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PLUG and ABANDONMENT PROCEDURE

STARCK 5-18

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 01/28/15. 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 0 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 6800' 2-3/8" tbg. LD any remainder.
8. MIRU WL. PU and RIH with (4-1/2", 11.6#) gauge ring to 6810'. POOH.
9. PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 6800' (collars at 6780' & 6822'). POOH. RDMO WL.
10. MIRU Hydrotesters. TIH with 2-3/8" tbg to 6800’ while hydrotesting to 3000 psi. RDMO Hydrotesters.
11. Load hole with biocide treated fresh water and circulate all gas out of well. PT CIBP to 1000psi for 15 minutes.
12. MIRU Cementers. Pump Niobrara Balance Plug: Pump 25 sx (6.9 bbl or 39 cf), assuming 15.8 ppg & 1.53 cf/sk. Volume based on 400’ inside 4-1/2", 11.6# production casing with no excess. Cement will be from 6800'-6400'. RD Cementers.
13. Slowly pull out of the cement and TOOH to 5900'. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOOH and SB 3770' of 2-3/8" tbg. LD remaining tbg.
14. MIRU WL. Run CCL-GR-CBL-VDL from +/- 6400' to surface to confirm squeeze location. Run from entire log with one pass at 500# and one pass at 0#. Current CBL squeeze location is 4140'. Forward resulting logs to Engineering. In addition to 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 completion of the job. Note that squeeze hole locations and cement volume may vary depending on CBL results. May also run packer to test injection first.
15. 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 4140' and 4' of squeeze holes at 3740'. RDMO WL.
16. PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 3770'.
17. Establish circulation to surface with biocide treated fresh water, and pump 100 bbls to clean up hole.
18. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump GAS BLOK Sussex Squeeze: 110 sx (35.1 bbl or 197 cf) TXI cement with 0.25 lb/sk polyflake, assuming 12 ppg & 1.79 cf/sk. Max pump pressure at surface is to be 663 psi. Underdisplace by 3 bbls. Volume is based on 370'

below the CICR inside 4-1/2", 11.6# production casing with no excess, 400' in the 4-1/2", 11.6# annulus assuming 7.88" bit size with 60% excess and 190' on top of the CICR to cover top perfs. RD Cementers.

19. Slowly pull out of the cement and TOOH to 3080'. Reverse circulate to ensure no cement is left in the tbg.
20. TOOH and SB 1075' of 2-3/8" tbg. LD stinger, and remaining tbg.
21. MIRU WL. RIH and jet cut 4-1/2", 11.6# casing at 975'. RDMO WL.
22. Attempt to establish circulation and circulate (74 bbl) with fresh water containing biocide to remove any gas. Max circulation pressure is 432 psi at 2.5 bpm using a Fox Hills fracture gradient of 0.8 psi/ft.
23. 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.
24. Install BOP on casing head with 4-1/2", 11.6# pipe rams.
25. TOOH and LD all 4-1/2", 11.6# casing. Remove 4-1/2", 11.6# pipe rams and install 2-3/8" pipe rams.
26. TIH with mule shoe and 2-3/8" tubing to 1075'.
27. Establish circulation to surface with biocide treated fresh water and pump at least three hole-volumes (226.5 bbl) to circulate all gas out of the well. Contact engineering if evidence of gas migration persists.
28. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump GAS BLOK Stub Plug: 40 sx (8.2 bbl or 46 cf) TXI cement with 0.25 lb/sk Polyflake, assuming 14 ppg & 1.15 cf/sk. Volume is based on 100' in 4-1/2", 11.6# production casing with no excess and 50' in 7.88" bit size with 100% excess factor. The plug is designed to cover 1075'-925'. RDMO Cementers. Notify engineering if circulation is ever lost during job.
29. Slowly pull out of the cement and TOOH to 800'. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOOH, LD all 2-3/8" tbg.
30. SD and WOC per cement company guidelines. Tag TOC and record tag depth in OpenWells. 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. If gas migration still exists after shut down, contact engineering for update to plugging procedures.
31. TIH with 2-3/8" tubing to 925'.
32. Establish circulation to surface with biocide treated fresh water and pump at least three hole-volumes (226.5 bbl) to circulate all gas out of the well. Contact engineering if evidence of gas migration persists.
33. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump Conventional Stub Plug: 120 sx (24.6 bbl or 138 cf) , assuming 14 ppg & 1.55 cf/sk. Volume is based on 150' in 7.88" bit size with 100% excess factor, and 200' in the 8-5/8", 24# surface casing with no excess. The plug is designed to cover 925'-575'. RDMO Cementers. Notify engineering if circulation is ever lost during job.
34. Slowly pull out of the cement and TOOH to 100'. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOOH, LD all 2-3/8" tbg.
35. 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.
36. MIRU WL. RIH 8-5/8", 24# CIBP to 80'. RDMO WL and WO rig.
37. 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.
38. Supervisor submit paper copies of all invoices, logs, and reports to VWP Engineering Specialist.
39. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.

40. 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.
41. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5’ below ground level.
42. Welder cut casing minimum 5' below ground level.
43. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
44. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
45. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
46. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
47. Back fill hole with fill. Clean location, and level.
48. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.