88" OH with 60% excess and 5-1/2" production casing and 200' in-between 9-5/8" surface casing and 5-1/2" production casing with no excess). Cement is estimated to cover 1560'-895'. Plan for 3 hour pump time. RD cementers.
23. PUH with 1.66" 2.3# J-55 10RD IJ tubing to 700'. LD remaining tbg. Circulate with freshwater 1.5 times the hole volume or until returns are clean.
24. TOOH and LD all 1.66" 2.3# J-55 10RD IJ tubing. ND BOP and double entry flange. Use 4-1/2" casing spear to re-land 4-1/2" casing. NU BOP. Install 2-3/8" pipe rams. Shut well in and WOC for a minimum of 24hrs.
25. MIRU wireline and run CCL-GR-CBL-VDL from +/- 7400' (below the original TOC) to surface. If the cement is not at or above 4352', contact engineer. RDMO wireline services. In addition to normal 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.
26. PU and TIH with retrieving head and 2-3/8" tubing. Circulate sand off of RBP. Circulate gas out of hole. Latch onto and release RBP at +/- 7400'. TOOH standing back all 2-3/8" tubing and LD RBP.
27. Hydrotest tubing to 3,000 psi while TIH. TIH with 2-3/8" NC, 2-3/8" XN nipple, 27 jts of 2-3/8" tbg (~834'), 5-1/2" Arrowset AS-1X packer rated to 10,000 psi (5-1/2", 17#) set at +/- 7180' (no collar data), 2-3/8" tbg to surface. Verify XN nipple sizes and enter in Open Wells. Land EOT at 8014'.
28. 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. Pressure test PKR to 1,000 psi for 15 minutes.
29. RU rig lubricator. Broach tubing to XN seating nipple. RD rig lubricator. ND BOP.
30. Install 7-1/16" flanged 5000 psi tubing head adaptor with studed top, 2-1/16" flanged 5000 psi master valve, flanged 5000 psi 2-3/8" 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.
31. 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.
32. NU WH. RDMO WO rig. Return well to production team.