

## PLUG and ABANDONMENT PROCEDURE

WILLIAMS 4-29

| 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. RDMO 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.  | MIR WO rig and spot in empty pipe trailer. Kill well as necessary using biocide treated fresh water. ND WH. NU BOP. Unland tbg using unlanding joint and LD.   |
| 6.  | TOOH tallying and SB 7390' of 2-3/8" tbg. LD remainder   |
| 7.  | MIRU WL. PU and RIH with (4-1/2", 11.6#) gauge ring to 7400' then POOH. RIH w/ (4-1/2", 11.6#) CIBP on WL and set at 7390' (Collars at 7378' and 7420'). POOH and RD WL.   |
| 8.  | <u>MIRU Cementers.</u> <b>Niobrara/Codell Balance Plug:</b> Pump minimum of 25 sxs (38 cf, 6.8 bbl) 15.8 ppg & 1.53 cf/sk. Volume based on 438'+ inside 4-1/2" production casing with no excess. Cement will be from 7390' – 6952'. RD Cementers.  |
| 9.  | Slowly pull out of the cement and LD tubing to keep 1400'. Reverse circulate tbg clean to ensure no cement is left in the tbg. TOH with remaining tubing and SB.   |
| 10. | MIRU WL. PU and RIH with (4-1/2", 11.6#) CIBP on WL and set at 4191' (Collars at 4170' and 4210'). Dump bail 2 sxs with wireline on top of CIBP – 15.8 Class G neat. POOH and RD WL.   |
| 11. | RIH and jet cut 4-1/2" casing at 1300'. RDMO WL.   |
| 12. | Attempt to circulate with biocide treated fresh water to remove any gas.   |
| 13. | ND BOP. ND TH. Un-land casing using a casing spear, not a lifting sub. Rig max pull shall be 100,000#. Max pull over string weight shall be 50,000#. If unable to unland, contact Engineering.   |
| 14. | Install BOP on casing head with 4-1/2" pipe rams.  |
| 15. | TOOH and LD all 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams.   |
| 16. | TIH with 2-3/8" tbg to 1400'.  |
| 17. | Establish circulation with biocide treated fresh water and pump pump 200 bbls to clean up hole. Call engineer if any gas is present.   |
| 18. | <u>RU Cementers.</u> <b>Pump GAS BLOK Lower Stub Plug:</b> Pump 10 bbls (min) SAPP and 5 bbls fresh water spacer followed by 250 sx (287 cf, 51 bbl), 14 ppg, & 1.15 cf/sk cement. Slurry could be different yield – confirm yield and volume before pumping. Volume is based on 100' in 4-1/2" production casing with no excess, and 408' in 7-7/8" bit size OH with 100% excess. The plug will cover 1400' – 892'. RDMO Cementers. |
| 19. | Slowly pull out of the cement and TOH to 850'. Reverse circulate using biocide treated fresh water to ensure the tbg is clean. WOC at minimum 8 hrs; verify gas migration/pressure on surface casing has been eliminated – preferably overnight.   |

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20. TIH and tag cement with tapped bull plug on bottom of tubing and perforated sub. Contact Engineer with tag. Pull up and get ready for next plug.
21. RU Cementers. **Pump GAS BLOK Upper Stub Plug:** Pump 10 bbls (min) SAPP and 5 bbls fresh water spacer followed by 150 sxs (172 cf, 31 bbl), 14 ppg, & 1.15 cf/sk cement. Slurry could be different yield – confirm yield and volume before pumping. Volume is based on 124' in 7 7-8" OH with 100% excess, and 200' in 8 5/8" casing with no excess. The plug will cover 892'–556'. RDMO Cementers.
22. Slowly pull out of the cement and TOH. Reverse circulate using biocide treated fresh water to ensure the tbg is clean. WOC at minimum 8 hrs; verify gas migration/pressure on surface casing has been eliminated – preferably overnight.
23. MIRU wireline – tag TOC. Must be 718'. If less, contact engineer.
24. Pressure test to test casing. Test shall be 500psi for 15mins. If well fails pressure test PU TIH with (8-5/8", 24#) packer and set just above cement top. Re-test casing. If casing still fails test, contact engineering.
25. RIH (8-5/8", 24#) CIBP to 80' and set. 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.