

Engineer: MICHAEL LEE

Cell: 970-302-4601

## PLUG and ABANDONMENT PROCEDURE

### JEFFERS 32-35

#### 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.). Notify 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. MIRU Slickline. Pull bumper spring and tag bottom. Record tag depth in OpenWells. Well has a gyro survey from 10/07/2014. . Run pressure recorder and obtain pressure gradient survey from surface to 7430', making gradient stops every 1000'. Forward pressure bomb results to Evans Engineering. RDMO slickline. NOTE: The BHP survey must be run before the well is blown down or killed with fluid.
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 08/05/2015 recorded no bradenhead pressure with no fluids produced. Blow down bradenhead and re-check pressure the next day. Repeat until pressure stays at 0 psi. Contact Evans Engineering if pressure does not blow down to 0 and stay at 0.
5. MIRU WO rig. Load hole using clean fresh water with biocide to control well. ND WH. NU BOP. Unland tbg using unlanding joint and LD.
6. TOOH and SB 7365' of 2-3/8" tbg.
7. MIRU Wireline. RIH with 4-1/2" CIBP and set at +/- 7365' to abandon the J-Sand perfs. TOOH. RIH to dump 2 sx on CIBP. TOOH. Load hole with biocide treated fresh water and PT CIBP to 1000 psi for 15 minutes. RD WL.
8. TIH with 2-3/8" tbg while hydrotesting to 3000 psi to 7365'. When on bottom, circulate all the gas out of the well.
9. RU cements. Pump Niobrara Balance Plug: Pump 40 sxs (38 cf) Thermal 35 + 0.5% CFR-2 + 0.25% FMC mixed at 15.6 ppg & 1.51 cf/sk. Volume based on 695' inside 4-1/2" production casing. Cement will be from 7365' – 6670'. RD cements.
10. Slowly pull out of the cement and PUH to 6450'. Reverse circulate to ensure no cement is left in the tbg.
11. TOOH and LD 2-3/8" tbg until EOT is at 4390'.
12. RU Cements. Pump Sussex Balance Plug: 30 sxs (35 cf) 0:1:0 'G' + 0.5% CFR-2 + 0.2% FMC + 0.5% LWA mixed at 15.8 ppg & 1.15 cf/sk. Volume is based on 410' inside 4-1/2" production casing. Cement will be from 4390' – 3980'. RD cements.
13. Slowly pull out of the cement and PUH to 3800'. Reverse circulate to ensure no cement is left in the tbg. WOC per cement company recommendations.
14. TIH to tag cement (~3980') and record tag depth in OpenWells.
15. TOOH and SB 1080' of 2-3/8" tbg.
16. RU WL. RIH and cut 4-1/2" casing at 980'. RD WL.
17. Circulate with fresh water containing biocide to remove any gas.
18. Un-land casing. ND BOP. ND TH. Install BOP on casing head with 4-1/2" pipe rams.
19. TOOH and LD 980' of 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams.
20. RIH with 2-3/8" tbg to 1080'.

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21. RU Cementers. Establish circulation with biocide treated fresh water, 10 bbls (min) SAPP, followed by 20 bbls fresh water spacer. Pump Stub Plug: 340 sxs (440 cf) Type III + 0.3% CFL-3 + 0.3% CFR-2 + 0.25lb/sk Polyflake, mixed at 14.8 ppg and 1.33 cf/sk. Volume is based on 100' in 4-1/2" production casing with no excess, 524' of 9.5" OH from log with 40% excess, and 206' in 8-5/8" surface casing with no excess. The plug will cover 1080' - 250'. RD cementers.
22. Slowly pull out of the cement and PUH to 200'. Circulate using biocide treated fresh water to ensure no cement is left in the tbg. WOC per cement company recommendation.
23. TIH to tag cement and record tag depth in OpenWells. Cement needs to be at or above 356' (100' into the SC shoe). If tag is below 356', call Evans Engineering.
24. RU WL. RIH 8-5/8" CIBP to 80'. Set and pressure test to 1000 psi for 15 minutes. RDMO WL and WO rig.
25. 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.
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 flow lines.
28. Excavate hole around surface casing enough to allow welder to cut casing a 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) if necessary.
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](mailto:rscDJVendors@anadarko.com).
33. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
34. Back fill hole with fill. Clean location, and level.
35. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.
- 36.