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## PLUG and ABANDONMENT PROCEDURE

ADAM FARM 21-4

API: 05-123-30567

### 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 and Core Tech. Pull production equipment and tag bottom. Record tag depth in Open Wells. RUN GYRO to 7395', making stops every 100'. RDMO Slickline and Core Tech.
3. Prepare location for base beam equipped rig. Install perimeter fence as needed.
4. COA: Verify Form 17 (State Bradenhead Test) has been run within 60 days of RU. If Form 17 required sampling, contact Engineering to verify plugging orders before beginning P&A operations.
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. Refer to BOP testing guidelines, fluid barrier management, and tripping best practices as applicable. All wireline operations will need a flanged changeover, WL BOP, Lubricator with an ID to fit the largest OD of the toolstring, and a packoff. Please contact foreman to discuss arrangement of stack, or alternate plan. Contact your foremen with any questions regarding standard operating procedures or any potential deviations.
7. MIRU WO rig. Kill well as necessary using biocide treated fresh water. Verify BOP and wellhead rating, inspect for appropriate API standards, pressure test BOP according to BOP testing guidelines. ND WH. NU BOP. Unland tbg using unlanding joint and LD.
8. Once well has been killed, pump an additional 200bbls of water to ensure wellbore is clear of gas. Must maintain full column of fluid or constant pump rate to keep gas out until top perforations are covered with a cast iron bridge plug.
9. TOOH and SB 1060' of 2-3/8" tbg. LD remaining 2-3/8" tbg.
10. MIRU WL. PU and RIH with (4-1/2", 11.6#) gauge ring to 7110'. POOH.
11. PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 7100' (collars at 7066' & 7108'). POOH.
12. Top fill hole with biocide treated fresh wate. PT CIBP to 500 psi for 15 minutes. A good PT has less than 10% loss in pressure and stabilization at the end of the test. Test can be extended longer in time if need be. Contact Foreman or Engineer to confirm proceeding after pressure test.
13. RIH and dump 2 sx of cement on top of CIBP. POOH.
14. COA: Confirm and document static conditions in the well before placing the Sussex plug. If there is evidence of pressure or fluid migration at any time after placing the Niobrara plug, contact Engineering.
15. PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 3910' (collars at 3884' & 3926'). POOH. RIH and dump 2 sx of cement on CIBP. POOH.
16. Run CCL/GR/CBL/VDL log from +/- 2000' to surface to confirm squeeze location. Run one pass with 500 psi on casing. Future operations may change depending on CBL results.
17. Forward logs to engineering and in addition to the normal handling of logs/job summaries, email copies of all cement job logs/job summaries and invoices to DJVendors@anadarko.com within 24 hours of job completion. Note that squeeze hole locations and cement volumes may vary depending on CBL results.

18. PU and RIH with one 2' 3-1/8" deep penetrating perf gun with 4 spf, 120° phasing, and 41" penetration. Shoot 2' of squeeze holes at 1220'. POOH. RDMO WL.
19. PU and TIH with (4.5") packer on 2.375" tbg. Set packer at 1200'.
20. Perform an injection test. Report results of test to engineer/foreman. Cement volumes may change based on results.
21. Release packer. TOOH, SB 2.375" tbg. LD Packer.
22. PU and TIH with (4.5) CICR on 2.375" tbg. Set CICR at 1200.
23. MIRU Cementers. Pump bradenhead hesitation squeeze: 25 sx (30.75 bbls or 5.5 cuft) Class G, assuming 15.8 ppg & 1.23 yld with 0.40% Latex, 2% Calcium Chloride, and 4% Gypsum. Mix water must be 70°F (may have to bring out cold water to dilute heated water). Collect wet and dry samples of cement to be left on rig. RDMO Cementers.
24. Sting out of CICR. undersiplace cement by 2 bbl. Pull out of cement at a rate of 1 jt/min. TOOH to 1080'. Reverse circulate with freshwater clean. SDFN.
25. COA: Verify and document that all pressure and fluid migration has been eliminated prior to placing the SC shoe plug at 1060'. If there is evidence of pressure or fluid migration, contact Engineering.
26. PU and RIH with one 4' 3-1/8" perf gun with 4 spf, 120° phasing, and 0.5 EHD. Shoot 4' of squeeze holes at 1060'. POOH. RDMO WL.
27. Open bradenhead - circulate through both surface valves if applicable to the wellhead for water/mud circulation and cement. Establish circulation down the 4-1/2" casing, up the annulus with fresh water and several sweeps of mud thinner if needed. Pump at least two hole volumes (133 bbl) or until returns are clean. Start at 1.5 bpm and slowly STEP up to maintain a minimum of 6 bpm with fresh water and surfactant during the remainder of circulation to promote hole cleaning and residual gas removal. Note: if rig pump cannot pump 6 bpm, use cement truck pump.
28. ND BOP. Connect B1 swedge to 4.5" casing.
29. MIRU Cementers. Pump 20 bbl pre-flush. Pump surface circulation plug: 410 sx (90 bbls or 505 cuft) Class G, assuming 15.8 ppg & 1.23 yld with 0.40% Latex, 2% Calcium Chloride, and 4% Gypsum. Mix water must be 70°F (may have to bring out cold water to dilute heated water). Volume is based on 1060' in 4.5" production casing with no excess, 89' in 4.5" production casing x 7.875 open hole annulus with 100% excess, and 971' in 4.5" production casing x 8-5/8" surface casing annulus with no excess plus an additional 100 sx. This plug is designed to cover 1060' - 0'. Excess is calculated into the job - pump cement until you receive 15.8 ppg cement on the backside. Collect wet and dry samples of cement to be left on rig. RDMO Cementers. Notify engineering if circulation is ever lost during the job.
30. If returns are not circulated to surface, WOC 4 hours and tag. Cement must be 80' or shallower. RDMO WO rig.
31. 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.
32. Supervisor submit paper copies of all invoices, logs, and reports to VWP Engineering Specialist.
33. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
34. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
35. Welder cut casing minimum 5' below ground level.
36. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
37. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
38. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
39. Back fill hole with fill. Clean location, and level.
40. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.