

PLUG and ABANDONMENT PROCEDURE

HSR-ATLER 10-5

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 catch and remove plunger, isolate production equipment, and remove any automation prior to rig MIRU. |
| 2. | MIRU slickline services. Pull bumper spring and tag bottom. Record tag depth in Open Wells. Well has a gyro from 6/5/2014. 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 a min of 25 jts of 2-3/8" 4.7# J-55, EUE tbg. Kill well as necessary using clean fresh water with biocide. ND WH. NU BOP. Unland tbg using unlanding joint and LD. |
| 6. | TOOH and SB 7670' 2-3/8" tbg. |
| 7. | MIRU Wireline. RIH with (4.5", 11.6#) gauge ring to 7680'.TOOH. |
| 8. | RIH with (4.5", 11.6#) CIBP and set at +/- 7670' to abandon the Nio/Codell perms. TOOH. RD WL. |
| 9. | TIH with 2-3/8" tbg while hydrotesting to 3000 psi to 7670'. Circulate all gas from well. PT CIBP to 1000 psi for 15 minutes. |
| 10. | <u>RU cementers.</u> Pump Niobrara Balance Plug: Pump 25 sxs (39 cf) 15.8 ppg & 1.53 cf/sk. Volume based on 430' inside 4-1/2" production casing. Cement will be from 7670' – 7240'. RD cementers. |
| 11. | Slowly pull out of the cement and PUH to 7040'. Reverse circulate tubing clean to ensure no cement is left in the tubing. TOOH and SB 4430' of 2-3/8" tubing. LD Remaining. |
| 12. | 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 4940' and 4' of squeeze holes at 4400'. RD WL. |
| 13. | PU CICR (4-1/2" 11.6#) and 2-3/8" tbg and RIH. Set CICR at 4430'. |
| 14. | Establish circulation to surface with biocide treated fresh water, and pump 200 bbls to clean up hole. |
| 15. | <u>RU Cementers.</u> Pump Sussex Squeeze: Pump 10 bbls sodium silicate and 5 bbls fresh water followed 255 sxs (296 cf) with 0.25 lb/sk polyflake 15.8 ppg & 1.16 cf/sk. Underdisplace by 3 bbls. Volume is based on 510' below the CICR inside 4-1/2" production casing with no excess, 540' in the 4-1/2" annulus assuming 9" OH from the log with 20% excess and 190' on top of the CICR to cover top perms. RD cementers. |
| 16. | Slowly pull out of the cement and PUH to 3740'. Reverse circulate to ensure no cement is left in the tbg. |
| 17. | TOOH and SB 1585' 2-3/8" tbg, LD CICR stinger and remaining tbg. |
| 18. | RU WL. RIH and cut 4-1/2" casing at 1485'. 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 all 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams. |
| 22. | RIH with 2-3/8" tubing to 1585'. |

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23. 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.
24. RU Cementers. **Pump Stub Plug:** 270 sxs (313 cf) with 0.25 lb/sk Polyflake, 15.8 ppg & 1.16 cf/sk (100' in 4-1/2" production casing with no excess, 544' in 8" OH from caliper with 20% excess, and 200' in 8-5/8" surface casing with no excess). The plug will cover 1585' – 741' RD cementers.
25. Slowly pull out of the cement and PUH to 540'. Reverse Circulate using biocide treated fresh water, to ensure the tubing is clean.
26. WOC per cement company recommendation. TIH and tag cement. Cement top needs to be at or above 891' (50' above the surface casing shoe at 941'). Call Engineering if tag is lower than 891'. PU and TOOH.
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 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).
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.
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.