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PLUG and ABANDONMENT PROCEDURE

PATSEY 1-22

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 VES. WELL NEEDS GYRO RUN. Run gyro to 8271', making stops every 100'. RDMO Slickline and VES.
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 8220’ 2-3/8" tbg. LD any remainder.
8. PU and TIH with (4-1/2", 11.6#) Bit and Scraper on 2-3/8" tbg to 8220'. TOOH and SB ' of 2-3/8" tbg. LD Bit and Scraper and remaining tbg.
9. MIRU WL. PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 8210' (collars at 8198' & 8238'). POOH. RIH and dump 2 sx cement on CIBP. POOH.
10. TOOH, SB 6930' 2-3/8" tbg. LD remaining tbg.
11. MIRU WL. RIH and dump 2 sx cement on CIBP. POOH. 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 7270' and 4' of squeeze holes at 6870'. RDMO WL.
12. PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 6930'.
13. Establish circulation to surface for a minimum 4 hours with biocide treated fresh water, and pump 100 bbls to clean up hole. Max pump pressure is psi with fresh water at 2 bpm. If unable to circulate at that pressure, contact engineer.
14. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump Niobrara Squeeze: 120 sx (32.8 bbl or 184 cf) Class G cement with 0.25 lb/sk polyflake, assuming 15.8 ppg & 1.53 cf/sk. Max pump pressure is to be psi at 2 bpm with a full column of cement. Underdisplace by 3 bbls. Volume is based on 340' 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 40% excess and 190' on top of the CICR to cover top perfs. Collect wet and dry samples of cement to be left on rig. RD Cementers.
15. Pull out of cement at a rate of 1 jt/min. TOOH to 6240’. Reverse circulate to ensure no cement is left in the tbg.
16. TOOH and SB 4365' of 2-3/8" tbg. LD stinger, and 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 4705' and 4' of squeeze holes at 4305'. RDMO WL.
18. PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 4365'.
19. Establish circulation to surface for a minimum 4 hours with biocide treated fresh water, and pump 100 bbls to clean up hole. Max pump pressure is psi with fresh water at 2 bpm. If unable to circulate at that pressure, contact engineer.
20. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump 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 is to be psi at 2 bpm with a full column of cement. Underdisplace by 3 bbls. Volume is based on 340' 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. Collect wet and dry samples of cement to be left on rig. RD Cementers.

21. Pull out of cement at a rate of 1 jt/min. TOOH to 3675'. Reverse circulate to ensure no cement is left in the tbg.
22. TOOH and SB 1080' of 2-3/8" tbg. LD stinger, and remaining tbg.
23. PU and TIH with mechanical cutter on 2-3/8" tbg. Cut 4-1/2", 11.6# casing at 980'. TOOH and LD cutter.
24. Attempt to establish circulation and circulate (80 bbl) with fresh water containing biocide to remove any gas.
25. 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.
26. Install BOP on casing head with 4-1/2", 11.6# pipe rams.
27. 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.
28. TIH with mule shoe and 2-3/8" tubing to 1080'.
29. Establish circulation to surface with biocide treated fresh water and pump at least two hole-volumes (163 bbl) to circulate all gas out of the well. Contact engineering if evidence of gas migration persists.
30. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump Stub Plug: 190 sx (52.5 bbl or 295 cf) Class G cement with 0.25 lb/sk Polyflake, assuming 14 ppg & 1.55 cf/sk. Volume is based on 100' in 4-1/2", 11.6# production casing with no excess. 300' in 7.88" bit size open hole with 100% excess factor. 200' in the 8-5/8", 24# surface casing with no excess. The plug is designed to cover 1080'-480'. Collect wet and dry samples of cement to be left on rig. RDMO Cementers. Notify engineering if circulation is ever lost during job.
31. Pull out of cement at a rate of 1 jt/min. TOOH to 280'. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOOH, LD all 2-3/8" tbg.
32. 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.
33. MIRU WL. RIH 8-5/8", 24# CIBP to 80'. RDMO WL and WO rig.
34. 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.
35. Supervisor submit paper copies of all invoices, logs, and reports to VWP Engineering Specialist.
36. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
37. 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.
38. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
39. Welder cut casing minimum 5' below ground level.
40. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
41. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
42. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
43. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
44. Back fill hole with fill. Clean location, and level.
45. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.