

## DUAL STAGE ANNULAR FILL PROCEDURE

### SUTTON FOUNDERS 1

Step	Description of work
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1. Well needs dual stage annular fill from 4855' - 4380' and from 1610' to 871', a packer, and 5K well head upgrade.
2. Well has gyro on 12/15/2011.
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. Spot 25 jts of 2-3/8" 4.7# J-55 8RD EUE tubing and spot 4855' (~155 jts) of 1.66" 2.33# J-55 10RD tbg.
7. MIRU WO rig. Kill well as necessary with water and biocide.
8. ND wellhead. NU BOP.
9. Use unlanding joint and unland mandrel. LD the landing joint and mandrel.
10. MIRU EMI services. EMI 2-3/8" tbg (255 joints landed at 7898') while TOO H 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.
11. PU 10,000 psi rated from above and below RBP (4.5", 11.6#, I-80), retrieving head, and 2-3/8" tubing. Set RBP at +/- 7415' (collars located at 7390' and 7432').
12. Release tbg from RBP and circulate all gas out of the hole. Load hole with water with biocide Pressure test RBP and production casing to 1000 psi for 15 minutes. If pressure test passes, proceed; otherwise contact engineering.
13. Circulate 2 sx of sand on top of RBP and TOO H and SB all 2-3/8" tubing.
14. 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.
15. NU double entry flange and BOP. Install 1.66" pipe rams.
16. PU 1.66" 2.33# J-55 10RD tubing and TIH between the 4-1/2" production casing and 8-5/8" surface casing/open hole to 4855' while continuously circulating.
17. Make 2 sweeps of DF 20-20 while TIH. If unable to make it to 4855' contact Engineering. Circulate with the rig pump to condition the hole. Pump a final sweep of DF 20-20 at 4855'. Circulate a minimum of 1.5 annular volumes (~561 bbls) and ensure well is dead.
18. 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:** 170 sx (199.4 cu.ft.) with Polyflake assumed at 14.2 ppg and 1.2 cf/sk. (475' in-between 9" OH with 20% excess and 4-1/2" production casing). Cement is estimated to cover 4855'-4380'. RD cementers.
19. PUH with 1.66" 2.33# J-55 10RD IJ tubing to 4000'. LD remaining tbg. Circulate with freshwater 1.5 times the hole volume (~280 bbls) or until returns are clean.
20. PUH to 1610'. LD remaining tubing.

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21. RU Cementers. Precede cement with 10 bbl fresh water spacer. **Pump Fox Hills Annular Fill: 290** sx (346.8 cu.ft.) with Polyflake assumed at 14.2 ppg and 1.2 cf/sk. (689' in-between 7.88" OH with 60% excess and 4-1/2" production casing and 200' in-between 8-5/8" surface casing and 4-1/2" production casing with no excess). Cement is estimated to cover 1610'-871'. RD cementers.
22. PUH with 1.66" 2.3# J-55 10RD IJ tubing to 500'. LD remaining tbg. Circulate with freshwater until returns are clean.
23. 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.
24. MIRU wireline and run CCL-GR-CBL-VDL from +/- 7300' (below the original TOC) to surface. If the cement is not at or above 4481', 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.
25. PU and TIH with retrieving head on 2-3/8" tubing. Circulate sand off of RBP. Latch onto and release RBP at +/- 7415'. TOOH standing back all 2-3/8" tubing and LD RBP.
26. Hydrotest tubing to 3,000 psi while TIH. TIH with 2-3/8" NC, 2-3/8" XN nipple, 15 jts of 2-3/8" tbg (~475'), 4-1/2" Arrowset AS-1X packer rated to 10,000 psi (4-1/2", 11.6#) set at +/- 7415' (collars located at 7390' and 7432'), 2-3/8" tbg to surface. Verify XN nipple sizes and enter in Open Wells. Land EOT at 7890'.
27. Load backside with packer fluid. Do not load hole with water out of the work tank. Pressure test PKR to 1000 psi for 15 minutes.
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 studded 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.
30. 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.
31. NU WH. RDMO WO rig. Return well to production team.