

Engineer: Tod Haanes

Cell: 303-929-2339

PLUG and ABANDONMENT PROCEDURE

Marrs Red VV 22-2DX

Step	Description of Work
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| 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 catch and remove plunger, isolate production equipment and remove any automation prior to rig MIRU. |
| 2. | NOTE: Casing is 3-1/2", 7.7 lb/ft, M-75, 10rd NU. |
| 3. | MIRU slickline. Pull bumper spring and tag bottom. Record tag depth in Open Wells. RD slickline. A CIBP and 2 sxs cement are reported to be at 8175'. |
| 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 1/15/2015 recorded a Bradenhead pressure of 9 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 with 1.90" OD pipe rams. Unseat landing joint, and LD. |
| 8. | TOOH and SB 7580' 1.90" OD tubing. |
| 9. | NOTE: There is an existing CIBP with 2 sxs cement cap that isolates the Dakota (CIBP = 8175' and 2 sxs cement). If the Step 3 tagging indicates the Dakota perfs are not isolated, call Evans Engineering (Dakota perfs are located from 8254'-8273'). |
| 10. | PU scraper and RIH to 7580' for 3-1/2" 7.7 lb/ft casing. TOOH, SB 7550' tubing, and LD scraper (spud date = 6/8/1993). |
| 11. | RU hydrotesters. PU 3-1/2" CIBP, and RIH on 1.90" tubing to 7550' while hydrotesting to 3000 psi. Set CIBP at 7550' to isolate the Codell perfs located at 7626'-7638'. 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. |
| 12. | TOOH, SB 7550' 1.90" tubing, and LD CIBP setting tool. |
| 13. | TIH with tubing to 7550'. |
| 14. | RU cementers. Pump Niobrara plug: 25 sxs (37 cf) Thermal 35 +0.5% CFR-2+0.25% FMC, mixed at 15.6 ppg & 1.51 cf/sk. The plug will cover 7550' to 6820'. Volume is based on 730' inside 3-1/2" production casing with no excess. RD cementers. |
| 15. | Slowly pull out of the cement and PUH to 6600'. Reverse circulate tubing clean to ensure no cement is left in the tubing. TOOH and SB 4400' 1.90" OD tubing. |
| 16. | RU WL. PU and RIH with one 2-1/8" perf gun with 3 spf, 0.42" EHD, 120° phasing. Shoot 2' of squeeze holes at 4880'. RD WL. |
| 17. | Establish circulation to surface with fresh water treated with biocide. If circulation on the back side is not possible, contact Evans Engineering before proceeding (the 3-1/2" casing may require cutting at 4880' to be used as a work string). |
| 18. | RU Cementers. ND BOP and tubing head. Nipple up cement head (plug retainer) in preparation for the wiper plug squeeze. |

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19. Pump 5 bbls water with biocide, 20 bbls sodium metasilicate, and another 5 bbls spacer immediately preceding cement. **Pump Sussex wiper plug squeeze:** 350 sxs (403 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. The plug will cover 4880' - 4376'. Volume is based on 504' in 11.25" OH from caliper with 20% excess, and 504' in 3-1/2" production casing with no excess. Displace with wiper plug to 4376'.
20. Nipple down the cement head (plug retainer). RD Cementers. NU tubing head and BOP.
21. WOC per cement company recommendation. TIH with 1.90" OD tubing and tag wiper plug. The top needs to be above **4385'** (200' above the Sussex TOP of 4585').
22. TOOH and LD 1.90" tubing.
23. RU WL. RIH and cut casing at **1350'**. RD WL.
24. Circulate with fresh water containing biocide to remove any gas.
25. Un-land casing. ND BOP, and the tubing hanger. Install BOP on casing head with 3-1/2" pipe rams.
26. It is not necessary to Hydrotest the 3-1/2" work string if it pressure tested to 3000 psi.
27. Using the 3-1/2" casing, establish circulation and *get bottoms up* with fresh water containing biocide.
28. RU Cementers. Precede cement with 10 bbl (min) SAPP followed by a 20 bbl fresh water spacer. **Pump Stub Plug:** 490 sxs (651 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. (506' in 11.25" OH from caliper with 40% excess, and 454' in 8-5/8" surface casing with no excess). The plug will cover 1350' - 390'. RD cementers.
29. Slowly pull out of the cement, and PUH to 200'. Reverse circulate tubing clean using fresh water treated with biocide. PUH to 100' and WOC.
30. WOC per cement company recommendation. Tag cement. Cement top needs to be above 451' (50' above the Fox Hills sand TOP located at 501'). TOOH and LD 3-1/2" casing.
31. MIRU WL. RIH 8-5/8" CIBP to 80'. Set and pressure test to 1000 psi for 15 minutes. RDMO WL and WO rig.
32. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to rscDJVendors@anadarko.com within 24 hours of completion of the job.
33. Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
34. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
35. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
36. Welder cut casing minimum 5' below ground level.
37. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
38. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
39. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
40. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
41. Back fill hole with fill. Clean location, and level.
42. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.