

Re-Entry PLUG and ABANDONMENT PROCEDURE

KC STATE #1

Step	Description of Work
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| 1. | Well is being re-entered to P&A to today's standards due to it being offset to APC's Lewton / Bucholz HZ wells. |
| 2. | 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.). |
| 3. | Locate and expose 8 5/8" casing stub. Extend stub to surface and install 8 5/8"x 11" SOW, 3M casing head with 3000 psi ball valves in both outlets. |
| 4. | Prepare location for base beam equipped rig. Install perimeter fence as needed. Have 150 bbls of 10ppg mud on location. Spot in 210 jts of 3-1/2" work string to location. |
| 5. | MIRU workover rig. NU 9" 3000 psi BOP stack on casing head (Thunderbird package). PT BOP and csg head. Function test BOPE. Install a choke or choke manifold on casing outlet. NU rotating head on BOP. Hook up return line to shale shaker on flat tank. Ensure full opening 3-1/2" TIW on rig floor. |
| 6. | RU power swivel. PU 7-7/8" rock bit, bit sub, 8 – 3-1/2" drill collars, 1 jt 3-1/2" work string (WS), float sub, and 3-1/2" WS. TIH and drill through existing cement plugs at surface (10 sx plug from ~10'-40'), at the base of surface casing (40 sx 330'-430'), and right below the surface casing (40 sx 790'-930') using 10 ppg mud. SEE ATTACHED RE-ENTRY DRILL OUT SOPs. |
| 7. | LD power swivel. Once surface cement plugs are drilled, Displace hole with drilling mud and continue washing down to Niobrara top at 6360'. |
| 8. | Break circulation and circulate 1.5 times hole volume or until there is no more gas or dehydrated mud in returns. |
| 9. | TOOH. SB WS and LD bit and drill collars. *NOTE: if any tight spots were encountered while washing to bottom make sure to ream through the tight area until you no longer see a tight spot. |
| 10. | TIH to ~6360' with WS w/ mule shoe on bottom while hydrotesting to 3000 psi. Establish circulation. Pump the tubing full of fresh water with biocide to clear WS of mud. |
| 11. | MIRU slickline. Run gyro survey from end of WS to surface. RDMO slickline. |
| 12. | Establish circulation with biocide treated fresh water. |
| 13. | <u>RU Cementers.</u> Pump Niobrara Balanced Plug: 150sx (233 cf) Niobrara Squeeze blend with 0.25 lb/sk Polyflake, assuming 15.8 ppg & 1.55 cf/sk. Volume is based on 400' in the 7-7/8" OH with 60% excess. Cement will be from 6360' – 5960'. RD cementers. |
| 14. | Slowly pull out of the cement and PUH to 5000'. Circulate to ensure no cement is left in the WS. |
| 15. | WOC per cement company recommendation. TIH and tag cement. Cement top needs to be at or above 5960'. Call Engineering if tag is lower. |
| 16. | PUH to 4330'. LD WS. |
| 17. | <u>RU Cementers.</u> Pump Sussex Balanced Plug: 190 sx (223 cf) Sussex squeeze blend with 0.25 lb/sk Polyflake, assuming 15.8 ppg & 1.17 cf/sk. Volume is based on 410' in the 7-7/8" OH with 60% excess. Cement will be from 4330' – 3920'. RD cementers. |
| 18. | Slowly pull out of the cement and PUH to 3000'. Circulate to ensure no cement is left in the WS. |

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19. WOC per cement company recommendation. TIH and tag cement. Cement top needs to be at or above 3920'. Call Engineering if tag is lower.
20. NOTE: THE FOLLOWING TWO PLUGS WILL BE PUMPED IMMEDIATELY AFTER ONE ANOTHER. Due to the size of the plug, we will pull up hole to 750' and continue pumping.
21. RU Cementers. Pump Fox Hills Balanced Plug: 340 sx (395 cf) Fox Hills squeeze blend with 0.25 lb/sk Polyflake, assuming 15.8 ppg & 1.16 cf/sk. Volume is based on 725' in the 7-7/8" OH with 60% excess. Cement will be from 1475' – 750'. SB cementers.
22. Slowly pull out of the cement and PUH to 750'.
23. RU Cementers. Pump Stub Plug: 240 sx (279 cf) with 0.25 lb/sk Polyflake, 15.8 ppg & 1.16 cf/sk (372' in 7-7/8" based on bit with 60% excess, and 200' in 8-5/8" surface casing with no excess). The plug will cover 750' - 178' RD cementers.
24. Slowly pull out of the cement and PUH to 100'. Reverse Circulate using biocide treated fresh water, to ensure the tubing is clean.
25. WOC per cement company recommendation. TIH and tag cement. Cement top needs to be at or above 328' (50' above the surface casing shoe at 378'). Call Engineering if tag is lower.
26. RU WL. PU and RIH 8-5/8" 24# CIBP to 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 hours of completion of the job.
28. Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
29. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
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 a 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 flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
37. Back fill hole with fill. Clean location, and level.
38. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.