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## PLUG and ABANDONMENT PROCEDURE

### WEICHEL 8-14

#### Description

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. MIRU Slickline. Pull production equipment and tag bottom. Record tag depth in Open Wells. Directional Survey was run on 03/19/09. RDMO Slickline.
3. Prepare location for base beam equipped rig. Install perimeter fence as needed.
4. Verify COAs before RU.
5. Upon RU, check and record bradenhead pressure. If bradenhead valve is not accessible, re-plumb so that valve is above GL. Blow down bradenhead and re-check pressure the next day. Repeat until pressure stays at 0 psi.
6. MIRU WO rig. Spot a tbg trailer. Kill well as necessary using biocide treated fresh water. ND WH. NU BOP. Unland tbg using unlanding joint and LD.
7. TOOH and SB 6950' 2-3/8" tbg. LD any remainder.
8. MIRU WL. PU and RIH with (4-1/2", 11.6#) gauge ring to 6960'. POOH.
9. PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 6950' (collars at 6922' & 6964'). POOH. RDMO WL.
10. TIH with 2-3/8" tbg to 6950'
11. Load hole with biocide treated fresh water and circulate all gas out of well. PT CIBP to 1000psi for 15 minutes.
12. MIRU Cementers. Pump Niobrara Balance Plug: Pump 25 sx (6.9 bbl or 39 cf), assuming 15.8 ppg & 1.53 cf/sk. Volume based on 400' inside 4-1/2", 11.6# production casing with no excess. Cement will be from 6950'-6550'. RD Cementers.
13. Slowly pull out of the cement and TOOH. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOOH, SB 1590' 2-3/8" tbg. LD remaining tbg.
14. MIRU WL. PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 4170' (collars at 4148' & 4190'). POOH. RIH and dump 2 sx cement on CIBP. POOH.
15. Slowly pull out of the cement and TOOH. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOOH, SB 1480' 2-3/8" tbg. LD remaining tbg.
16. Run CCL-GR-CBL-VDL from +/- 4000' to surface, one run at 500# and one at 0#. Forward to Engineering. In addition to normal handling, of logs/job summaries, email copies of all cement job logs/job summaries and invoices to DJVendors@anadarko.com within 24 hours of completion of the job. Note that squeeze depths are subject to change based on CBL and an additional squeeze may be added.
17. PU and RIH with one 3-1/8" perf guns with 4 spf, min 0.5" EHD, 90° phasing. Shoot 4' of squeeze holes at 1650'. RDMO WL.
18. PU and TIH with (4-1/2", 11.6#) packer on 2-3/8" tbg. Set packer at 1620' and test injection rate, notify engineering of results. Max pressure with water shall be 685 psi.
19. PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 1620'.

20. RU Cementers. Perform hesitation squeeze using GasBlok TXI cement: 25 sx (5.1 bbl or 28.8 cf) , assuming 14 ppg & 1.15 cf/sk. Underdisplace by 1 bbl. Volume is based on 40' in the annulus with 60% excess, 30' in production casing with no excess and 60' on top of retainer. RDMO Cementers.
21. TOOH to 1000', reverse circulate. TOOH and SB 1480' of tbg, LD remainder.
22. \*\*\* After pumping the squeeze, SD and WOC at minimum 8 hrs; verify gas migration has been eliminated. If evidence of gas migration or pressure remains, contact engineering. \*\*\*
23. TIH with 2-3/8" tubing to 1480'.
24. Establish circulation to surface with biocide treated fresh water and pump at least three hole-volumes (15 bbl) to circulate all gas out of the well. Contact engineering if evidence of gas migration persists.
25. RU Cementers. Pump Fox Hills Balance Plug: 70 sx (14.4 bbl or 81 cf) , with GASBLOK TXI cement assuming 14 ppg & 1.15 cf/sk. Volume is based on 820' in 4-1/2", 11.6# production casing with no excess. The plug is designed to cover 1480'-660'. RDMO Cementers. Notify engineering if circulation is ever lost during job.
26. Slowly pull out of the cement and TOOH to 100'. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOOH, LD all 2-3/8" tbg.
27. Tag cement as needed. After tagging top of cement, and verifying appropriate coverage above the surface casing shoe, pressure test surface casing to 500 psi and hold for 15 minutes.
28. MIRU WL. RIH 4-1/2", 11.6# CIBP to 80'. 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 within 24 hours of completion of the job.
30. Supervisor submit paper copies of all invoices, logs, and reports to VWP Engineering Specialist.
31. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
32. Capping crew will set and secure night cap on 4-1/2", 11.6# casing head, restrain the casing head, pressure test CIBP to 500 psi with hydrotest pump, then remove night cap and casing head restraints.
33. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
34. Welder cut casing minimum 5' below ground level.
35. Fill production and surface casing to surface using 4500 psi compressive strength cement (NO gravel).
36. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
37. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
38. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
39. Back fill hole with fill. Clean location, and level.
40. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.