

## PLUG AND ABANDONMENT PROCEDURE

### PAQUETTE 13-5

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 48 hours prior to rig move. Request they catch and remove plunger, isolate production equipment and remove any automation prior to rig MIRU.
2. Order 50 bbls of 9 ppg mud for Step 25.
3. MIRU slickline. Pull bumper spring and tag bottom. Record tag depth in Open Wells. Run pressure bomb and obtain pressure gradient survey from surface to halfway between the perfs, making gradient stops every 1000'. Forward pressure bomb results to Evans Engineering. RD slickline.

**NOTE: Be sure to run pressure bomb prior to blowing down and killing well.**

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 **7/16/2012** recorded a Bradenhead pressure of **322 psi to 281, and no liquids**.
6. **Blowdown Bradenhead and re-check pressure the next day.** Repeat until pressure stays at 0 psi. Contact Evans Engineering if pressure does not report 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. TOOH and SB 7350' of 2-3/8" tubing, LD remainder.
9. RU WL. PU gauge ring for 4-1/2", 11.6 lb/ft casing and RIH to 7380'. POOH and LD gauge ring.
10. PU 4-1/2" 11.6 lb/ft CIBP and set at 7350' (collars are located at 7345' and 7377') to abandon Niobrara/Codell perfs. RD WL.
11. Pressure test CIBP to 1000 psi for 15 minutes.  
**Monitor Bradenhead pressure during test. Contact Evans Engineering if the Bradenhead pressure is affected by the casing test.**
12. RU hydrotesters. TIH with 2-3/8" tubing to 7350' OE. Hydrotest tubing to 3000 psi. RD hydrotesters.
13. RU Cementers. **Pump Niobrara Balanced Plug:** 25 sx Thermal 35 + 0.3% CFR-2 + 0.3% ASM-3 (AS-3), mixed at 15.6 ppg & 1.51 ft<sup>3</sup>/sk. The plug will cover 7350'- 6950'. Volume based on 400' in 4-1/2" production casing with no excess. RD cementers.
14. Slowly pull out of the cement and PUH to 6750'. Circulate tubing clean to ensure no cement is left in the tubing.
15. PUH to 5110'.
16. RU cementers. **Pump Sussex/Shannon Balance Plug:** 75 sx 0:1:0 blend 'G' + 0.5% CFR-2 + 0.2% FMC + 0.5% LWA, mixed at 15.8 ppg and 1.15 ft<sup>3</sup>/sk. The plug will cover 5110' to 4180'. Volume is based on 930' inside 4-1/2" casing with no excess. RD cementers.
17. Slowly pull out of the cement and PUH to 3990'. Circulate tubing clean to ensure no cement is left in the tubing.
18. WOC per company recommendation. Tag cement. Record cement depth in OpenWells. Cement top needs to be at or above 4184'.

Engineer: Jane Ann Moreland

Cell: 970-800-1487

19. TOOH and SB 1140' 2-3/8" tubing. LD remainder.
20. RU WL. RIH and cut 4-1/2" casing at 1040'. RD WL.
21. Circulate with fresh water containing biocide treated water to remove any gas.
22. Un-land casing. ND BOP. ND TH. Install BOP on casing head with 4-1/2" pipe rams.
23. TOOH and LD 1040' of 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams.
24. RIH with 2-3/8" tubing to 1140'.
25. Establish circulation with biocide treated water and get bottoms up.
26. RU cements. Precede cement with 10 bbls (min) SAPP followed by a 20 bbl fresh water spacer. Circulate 50 bbls (entire hole volume) of new 9 ppg mud. **Pump Stub Plug:** 125 sx 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, 174' in 8" OH with 40% excess, and 200' in 8-5/8" casing with no excess). The plug will cover 1140' – 666'. RD cements.
27. Slowly pull out of cement and PUH to 450'. Reverse circulate to ensure no cement is left in the tubing. PUH to 350' and WOC.
28. WOC per cement company recommendation. Tag cement. Record cement depth in OpenWells. Cement top needs to be at or above 766' (100' above surface casing shoe located at 866'). TOOH.
29. RU WL. RIH 8-5/8", 24#/ft CIBP to 80'. RDMO WL and WO rig.
30. 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.
31. Supervisor submit paper copies of 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. Capping crew will set and secure night cap on 8-5/8" casing head, restrain the casing head, pressure test CIBP to 500 psi with hydrotest pump, then remove night cap and casing head restraints.
34. Excavate hole around surface casing enough to allow welder to cut casing a minimum of 5' below ground level.
35. Welder cut casing minimum 5' below ground level.
36. Fill casing to surface casing using 4500 psi compressive strength cement (NO gravel).
37. Spot weld on steel marker plate. Marker should contain Well name, Well number, and legal location (1/4 1/4 descriptor) and API number.
38. Obtain GPS location data as per COGCC Rule 215 and send to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com).
39. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
40. Back fill hole with fill. Clean location and level.
41. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.