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PLUG and ABANDONMENT PROCEDURE

NORGREN DONALD D 1

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 09/15/14. 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 of 30 jts of 2-3/8" 4.7#, J-55, EUE tbg. Kill well as necessary using biocide treated fresh water. ND WH. NU BOP. Unland tbg using unlanding joint and LD.
7. TOOH and SB all 2-3/8" tbg.
8. PU and TIH with (4-1/2", 10.5#) Bit and Scraper on 2-3/8" tbg to 7780'. TOOH, SB all 2-3/8" tbg. LD Bit and Scraper.
9. MIRU WL. PU and RIH with (4-1/2", 10.5#) CIBP and set at +/- 7770'. POOH. RIH and dump 2 sx cement on CIBP. POOH. RDMO WL.
10. TIH with 2-3/8" tbg to 7770'. Load hole with biocide treated fresh water and circulate all gas out of well. TOOH and SB 2-3/8" tbg.
11. MIRU WL. RIH and run CBL from 7770' to surface. Forward CBL to Platteville office. Cementing plans may change depending on CBL results. RDMO WL.
12. 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 7000' and 4' of squeeze holes at 6600'. RDMO WL.
13. MIRU hydrotesters. PU and TIH with (4-1/2", 10.5#) CICR on 2-3/8" tbg while hydrotesting to 3000 psi. RDMO hydrotesters. Set CICR at 4020'.
14. Establish circulation to surface with biocide treated fresh water, and pump 100 bbls to clean up hole.
15. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump Niobrara Squeeze: 135 sx (36.4 bbl or 204 cf) with 0.25 lb/sk polyflake, assuming 15.8 ppg & 1.51 cf/sk. Underdisplace by 3 bbls. Volume is based on 370' below the CICR inside 4-1/2", 10.5# production casing with no excess, 400' in the 4-1/2", 10.5# annulus assuming 7.88" bit size with 60% excess and 190' on top of the CICR to cover top perms. RD Cementers.
16. Slowly pull out of the cement and TOOH to 6115'. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOOH and SB 4020' of 2-3/8" tbg. LD remaining tbg.
17. 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 4390' and 4' of squeeze holes at 3990'. RDMO WL.

18. PU and TIH with (4-1/2", 10.5#) CICR on 2-3/8" tbg. Set CICR at 4020'.
19. Establish circulation to surface with biocide treated fresh water, and pump 100 bbls to clean up hole.
20. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump GAS BLOK Sussex Squeeze: 175 sx (47.1 bbl or 265 cf) with 0.25 lb/sk polyflake, assuming 15.8 ppg & 1.51 cf/sk. Underdisplace by 3 bbls. Volume is based on 370' below the CICR inside 4-1/2", 10.5# production casing with no excess, 400' in the 4-1/2", 10.5# annulus assuming 7.88" bit size with 60% excess and 190' on top of the CICR to cover top perms. RD Cementers.
21. Slowly pull out of the cement and TOO H to 3330'. Reverse circulate to ensure no cement is left in the tbg.
22. TOO H and SB 1000' of 2-3/8" tbg. LD stinger, and remaining tbg.
23. TIH with 2-3/8" tubing to 1000'.
24. Establish circulation to surface with biocide treated fresh water. Contact engineering if evidence of gas migration persists.
25. RU Cementers. Pump GAS BLOK Stub Plug: 70 sx (14.5 bbl or 82 cf) , assuming 15.8 ppg & 1.16 cf/sk. Volume is based on 1000' in 4-1/2", 10.5# production casing with no excess, and -210' in the 8-5/8", 24# surface casing with no excess. The plug is designed to cover 1000'-210'. RDMO Cementers.
26. Slowly pull out of the cement and TOO H to 100'. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOO H, LD all 2-3/8" tbg.
27. MIRU WL. Tag cement as needed. RIH 4-1/2", 10.5# CIBP to 80'. RDMO WL and WO rig.
28. 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.
29. Supervisor submit paper copies of all invoices, logs, and reports to VWP Engineering Specialist.
30. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
31. Capping crew will set and secure night cap on 4-1/2", 10.5# casing head, restrain the casing head, pressure test CIBP to 500 psi with hydrotest pump, then remove night cap and casing head restraints.
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. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
35. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
36. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
37. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
38. Back fill hole with fill. Clean location, and level.
39. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.