

Engineer: MICHAEL LEE

Cell: 970-302-4601

## PLUG and ABANDONMENT PROCEDURE

### NEWBY 12-33

Step	Description of Work
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| 1.  | Provide 48 hour notice to COGCC prior to rig up per request on approved Form 6 (e.g. call field coordinator, submit Form 42, etc.). Notify Automation Removal Group at least 24 hours prior to rig move. Request they isolate production equipment, and remove any automation prior to rig MIRU.   |
| 2.  | MIRU Slickline. Pull bumper spring and tag bottom. Record tag depth in OpenWells. Well has a directional survey from 1/15/2009.  |
| 3.  | Run pressure recorder and obtain pressure gradient survey from surface to 7115' making gradient stops every 1000'. Forward pressure bomb results to Evans Engineering. RDMO slickline. NOTE: The BHP survey must be run before the well is blown down or killed with fluid.  |
| 4.  | Arrange for 100 bbls of minimum 9.0 ppg mud to be delivered prior to setting the stub plug.  |
| 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. The last Form 17 test on 02/19/2015 recorded 116 psi of bradenhead pressure with 20 gal of oil produced in 5 minutes. Bradenhead test was stopped after 15 minutes due to fluid production. Blow down bradenhead and re-check pressure the next day. Repeat until pressure stays at 0 psi. Contact Evans Engineering if pressure does not blow down to 0 and stay at 0. |
| 7.  | MIRU WO rig. Spot in a minimum of 25 jts of 2-3/8", 4.7#, J-55 tbg. Load hole using clean fresh water with biocide to control well. ND WH. NU BOP. Unland tbg using unlanding joint and LD.  |
| 8.  | TOOH and SB 6920' of 2-3/8" tbg.   |
| 9.  | MIRU WL. RIH with a gauge ring (4-1/2", 11.6#, I-80) down to +/- 6930' and TOOH. RIH with CIBP (4-1/2", 11.6#, I-80) and set at +/- 6920' to abandon the Niobrara and Codell perms. TOOH. Load hole with biocide treated fresh water and PT CIBP to 1000 psi for 15 minutes. RD WL.  |
| 10. | TIH with 2-3/8" tbg while hydrotesting to 3000 psi to 6920'. When on bottom, circulate all the gas out of the well.  |
| 11. | <u>RU cementers.</u> <b>Pump Niobrara Balance Plug:</b> Pump 25 sxs (38 cf) Thermal 35 + 0.5% CFR-2 + 0.25% FMC mixed at 15.6 ppg & 1.51 cf/sk. Volume based on 430' inside 4-1/2" production casing. Cement will be from 6920' – 6490'. RD cementers.   |
| 12. | Slowly pull out of the cement and PUH to 6290'. Reverse circulate to ensure no cement is left in the tbg.  |
| 13. | TOOH and LD 2-3/8" tbg until EOT is at 4120'.  |
| 14. | <u>RU Cementers.</u> <b>Pump Sussex Balance Plug:</b> 35 sxs (40 cf) 0:1:0 'G' + 0.5% CFR-2 + 0.2% FMC + 0.5% LWA mixed at 15.8 ppg & 1.15 cf/sk. Volume is based on 450' inside 4-1/2" production casing. Cement will be from 4120' – 3670'. RD cementers.  |
| 15. | Slowly pull out of the cement and PUH to 3470'. Reverse circulate to ensure no cement is left in the tbg. WOC per cement company recommendations.  |
| 16. | TIH to tag cement (~3670') and record tag depth in OpenWells.  |
| 17. | TOOH and SB 1550' of 2-3/8" tbg.   |

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18. RU WL. RIH and cut 4-1/2" casing at 1450'. RD WL.
19. Circulate with fresh water containing biocide to remove any gas.
20. Un-land casing. ND BOP. ND TH. Install BOP on casing head with 4-1/2" pipe rams.
21. TOOH and LD 1450' of 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams.
22. TIH with 2-3/8" tbg to 1550'.
23. Establish circulation with biocide treated fresh water. Pump 10 bbls (min) SAPP, followed by 20 bbls fresh water spacer. Pump 9.0 ppg minimum mud and get bottoms up (circulation volume is ~100 bbls). NOTE: Due to history of high bradenhead pressure and bradenhead fluid production, it is very important to get all gas out of the hole prior to cementing.
24. **RU Cementers.** **Pump Stub Plug:** 280 sxs (366 cf) Type III + 0.3% CFL-3 + 0.3% CFR-2 + 0.25lb/sk Polyflake, mixed at 14.8 ppg and 1.33 cf/sk. Volume is based on 100' in 4-1/2" production casing with no excess, 579' of 8" OH from log with 20% excess, and 321' in 8-5/8" surface casing with no excess. The plug will cover 1550' - 550'. RD cementers.
25. Slowly pull out of the cement and PUH to 350'. Circulate using biocide treated fresh water to ensure no cement is left in the tbg. WOC per cement company recommendation.
26. TIH to tag cement (~550') and record tag depth in OpenWells. Cement needs to be at or above 771' (100' into the SC shoe). If tag is below 771', call Evans Engineering.
27. RU WL. RIH 8-5/8" CIBP to 80'. RDMO WL and WO rig.
28. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com) within 24 hours of completion of the job.
29. Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
30. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
31. 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.
32. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
33. Welder cut casing minimum 5' below ground level.
34. Fill casing to surface using 4500 psi compressive strength cement (NO gravel) if necessary.
35. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
36. Obtain GPS location data as per COGCC Rule 215 and send to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com).
37. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
38. Back fill hole with fill. Clean location, and level.
39. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.