

## PLUG and ABANDONMENT PROCEDURE

### HSR-BLANK 15-5A

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 gyro survey from 11/4/2013. RD slickline.   |
| 3.  | Prepare location for base beam equipped rig. Install perimeter fence as needed.  |
| 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.  |
| 5.  | MIRU WO rig. Spot in a min 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.  |
| 6.  | Well has packer at 6196' release and TOOH and SB 6970' of 2-3/8" tbg.  |
| 7.  | PU and RIH 4-1/2" csg scraper on 2-3/8" tbg down to 6970' and TOOH. SB 6960' 2-3/8" tbg.   |
| 8.  | MIRU Wireline. RIH with 2-7/8" (6.5#) gauge ring through the liner down to 7720' (liner top at 7393'). TOOH. RIH with a 2-7/8" (6.5#) CIBP and set at +/- 7710' to abandon the J-Sand perfs. TOOH. RIH to dump 1 sx on CIBP. TOOH.   |
| 9.  | PU and RIH with 4-1/2" (11.6#) CIBP at +/- 6960' to abandon the Nio/Codell perfs. TOOH. RD WL.   |
| 10. | TIH with 2-3/8" tbg while hydrotesting to 3000 psi to 6960'. Load hole with biocide treated fresh water and circulate the gas out of the well. PT CIBP to 1000 psi for 15 minutes.   |
| 11. | <u>RU cementers. Pump Niobrara Balance Plug:</u> Pump 25 sxs (39 cf) 15.8 ppg & 1.55 cf/sk. Volume based on 400' inside 4-1/2" production casing. Cement will be from 6960' – 6560'. RD cementers.   |
| 12. | Slowly pull out of the cement and PUH to 6360'. Reverse circulate to ensure no cement is left in the tbg.  |
| 13. | TOOH SB 4060' 2-3/8" tbg. LD remainder.  |
| 14. | RU WL. PU and RIH with two 3-1/8" perf guns with 3 spf, min 0.5" EHD, 120° phasing. Shoot 2' of squeeze holes at 4450' and 4' of squeeze holes at 4030'. RD WL.  |
| 15. | PU and RIH with (4-1/2" 11.6#) CICR on 2-3/8" tbg. Set CICR at 4060'.  |
| 16. | Establish circulation to surface with biocide treated fresh water, and pump 100 bbls to clean up hole.   |
| 17. | <u>RU Cementers. Pump Sussex Squeeze Plug:</u> 215 sxs (254 cf) w/ polyflake, 15.8 ppg & 1.18 cf/sk. Volume is based on 390' inside 4-1/2" production casing below the retainer, 420' in 8" OH with 60% excess and 3 bbls on top of retainer. Cement will be from 4450' – 4030'. RD cementers.   |
| 18. | Slowly pull out of the cement and PUH to 3830'. Reverse circulate to ensure no cement is left in the tbg.  |
| 19. | TOOH and SB 1110' 2-3/8" tbg. LD CICR stinger and remaining tbg.   |
| 20. | RU WL. RIH and cut 4-1/2" casing at 1010'. RD WL.  |
| 21. | Circulate with fresh water containing biocide to remove any gas.   |

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22. Un-land casing using a casing spear, not a lifting sub. Max pull shall be 100,000#. If unable to unland, contact Engineering.
23. ND BOP. ND TH. Install BOP on casing head with 4-1/2" pipe rams.
24. TOOH and LD all 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams.
25. RIH with 2-3/8" tubing to 1110'.
26. Establish circulation with biocide treated fresh water and pump one hole volume (90 bbls). Pump 10 bbls (min) SAPP, followed by 5 bbls fresh water spacer.
27. RU Cementers. **Pump Stub Plug:** 280 sxs (325 cf) w/ Polyflake, 15.8 ppg and 1.16 cf/sk. Volume is based 100' inside 4-1/2" csg, 572' of 8" OH from log with 60% excess, and 200' in 8-5/8" surface casing with no excess. The plug will cover 1110' - 388'. RD cementers.
28. Slowly pull out of the cement and PUH to 200'. Circulate using biocide treated fresh water to ensure no cement is left in the tbg. WOC per cement company recommendation.
29. TIH and tag cement. Cement top needs to be at or above 388' (50' above the surface casing shoe at 438'). Call engineering if tag is lower than 388'. PU and TOOH.
30. RU WL. RIH 8-5/8" CIBP to 80'. RDMO WL and WO rig.
31. 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.
32. Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
33. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
34. 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.
35. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
36. Welder cut casing minimum 5' below ground level.
37. Fill casing to surface using 4500 psi compressive strength cement (NO gravel) if necessary.
38. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
39. Obtain GPS location data as per COGCC Rule 215 and send to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com).
40. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
41. Back fill hole with fill. Clean location, and level.
42. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.