

Engineer: Tod Haanes

Cell: 303-929-2339

Date: 10/15/2015

PLUG and ABANDONMENT PROCEDURE

White W Bluffs 5-1 API# 05 123 16567 Wins# 74072

Step Description of Work

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.). Call 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 bumper spring and tag bottom. **Record tag depth in Open Wells.** RD slickline.
3. Prepare location for base beam equipped rig. Install perimeter fence as needed.
4. Check and record Bradenhead pressure. If Bradenhead valve is not accessible, re-plumb so that valve is above GL. The last Form 17 test on 1/3/2014 recorded a Bradenhead pressure of 0 to 0 psi, and no liquids.
5. **Blow-down bradenhead and re-check pressure the next day.** Repeat until pressure stays at 0 psi. **Contact Evans Engineering if pressure does not report at 0 psi the next day.**
6. MIRU WO rig. Kill well as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing joint, and LD.
7. TOOH and SB all 2-1/16" tubing.
8. PU **scraper** (3-1/2" casing) and RIH to 7319'. TOOH, SB 7300' tubing, and LD **scraper**.
9. RU hydrotesters. PU CIBP for 3-1/2" casing, and while hydrotesting tubing to 3000 psi, set CIBP at 7300' (collars are located at 7285' and 7315') to abandon the Codell perms. **NOTE:** No need to pressure test the CIBP since Sussex production perms are located from 4595'-4613'.
10. TOOH, SB 7300' 2-1/16" tubing, and LD CIBP setting tool.
11. TIH with tubing to 7300'.
12. RU cementers. **Pump Niobrara plug:** 20 sxs (31 cf) Thermal 35 +0.5% CFR-2+0.25% FMC, mixed at 15.6 ppg & 1.51 cf/sk. The plug will cover 7300' to 6668'. Volume is based on 632' inside 3-1/2" production casing with no excess. RD cementers.
13. Slowly pull out of the cement and PUH to 6400'. Circulate to ensure no cement is left in the tubing. PUH to 6300' and WOC. **NOTE:** Sussex production perms are located from 4595'-4613'.
14. WOC per cement company recommendation. Tag cement. Cement top needs to be at or above 6686' (400' above the Niobrara TOP of 7086').
15. TOOH and SB 4540' of 2-1/16" tubing.
16. PU 3-1/2" **CICR**, RIH on 2-1/16" tubing to 4540', and set **CICR** at 4540' (Sussex production perms are located from 4595'-4613').
17. **Establish a rate with biocide treated water into the Sussex perms. DO NOT exceed 2000 psi.**

TOC = 6500'

FHM 1120'; Sussex Top 4384'; Sussex Base 4616'; Shannon Base absent; Niobrara Top 7086'.

Closest HZ Offset Pad: 92' to the Herman 37-32HZ Pad.

STIPs: No wildlife stips.

Gyro survey was run 1/3/2012.

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18. RU cementers. **Pump Sussex production-perf squeeze:** 70 sxs (81 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. Pump 50 sxs (58 cf, 10.3 bbls) below the CICR into the Sussex production-perfs. Under-displace by 4.1 bbls and un-sting from the CICR spotting a minimum 200' of cement above the Sussex TOP (located at 4384'). TOC inside the 3-1/2" casing should be at 4060'. Volume is based on 50 sxs below the CICR into the Sussex production-perfs, and 480' in 3-1/2" production casing with no excess. RD cementers.
19. Slowly pull out of the cement and PUH to 3800'. Reverse circulate to ensure no cement is left in the tubing. TOOH and SB 1320' 2-1/16" tubing.
20. RU WL. RIH and cut 3-1/2" casing at 1220'. RD WL.
21. Circulate with fresh water containing biocide to remove any gas.
22. Un-land casing. ND BOP. ND TH. Install BOP on casing head with 3-1/2" pipe rams.
23. TOOH and LD 1220' of 3-1/2" casing. Remove 3-1/2" pipe rams and install 2-1/16" pipe rams.
24. RIH with 2-1/16" tubing to 1320'.
25. Establish circulation with biocide treated fresh water, and get bottoms up.
26. RU Cementers. Precede cement with 10 bbl (min) SAPP followed by a 20 bbl fresh water spacer. **Pump Stub Plug:** 440 sxs (586 cf) Type III+0.3% CFL-3+0.3% CFR-2+0.25 lb/sk Polyflake, mixed at 14.8 ppg & 1.33 cf/sk (100' in 3-1/2" production casing with no excess, 680' in 10.0" OH from caliper with 40% excess, 172' in 8-5/8" surface casing with no excess). The plug will cover 1320' - 368'. RD cementers.
27. Slowly PUH to +/- 360'. Reverse circulate to ensure no cement is left in the tubing, and that TOC is no higher than +/- 360' (a CIBP will be set at 80'). PUH to 200' and WOC.
28. WOC per cement company recommendation. Tag cement. Cement top needs to be at or above 440' (100' above the surface casing shoe located at 540'). TOOH.
29. RU WL. RIH 8-5/8" CIBP to 80'. Set and pressure test to 1000 psi for 15 minutes. RDMO WL and WO rig.
30. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to rsdJVendors@anadarko.com within 24 hours of completion of the job.
31. Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
32. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
33. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
34. Welder cut casing minimum 5' below ground level.
35. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).

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36. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
37. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
38. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
39. Back fill hole with fill. Clean location, and level.
40. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.

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