

## PLUG and ABANDONMENT PROCEDURE

### POWERS X 22-02

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. Pull bumper spring and tag bottom. Record tag depth in Open Wells. Well has GYRO from 04/17/2014. 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 40 jts of 2-3/8 4.7# J-55 EUE tbgs. Kill well as necessary using clean biocide treated fresh water. ND WH. NU BOP. Unland tbgs using unlanding joint and LD.  |
| 6.  | TOOH and SB all 2-3/8" tbgs.   |
| 7.  | MIRU Hydrotester. TIH with 2-3/8" tbgs while hydrotesting to 3000 psi to 6880'. Load hole with biocide treated fresh water and circulate all gas from well. PT CIBP to 1000 psi for 15 minutes. RDMO Hydrotester.  |
| 8.  | <u>MIRU Cementers</u> . Niobrara/Codell Balance Plug: 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 6880' – 6480'. RD Cementers.  |
| 9.  | Slowly pull out of the cement and PUH to 5980'. Reverse circulate tbgs clean to ensure no cement is left in the tbgs.  |
| 10. | LD 2-3/8" tbgs while PUH to 4490'.   |
| 11. | Establish circulation to surface with biocide treated fresh water.   |
| 12. | <u>RU Cementers</u> . Pump Sussex Balance Plug: Pump 40 sx (47 cf), assuming 15.8 ppg & 1.17 cf/sk. Volume is based on 410' inside 4-1/2" production casing with no excess. Cement will be from 4490' – 4080'. RD Cementers.   |
| 13. | Slowly pull out of the cement and PUH to 3580'. Reverse circulate to ensure no cement is left in the tbgs.   |
| 14. | TOOH and SB 1515' 2-3/8" tbgs, LD remaining tbgs.  |
| 15. | MIRU WL. Tag plug if necessary. RIH and cut 4-1/2" casing at 1415'. RDMO WL.   |
| 16. | Attempt to circulate with biocide treated fresh water to remove any gas.   |
| 17. | 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.   |
| 18. | Install BOP on casing head with 4-1/2" pipe rams.  |
| 19. | TOOH and LD all 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams.   |
| 20. | TIH with 2-3/8" tbgs to 1515'.   |
| 21. | Establish circulation with biocide treated fresh water and pump one hole volume (100 bbls).  |
| 22. | <u>RU Cementers</u> . Pump Stub Plug: Pump 10 bbls (min) SAPP, followed by 5 bbls fresh water spacer. Pump 270 sx (314 cf) with 0.25 lb/sk Polyflake, 15.8 ppg & 1.16 cf/sk. Volume is based on 100' in 4-1/2" production casing with no excess, 549' in 8" OH w/ 20% excess factor, and 200' in 8-5/8" surface casing with no excess. The plug will cover 1515' – 666'. RDMO Cementers. |

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23. Slowly pull out of the cement and PUH to 100'. Reverse Circulate using biocide treated fresh water to ensure the tbg is clean.
24. WOC per cement company recommendation. TIH and tag cement. Cement top needs to be at or above 816' (50' above OH TOC within surface casing at 866'). Call Engineering if tag is lower than 816'. TOOH.
25. MIRU WL. PU and RIH with (8-5/8", 24#) CIBP to 80'. RDMO WL and WO rig.
26. 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.
27. Supervisor submit paper copies of all invoices, logs, and reports to Platteville Engineering Specialist.
28. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
29. 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.
30. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
31. Welder cut casing minimum 5' below ground level.
32. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
33. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
34. Obtain GPS location data as per COGCC Rule 215 and send to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com).
35. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
36. Back fill hole with fill. Clean location, and level.
37. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.