

## PLUG and ABANDONMENT PROCEDURE

Engineer: Tod Haanes  
Cell: 303-929-2339

### DEEPE 4-22

#### 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 isolate production equipment and remove any automation prior to rig MIRU.
2. There is *no need* for a slickline tag (no bumper spring and the uppermost RBP is located at 7195', with 2 sxs sand).
3. Arrange delivery of 25 joints 2-3/8" 4.70 lb/ft J-55 tubing.
4. Prepare location for base beam equipped rig. Install perimeter fence as needed.
5. 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 9/18/2015 recorded a Bradenhead pressure of 1 to 0 psi, and no liquids.
6. *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.
7. MIRU WO rig. Kill well as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing joint, and LD.
8. A *retrieving head* is reported to be on the tubing. Circulate the sand off the first RBP located at 7195', and release the RBP. TOOH, SB 7280' 2-3/8" tubing, and LD RBP.
9. With the *retrieving head* still attached, TIH to the second RBP located at 7280'. Circulate the sand off, and release the RBP. TOOH, SB 7330' 2-3/8" tubing, LD RBP, and LD the *retrieving head*.
10. RU WL. PU gauge ring and RIH to 7360' for 4-1/2" 11.6 lb/ft casing (spud date = 9/7/2001). POOH and LD gauge ring.
11. PU 4-1/2" 11.6 lb/ft CIBP and set at 7330' (collars at 7300' and 7342') to abandon the Niobrara/Codell perms. RD WL.
12. RU hydrotesters. TIH with 2-3/8" tubing to 7330' while hydrotesting to 3000 psi. PU 5', circulate gas out of the hole, and pressure test CIBP to 1000 psi for 15 minutes. RD hydrotesters. *Monitor bradenhead pressure during test. Contact Evans Engineering if the bradenhead pressure is affected by the casing test.*
13. RU cementers. Pump Niobrara plug: 25 sxs (38 cf) Thermal 35 +0.5% CFR-2+0.25% FMC, mixed at 15.6 ppg & 1.51 cf/sk. The plug will cover 7330' to 6890'. Volume is based on 440' inside 4-1/2" production casing with no excess. RD cementers.
14. Slowly pull out of the cement and PUH to 6600'. Reverse circulate to ensure no cement is left in the tubing. PUH to 5150'.
15. RU Cementers. Pump Sussex balanced plug: 70 sxs (80 cf) 0:1:0 'G'+0.5% CFR-2+0.2% FMC+0.5% LWA, mixed at 15.8 ppg & 1.15 cf/sk. The plug will cover 5150' - 4230'. Volume is based on 920' in 4-1/2" production casing with no excess. RD cementers.
16. Slowly pull out of the cement and PUH to 4000'. Reverse circulate to ensure no cement is left in the tubing. PUH to 3900' and WOC.
17. WOC per cement company recommendation. Tag cement. Cement top needs to be at or above 4281' (200' above the Sussex TOP of 4481').

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18. TOOH and SB 1380' 2-3/8" tubing.
19. RU WL. RIH and cut 4-1/2" casing at 1280'. RD WL.
20. Circulate with fresh water containing biocide to remove any gas.
21. Un-land casing. ND BOP. ND TH. Install BOP on casing head with 4-1/2" pipe rams.
22. TOOH and LD 1280' of 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams.
23. RIH with 2-3/8" tubing to 1380'.
24. Establish circulation with biocide treated fresh water and get bottoms up.
25. RU Cementers. Precede cement with 10 bbl (min) SAPP followed by a 20 bbl fresh water spacer. Pump Stub Plug: 270 sxs (360 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 4-1/2" production casing with no excess, 592' in 8.0" OH from caliper with 40% excess, and 172' in 8-5/8" surface casing with no excess). The plug will cover 1380' - 516'. RD cementers.
26. Slowly PUH to 300'. Reverse circulate to ensure no cement is left in the tubing. PUH to 200' and WOC.
27. WOC per cement company recommendation. Tag cement. Cement top needs to be at or above 588' (100' above the surface casing shoe located at 688'). TOOH.
28. RU WL. RIH 8-5/8" CIBP to 80'. Set and pressure test to 1000 psi for 15 minutes. RDMO WL and WO rig.
29. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com) within 24 hours of completion of the job.
30. Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
31. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
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](mailto: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.