

Engineer: VALERIE WHITE

Cell: 307-696-3591

PLUG and ABANDONMENT PROCEDURE

DREYER 2

Step Description of Work

1. Provide 48 hr notice to COGCC prior to rig up per request on approved Form 6 (e.g. call field coordinator, submit Form 42, etc.). Call Automation Removal Group at least 24 hr prior to rig move. Request they catch and remove the plunger, isolate production equipment and remove any automation prior to MIRU.
2. MIRU Slickline and VES. Pull bumper spring and tag bottom. Record tag depth in Open Wells. Run gyro from 7400' to surface making 100' stops. RD slickline.
3. Prepare location for base beam equipped rig. Install perimeter fence as needed. Order a minimum of 25 joints additional 2-3/8, 4.70#, J-55 EUE tbg.
4. Check and record bradenhead pressure. If bradenhead valve is not accessible, re-plumb so that valve is above GL. Contact Evans Engineering if pressure does not blow down to 0 and stay at 0.
5. MIRU WO rig. Kill as necessary using clean fresh water with biocide. ND WH. NU BOP. Unland tbg.
6. TOOH and SB all of the 2-3/8" tbg.
7. TIH with 4-1/2", 11.6# csg scraper (4-1/2", 11.6#, K-55) on 2-3/8" tbg down to 7900' and TOOH. SB 7890' of 2-3/8" tbg.
8. RU WL. RIH with 4-1/2" CIBP (4-1/2", 11.6#, K-55) and set at +/- 7890' to abandon the J sand perms. TOOH. Standby WL.
9. TIH with 2-3/8" tbg to 2500'. Load hole with biocide treated fresh water and circulate the gas out of the well. TOOH.
10. RIH and run CBL from 7890' to surface. Forward CBL to Evans office. Cementing plans may change depending on CBL results. (Need to verify cement behind 4.5" from 1494' to surface). Standby WL.
11. PT CIBP to 1000 psi for 15 minutes.
12. RIH to dump 2 sx on CIBP. TOOH. RIH with 4-1/2" CIBP (4-1/2", 11.6#, K-55) and set at +/- 7055'. TOOH. RD WL.
13. RIH with 2-3/8" tubing to 7055' while hydrotesting in to 3000 psi.
14. RU cementers. Establish circulation with biocide treated fresh water. Pump Niobrara Balance Plug: Pump 30 sxs (45.3 cf) Thermal 35 + 0.3% CFR-2 +0.3% ASM-3 (AS-3) mixed at 15.6 ppg & 1.51 cf/sk. Volume based on 400' inside 4-1/2" production casing with no excess. RD cementers. Plug designed to cover 7055' to 6655'.
15. Slowly pull out of the cement and PUH to 6350'. Reverse circulate tubing clean to ensure no cement is left in the tubing. TOOH and SB 4500' of 2-3/8" tbg.
16. RU WL. RIH with two 3-1/8" perf guns with 3 spf, min 0.5" EHD, 120° phasing. Shoot 1' of squeeze holes at 4780' and 2' of squeeze holes at 4570'. RD WL.
17. PU CICR (4-1/2" 11.6#, K-55) and 2-3/8" tbg. Set CICR at 4600' (Refer to Wireline's perforation run for collar locations).
18. RU cementers. Establish circulation to surface with biocide treated fresh water. Pump Shannon/Sussex Squeeze: Pump 5 bbls fresh water, 20 bbls sodium metasilicate and 5 bbls fresh water followed by 130 sxs (149.5 cf) 0:1:0 'G' + 0.5% CFR-2 + 0.2% FMC + 0.5% LWA + 0.25 lb/sk Polyflake mixed at 15.8 ppg & 1.15 cf/sk. Underdisplace by 3 bbls. Volume based

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on 180' below the CICR inside 4-1/2" production casing, 210' in the 4-1/2" production casing annulus assuming 9.5" OH from the caliper log with 40% excess, and 195' on top of the CICR. RD cementers.

19. Slowly pull out of the cement and PUH to 4105'. Reverse circulate tubing clean to ensure no cement is left in the tubing. TOOH and SB 1500' of 2-3/8" tbg.
20. RU Cementers. Establish circulation with biocide treated fresh water. Pump Foxhills Plug: 75 sxs (99.75 cf) Type III + 0.3% CFL-3 + 0.3% CFR-2, mixed at 14.8 ppg and 1.33 cf/sk. Volume is based on 1000' in 4-1/2" production casing with no excess. The plug will cover 1500' - 500'. RD cementers.
21. Slowly pull out of the cement and PUH to 400'. Reverse circulate tubing clean to ensure no cement is left in the tubing.
22. RU Cementers. Establish circulation with biocide treated fresh water. Pump Stub Plug: 30 sxs (39.9 cf) Type III + 0.3% CFL-3 + 0.3% CFR-2, mixed at 14.8 ppg and 1.33 cf/sk. Volume is based on 400' in 4-1/2" production casing with no excess. The plug will cover 400' - surface. RD cementers.
23. Slowly pull out of the cement and TOOH.
24. WOC per cement company recommendation. Tag cement. Cement top needs to be at or above 224'. TOOH and LD tubing. RDMO WO Rig.
25. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to rscDJVendors@anadarko.com within 24 hrs of completion of the job.
26. Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
27. Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
28. Excavate hole around surface casing enough to allow welder to cut casing minimum 5' below ground level.
29. Welder cut casing minimum 5' below ground level.
30. Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
31. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
32. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
33. Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
34. Back fill hole with fill. Clean location, level.
35. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.