

## WARDELL H 19-11

## PLUG AND ABANDON PROCEDURE

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 IOC (970-506-5980) at least 24 hr prior to rig move. Request they catch and remove plunger, isolate production equipment and remove any automation prior to rig MIRU.
2. MIRU slickline services. Pull bumper spring and tag bottom. RDMO slickline services.
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.
5. MIRU WO rig. Kill well as necessary w/ water containing biocide. ND WH, NU BOP.
6. Unseat and LD landing joint. PU w/ 1.66 OD tbg (2.33#, J-55) to break any sand bridges. Do not exceed the safety tensile load of 29,416 lbs (80% of upset yield strength).
7. TOOH and SB 1.66" OD tbg (223 jts landed at 7,342').
8. MIRU Wireline. PU gauge ring for 2-7/8" csg (2.33#). RIH to +/- 7,310'. POOH and LD.
9. PU CIBP for 2-7/8" (2.33#, J-55) csg on wireline and RIH to 7,290'. Set CIBP in the csg at 7,290'. POOH and LD the setting tool. Pressure test to 2,500 psi for 15 min. NOTE: if pressure test fails, be prepared to TOOH w/ 2-7/8" csg and hydrotest back in for step 19.
10. MIRU VES. PU Gyro and RIH from +/- 7,290' to surface with measurements every 100'. POOH and LD Gyro. RDMO VES & Wireline.
11. TIH 1.66" OD tbg and tag CIBP at +/- 7,290' while hydrotesting each joint to +/- 3000 psi and tag CIBP. Pick up 5' from tag.
12. MIRU Cementing Services. Spot 25 sx (+/- 34 cuft) of cmt (Class G w/ 20% silica flour, 0.4% CD-32, 0.4% ASA-301, and R-3 to achieve 2:30 pump time) mixed at 15.8 ppg and 1.38 cuft/sk from 7,290' to 6,230'.
13. PUH w/ 1.66" OD tbg to +/- 6,000' and circulate tbg clean. PUH to 4,740'.
14. MIRU Cementing Services. Spot 25 sx (+/- 29 cuft) of cmt (Class G w/ 0.25 pps cello flake, 0.4% CD-32, 0.4% ASA-301) mixed at 15.8 ppg and 1.15 cuft/sk. Planned cement is from 4,740' to 3,840' in 2-7/8", 6.5# csg. RDMO Cementing Services.
15. PUH to +/- 3,500' and circulate hole clean. WOC for 4 hrs.
16. TIH w/ 1.66" OD tbg and tag TOC at +/- 3,840'. If tag is deeper than 4,339', contact the engineer for possible further cement work. POOH and LD 1.66" OD tbg.
17. MIRU Wireline. PU a jet cutter and RIH to 1,400' and cut the 2-7/8" csg. Cut csg and circulate bottoms up. Continue to circulate to remove any gas in the wellbore. RDMO Wireline.
18. ND BOP and tbg head. NU BOP on the surface csg with 2-7/8" pipe rams. Install 3,000 psi ball valves on the csg head outlets. Install a choke or a choke manifold on one outlet.

19. Unland and PU 2-7/8" csg 5'. NOTE: if pressure test in step 9 fails, TOO H w/ 2-7/8" and TIH while hydrotesting.
20. MIRU Cementing Services. Pump 10 bbls of SAPP (Sodium Acid Pyrophosphate) followed by 20 bbls of fresh water containing biocide prior to pumping cement through the 2-7/8" csg. Spot 460 sx (+/- 612 cuft) of cmt (Type III w/ cello flake and CaCl<sub>2</sub> as deemed necessary) mixed at 14.8 ppg at 1.33 cuft/sk. Planned cement is from 1,400' to 650' in 9" OH (from closest caliper, plus 40% excess), and from 650' to 450' inside 8-5/8", 24# surface csg. PUH to 150' and circulate csg clean, POOH and SB csg. RDMO Cementing Services. WOC for 4 hrs.
21. Tag TOC w/ 2-7/8" csg and if TOC is deeper than 450' contact engineer for possible further cement work. TOO H and LD 2-7/8" csg.
22. MIRU wireline. PU CIBP on wireline for 8-5/8" (24#) csg and TIH to +/- 80'. Set CIBP and test to 1000 psi for 15 min. POOH and LD wireline. RDMO wireline.
23. RDMO WO rig.
24. NOTE: Instruct cementing & wireline contractors to email copies of all job logs/job summaries & invoices to [rsdJVendors@anadarko.com](mailto:rsdJVendors@anadarko.com) within 24 hours of the completion of the job.
25. Wellsite supervisor should turn all paper copies of cementing reports/invoices and logs into Joleen Kramer.
26. Have excavation contractor notify One-Call to clear for digging around wellhead and flowline removal.
27. Excavate hole around surface casing enough to allow welder to cut 8-5/8" casing minimum 5' below ground level.
28. Welder cut 8-5/8" casing minimum 5' below ground level.
29. MIRU ready cement mixer. Fill the last 80' inside the 8-5/8" prod. casing until 10' below surface. Use 4,500 psi compressive strength redi-mix cement (Sand and Cement only, no gravel) to finish filling surface casing to top of cut off.
30. Have welder spot weld on steel marker plate. (Note: marker shall be labeled with well name and number, legal location (¼ ¼ description) and API number.
31. Properly abandon flowlines as per rule 1103.
32. Have excavation contractor back fill hole with native material. Clean up location and have leveled to plant any vegetation required.
33. Submit Form 6 to COGCC. Provide "As Plugged" wellbore diagram identifying the specific plugging completed.

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