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## PLUG and ABANDONMENT PROCEDURE

### HSR FEDERAL 7-36

#### Description

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 production equipment and tag bottom. Record tag depth in Open Wells. Gyro was run on 06/26/13. RDMO Slickline.
3. Prepare location for base beam equipped rig. Install perimeter fence as needed.
4. Verify COAs before RU.
5. Upon RU, 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.
6. MIRU WO rig. Spot a min tbg trailer 1.25" tbg. Kill well as necessary using biocide treated fresh water. Verify BOP and wellhead rating, inspect for appropriate API standards, pressure test BOP according to VWP BOP testing guidelines. ND WH. NU BOP. Unland tbg using unlanding joint and LD.
7. TOOH and SB 7050' 1.25" tbg. LD any remainder.
8. PU and TIH with (2-7/8", 6.5#) Bit and Scraper on 1.25" tbg to 7050'. TOOH and SB 7040' of 1.66" tbg. LD Bit and Scraper.
9. MIRU WL. PU and RIH with (2-7/8", 6.5#) CIBP and set at +/- 7040' (collars at 7020' & 7054'). POOH. RDMO WL.
10. TIH with 1.25" tbg to 7040'.
11. Load hole with biocide treated fresh water and circulate all gas out of well. PT CIBP to 2000psi for 15 minutes (2-7/8", 6.5# csg to be used as a work string beginning in step #17).
12. MIRU Cementers. Pump Niobrara Balance Plug: Pump 10 sx (2.8 bbl or 16 cf), assuming 15.8 ppg & 1.53 cf/sk. Volume based on 400' inside 2-7/8", 6.5# production casing with no excess. Cement will be from 7040'-6640'. Collect wet and dry samples of cement to be left on rig. RD Cementers.
13. Pull out of cement at a rate of 1 jt/min. TOOH LD all 1.25" tbg.
14. MIRU WL. RIH and jet cut 2-7/8", 6.5# casing at 4650. RDMO WL.
15. Attempt to establish circulation to surface with biocide treated fresh water and pump at least two hole-volume (848 bbl) to circulate all gas out of the well and cleanup hole. Contact engineering if evidence of gas migration persists.
16. 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.
17. Install BOP on casing head with 2-7/8", 6.5# pipe rams.
18. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump Sussex Open Hole Plug: 125 sx (39.9 bbl or 224 cf) TXI cement with 0.25 lb/sk polyflake, assuming 12 ppg & 1.79 cf/sk. Max pump pressure at surface is to be 744 psi. Volume is based on 405' in open hole assuming

7.88" bit size with 60% excess. Plug will be from 4650' - 4245'. Collect wet and dry samples of cement to be left on rig. RD Cementers.

19. Pull out of cement at a rate of 1 jt/min and TOO H to 3745'. Reverse circulate to ensure no cement is left in the csg. WOC per cementing company guidelines. Tag cement as needed.
20. TOO H to 1355'. LD remaining csg.
21. Establish circulation to surface with biocide treated fresh water.
22. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump Fox Hills Open Hole Plug: 310 sx (85.6 bbl or 481 cf) cement with 0.25 lb/sk Polyflake, assuming 14 ppg & 1.55 cf/sk. Volume is based on 584' in open hole assuming 7.88" bit size with 100% excess, and 201' in 8-5/8", 24# surface casing with no excess. The plug is designed to cover 1355'-570'. Collect wet and dry samples of cement to be left on rig. RDMO Cementers. Notify engineering if circulation is ever lost during job.
23. Pull out of cement at a rate of 1 jt/min and TOO H to 100'. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOO H, LD all 2-7/8", 6.5# csg.
24. MIRU WL. Tag cement as needed. After tagging top of cement, and verifying appropriate coverage above the surface casing shoe, pressure test surface casing to 500 psi and hold for 15 minutes.
25. RIH 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 VWP 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", 24# 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.