

Engineer: VALERIE WHITE

Cell: 307-696-3591

## PLUG and ABANDONMENT PROCEDURE

### DOVERSBERGER EUGENE 1

#### Step Description of Work

1. Provide 48 hr 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 hr prior to rig move. Request they catch and remove the plunger, isolate production equipment and remove any automation prior to MIRU.
2. MIRU Slickline. Pull bumper spring and tag bottom. Record tag depth in Open Wells. Well has a gyro survey from 11/05/2014. RD slickline.
3. Prepare location for base beam equipped rig. Install perimeter fence as needed. Order a minimum of 25 joints additional 2-3/8", 4.7# tbg.
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 08/23/2010 recorded a bradenhead pressure of less than 1 psi, blown dead 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. Kill as necessary using clean fresh water with biocide. ND WH. NU BOP. Unland tbg.
6. TOOH and SB all of the 2-3/8" tbg.
7. TIH with 4-1/2", 10.5# csg scraper and 2-3/8" tbg down to 4590' and TOOH. SB 4580' of 2-3/8" tbg.
8. MIRU Wireline. Run 2-7/8", 6.5# gauge ring to 7940'.
9. RIH with 2-7/8" CIBP and set at +/- 7926' to abandon the J-sand perfs. TOOH. RIH to dump 1 sx on CIBP. TOOH. Standby WL.
10. TIH with 2-3/8" tbg to 2500'. Load hole with biocide treated fresh water and circulate the gas out of the well. PT to 1000 psi for 15 minutes. TOOH
11. RIH and run CBL from 4580' to surface. Forward CBL to Evans office. Cementing plans may change depending on CBL results.
12. RIH with two 1-11/16" perf guns with 3 spf, min 0.35" EHD, 120° phasing. Shoot 2' of squeeze holes at 6845'. RD WL.
13. PU CICR (4-1/2" 10.5#, K-55) and 2-3/8" tbg and RIH while hydrotesting tubing to 4000 psi. Set CICR at 4580' (Refer to Wireline's perforation run for collar locations).
14. RU cementers. Establish injection with biocide treated fresh water. **Pump Niobrara Squeeze:** Pump 75 sxs (230 cf) 1:1:3 Poz:G:Gel + 20% silica + 0.4% CFL-3 + 0.4% CFR-2 + 0.1% SMS mixed at 13.5 ppg & 1.66 cf/sk. Underdisplace by 5 bbls. Volume based on 2450' below the CICR inside 4-1/2" production casing and 2-7/8" liner, 180' in the 2-7/8" liner annulus assuming 4-1/2" OH from the caliper log with 20% excess, and 280' on top of the CICR. RD cementers.
15. Slowly pull out of the cement and PUH to 1500'. Reverse circulate tubing clean to ensure no cement is left in the tubing. TOOH and SB 870' of 2-3/8" tbg.
16. RU WL. RIH with two 3-1/8" perf guns with 3 spf, min 0.5" EHD, 120° phasing. Shoot 1' of squeeze holes at 1460' and 2' of squeeze holes at 840'. RD WL.
17. PU CICR (4-1/2" 10.5#, K-55) and 2-3/8" tbg and RIH. Tension set CICR at 870' (Refer to Wireline's perforation run for collar locations).

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18. RU Cementers. Establish circulation with biocide treated fresh water, 10 bbls (min) SAPP, followed by 20 bbls fresh water spacer. **Pump Shoe Plug:** 285 sxs (570 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 1460' in 4-1/2" production casing with no excess, and 620' of 8-1/2" OH from caliper log (at lower depths) with 40% excess. Pump 225 sxs below the CICR and spot the remaining 60 sxs on top of the CICR. The plug will cover 1460' to surface. RD cementers.
19. Slowly pull out of the cement and POOH.
20. WOC per cement company recommendation, then use the workstring to tag the top of cement. Record the TOC in OpenWells. Tag needs to be 120' or higher.
21. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to rscDJVendors@anadarko.com within 24 hrs of completion of the job.
22. Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
23. Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
24. Excavate hole around surface casing enough to allow welder to cut casing minimum 5' below ground level.
25. Welder cut casing minimum 5' below ground level.
26. Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
27. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
28. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
29. Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
30. Back fill hole with fill. Clean location, level.
31. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.