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## PLUG and ABANDONMENT PROCEDURE

### WEICHEL 35-14

#### 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. MWD from 06/15/09. 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 in empty float. Kill well as necessary using biocide treated fresh water. ND WH. NU BOP. Unland tbg using unlanding joint and LD.
7. TOOH and SB 6900' 2-3/8" tbg. LD any remainder.
8. MIRU WL. PU and RIH with (4-1/2", 11.6#) gauge ring to 6910'. POOH.
9. PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 6900' (collars at 6890' & 6935'). POOH. RDMO WL.
10. TIH with 2-3/8" tbg to 6900'
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 6900'-6500'. 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 1140' 2-3/8" tbg. LD remaining tbg.
14. MIRU WL. PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 4307' (collars at 4282' & 4322'). POOH.
15. Run new CBL from 4307' to surface. From current CBL, best squeeze location is 1170'. Identify location to perforate and squeeze. Depending on CBL, run test packer before CICR to test injection rate into squeeze holes.
16. RIH and dump 2 sx cement on CIBP. POOH.
17. RIH with 2 - 3-1/8" perf guns with 4 spf, min 0.5" EHD, 120° phasing. Shoot 4' of squeeze holes at 1170' (subject to change based off of new CBL) RDMO WL.
18. TIH with CICR on tubing and set at 1140' (Run test packer first if desired to check injection rate). Establish injection rate for squeeze. Max pump pressure at 2 bpm with full column of water is 480#.
19. RU Cementers. Pump GAS BLOK Squeeze: 25 sx (5.1 bbl or 28.8 cf) TXI cement assuming 14 ppg & 1.15 cf/sk. Volume is based on 30' in 4-1/2", 11.6# production casing with no excess below the CICR, 30' in 7.88" bit size with 100% excess factor, and 125' in the 4 1/2' production casing above the CICR with no excess. Under displace by 2 bbls. Max pressure with full column of cement at 2 bpm of cement is 140#. If

- squeeze is expected to be low rate, can consider stinging out of CICR and spotting cement to EOT during RDMO Cementers. Notify engineering if circulation is ever lost during job.
20. Sting out of retainer and reverse circulate to clean tubing. TOH and LD stinger.SB 970' of tubing.
  21. MIRU wireline and RIH and jet cut 4-1/2", 11.6# casing at 870'. RDMO WL.
  22. Attempt to establish circulation and circulate (56 bbl) with fresh water containing biocide to remove any gas. Max Pressure is 350#.
  23. ND BOP. ND TH. Un-land casing using a casing spear, not a lifting sub. Rig max pull shall be 100,000#. Max pull over string weight shall be 50,000#. If unable to unland, contact Engineering.
  24. Install BOP on casing head with 4-1/2", 11.6# pipe rams.
  25. TOOH and LD all 4-1/2", 11.6# casing. Remove 4-1/2", 11.6# pipe rams and install 2-3/8" pipe rams.
  26. TIH with mule shoe and 2-3/8" tubing to 970'.
  27. Establish circulation to surface with biocide treated fresh water and pump at least three hole-volumes (172.5 bbl) to circulate all gas out of the well. Contact engineering if evidence of gas migration persists.
  28. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump GAS BLOK Stub Plug: 80 sx (16.4 bbl or 92 cf) TXI cement, assuming 14 ppg & 1.15 cf/sk. Volume is based on 100' in 4-1/2", 11.6# production casing with no excess, 5' in 7.88" bit size with 100% excess factor, and 200' in the 8-5/8", 24# surface casing with no excess. The plug is designed to cover 970'-665'. RDMO Cementers. Notify engineering if circulation is ever lost during job.
  29. 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.
  30. MIRU WL. 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.
  31. RIH 8-5/8", 24# CIBP to 80'. 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 VWP Engineering Specialist.
  34. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
  35. Capping crew will set and secure night cap on 8-5/8", 24# casing head, restrain the casing head, pressure test CIBP to 500 psi with hydrotest pump, then remove night cap and casing head restraints.
  36. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
  37. Welder cut casing minimum 5' below ground level.
  38. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
  39. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
  40. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
  41. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
  42. Back fill hole with fill. Clean location, and level.
  43. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.