

Engineer: ELIZABETH HUNT

Cell: 808-594-3092

PLUG and ABANDONMENT PROCEDURE

RICHARDSON V 3-16

Step	Description of Work
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| 1. | Provide 48 hr notice to COGCC prior to rig up per request on approved Form 6 (e.g. call field coordinator, submit Form 42, etc.). Call Automation Removal Group at least 24 hr prior to rig move. Request they catch and remove the plunger, isolate production equipment and remove any automation prior to MIRU. |
| 2. | MIRU Slickline. Pull bumper spring and tag bottom. Record tag depth in Open Wells. Well has gyro from 5/12/2011. RDMO Slickline. |
| 3. | Prepare location for base beam equipped rig. Install perimeter fence as needed. Order a minimum of 25 joints additional 2-1/16", 3.25#, J-55 IJ tbg. |
| 4. | 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. Contact the on-call engineer if pressure does not blow down to 0 and stay at 0. |
| 5. | MIRU WO rig. Kill as necessary using clean fresh water with biocide. ND WH. NU BOP. Unland tbg using unlanding jt and LD. Release packer set at 5160'. |
| 6. | TOOH and SB 7370' of 2-1/16" tbg. LD packer. |
| 7. | PU bit and scraper for 3-1/2", 7.7# csg and RIH to 7370' (just above 2-3/8" liner top @ 7455'). TOOH, SB 7360' 2-1/16" tbg and LD bit and scraper. |
| 8. | MIRU Wireline. RIH with 2-3/8" (4.7#) CIBP and set at +/- 7800' to abandon the J-Sand perfs. POOH. RIH to dump 1 sx cement on CIBP. POOH. |
| 9. | RIH with 3-1/2" (7.7#) CIBP and set at +/- 7360' to abandon the NB/CD. POOH. RDMO WL. |
| 10. | Pressure test CIBP to 2000 psi for 15 minutes. (3-1/2" csg will be used as a work string later). If PT fails, contact the on-call engineer. |
| 11. | MIRU hydrotesters. RIH with 2-1/16" tbg OE to 7360' while hydrotesting in to 3000psi. RDMO hydrotesters. Load hole with biocide treated fresh water and circulate all gas out of the hole. |
| 12. | <u>MIRU cementers.</u> Pump Niobrara Balance Plug: Pump 25 sxs (39 cf), assuming 15.8 ppg & 1.53 cf/sk. The plug will cover 7360ft-6770ft. Volume based on 590' above the CIBP inside the 3.5" production casing w/ no excess. RD cementers. |
| 13. | Slowly pull out of the cement and PUH to 6200'. Reverse circulate tubing clean to ensure no cement is left in the tubing. TOOH and LD all 2-1/16" tbg. |
| 14. | MIRU WL. RIH and cut 3-1/2 (7.7#) casing at 4530'. POOH. RDMO WL. |
| 15. | Circulate with fresh water containing biocide to remove any gas. |
| 16. | ND BOP. ND TH. Un-land casing using a casing spear, not a lifting sub. Max pull shall be 100,000#. If unable to unland, contact Engineering. |
| 17. | Install BOP on casing head with 3-1/2" pipe rams. |
| 18. | Raise 3-1/2" csg to floor. |
| 19. | Establish circulation to surface with biocide treated fresh water. |
| 20. | <u>RU cementers.</u> Pump 10 bbls pre-flush, followed by 5 bbls fresh water spacer. Pump Sussex Balance Plug: 140 sxs (212 cf) with 0.25 lb/sk polyflake, assuming 15.8 ppg & 1.51 cf/sk. Volume based on 380' in the 3-1/2" production casing annulus assuming 12.5" OH from the bit size with 60% excess. RD cementers. |

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21. Slowly pull out of the cement and PUH to 3700'. Reverse circulate to ensure no cement is left in the tbg.
22. WOC per cement company recommendation. TIH and tag cement. Cement top needs to be at or above 4152' (200' above the SX top at 4352'). Call engineering if tag is lower than 4152'.
23. Establish circulation with biocide treated water. Pump one hole volume (92 bbl).
24. RU Cementers. Pump 10 bbls pre-flush, followed by 5 bbls fresh water spacer. Pump Stub Plug: 270 sxs (405 cf) with 0.25 lb/sk Polyflake, assuming 15.8 ppg and 1.50 cf/sk. Volume is based on 606' of 12.5" OH from bit size with 60% excess, and 200' in 8-5/8" surface casing with no excess. The plug is designed to cover from 1120' to 314'. RDMO cementers. Notify engineering if circulation is ever lost during job.
25. Slowly pull out of the cement and PUH to 100'. Reverse circulate casing clean to ensure no cement is left in the casing.
26. MIRU WL. Tag cement as needed. RIH with 8-5/8" CIBP (8-5/8", 24# casing) and set at +/- 80. RDMO WL and WO rig.
27. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to rscDJVendors@anadarko.com within 24 hrs of completion of the job.
28. Supervisor submit paper copies of all invoices, logs, and reports to Platteville Engineering Specialist.
29. Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
30. Capping crew will set and secure night cap on 8 5/8" casing head, restrain the casing head, pressure test CIBP to 500 psi with hydrotest pump, then remove night cap and casing head restraints.
31. Excavate hole around surface casing enough to allow welder to cut casing minimum 5' below ground level.
32. Welder cut casing minimum 5' below ground level.
33. Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
34. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
35. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
36. Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
37. Back fill hole with fill. Clean location, level.
38. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.