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PLUG and ABANDONMENT PROCEDURE

RADEMACHER 15-25

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. Directional Survey was run on 08/22/06. 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. 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 7200' 2-3/8" tbg. LD any remainder.
8. MIRU WL. PU and RIH with (4-1/2", 11.6#) gauge ring to 7210'. POOH.
9. PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 7200' (collars at 7182' & 7226'). POOH. RDMO WL.
10. TIH with 2-3/8" tbg to 7200'
11. Load hole with biocide treated fresh water and circulate all gas out of well. PT CIBP to 500 psi for 15 minutes.
12. MIRU Cementers. Pump Niobrara Balance Plug: Pump 35 sx (9.6 bbl or 54 cf) Class G Cement, assuming 15.8 ppg & 1.53 cf/sk. Volume based on 590' inside 4-1/2", 11.6# production casing with no excess. Cement will be from 7200'-6610'. Collect wet and dry samples of cement to be left on rig. RDMO Cementers.
13. Pull out of cement at a rate of 1 jt/min. TOOH, SB 3750' 2-3/8" tbg. LD remaining tbg.
14. MIRU WL. PU and RIH with two 3-1/8" perf guns with 3 spf, min 0.5" EHD, 120° phasing. Shoot 2' of squeeze holes at 3890' and 4' of squeeze holes at 3690'. RDMO WL.
15. PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 3750'.
16. Establish circulation to surface with biocide treated fresh water, and pump 100 bbls to clean up hole. Max pump pressure is 833 psi with fresh water at 2 bpm. If unable to circulate at that pressure, contact engineer.
17. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump Sussex Squeeze: 60 sx (19.2 bbl or 108 cf) TXI cement with 0.25 lb/sk polyflake, assuming 12 ppg & 1.79 cf/sk. Max pump pressure is to be 717 psi at 2 bpm with a full column of cement. Underdisplace by 3 bbls. Volume is based on 140' below the CICR inside 4-1/2", 11.6# production casing with no excess, 200' in the 4-1/2", 11.6# annulus assuming 7.875" bit size with 60% excess and 190' on top of the CICR to cover top perfs. Collect wet and dry samples of cement to be left on rig. RDMO Cementers.

18. Pull out of cement at a rate of 1 jt/min. TOO H to 3060'. Reverse circulate to ensure no cement is left in the tbg.
19. TOO H and SB 830' of 2-3/8" tbg. LD stinger, and remaining tbg.
20. PU and TIH with mechanical cutter on 2-3/8" tbg. Cut 4-1/2", 11.6# casing at 460'. TOO H and LD cutter.
21. Attempt to establish circulation and circulate (29 bbl) with fresh water containing biocide to remove any gas.
22. 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.
23. Install BOP on casing head with 4-1/2", 11.6# pipe rams.
24. TOO H and LD all 4-1/2", 11.6# casing. Remove 4-1/2", 11.6# pipe rams and install 2-3/8" pipe rams.
25. TIH with mule shoe and 2-3/8" tubing to 830'.
26. Establish circulation to surface with biocide treated fresh water and pump at least two hole-volumes (70 bbl) to circulate all gas out of the well. Contact engineering if evidence of gas migration persists.
27. MIRU Cementers. Pump Stub Plug: Pump 130 sx (35.9 bbl or 202 cf) Class G cement, assuming 14 ppg & 1.55 cf/sk. Volume is based on 370' in 4-1/2", 11.6# production casing with no excess. 460' in the 8-5/8", 24# surface casing with no excess. The plug is designed to cover 830'-0'. Verify and document cement to surface. Collect wet and dry samples of cement to be left on rig. RDMO Cementers.
28. Pull out of cement at a rate of 1 jt/min. TOO H, LD all 2-3/8" tbg. Tag cement as needed to verify cement to surface. RDMO WO rig.
29. 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.
30. Supervisor submit paper copies of all invoices, logs, and reports to VWP Engineering Specialist.
31. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
32. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
33. Welder cut casing minimum 5' below ground level.
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.