

PLUG AND ABANDONMENT PROCEDURE

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1. Call foreman or Lead Operator before rig up to isolate and remove automation and production equipment. Install fence if needed.
2. MIRU slickline services. Pull bumper spring, tag bottom. RDMO SL.
3. Provide notice to COGCC prior to MIRU per Form 6 COA.
4. Prepare location for base beam rig.
5. MIRU WO rig. Kill well; circulate as necessary, with water containing biocide. ND wellhead. NU BOP's. Unseat landing joint and lay down.
6. Place cement services on will call when rig moves on location, providing expected volumes of cement needed. (~ 30 sacks (35 cu.ft) for NBCD in pipe plug; 330 sacks (370 cu.ft) for SXSH plug, ~ 490 sacks (650cu.ft) for Fox Hills plug, ~ 40 sacks (~ 50 cu.ft)for surface plug). See attached WBD for cement blends.
7. TOOH and stand back 2 3/8" (4.7#) J-55 TBG.
8. MIRU wireline services. RIH gauge ring for 4 1/2 " (11.6#) casing to 7900'.
9. PU 4 1/2 " (11.6#) CIBP and RIH on W/L to +/-7780'. Set CIBP. Cannot P/T CIBP due to perfs above setting depth. Dump bail 2 sacks of cement on top of CIBP.
10. PU 4 1/2 " (11.6#) CIBP and RIH on W/L to +/-7120'. Set CIBP. P/T CIBP to 1000 psi.
Note: Casing leak cemented at 548'-563'.
11. PU RIH with CCL-GR-CBL-VDL. Run from +/- 7100' to surface to verify cement behind 4-1/2" CSG. Cement placement in this procedure may be adjusted based on log results.
12. RIH on 2 3/8" TBG to +/- 7120'. Hydrotest TBG to 3000 psi while RIH.

13. Initiate circulation using water containing biocide. Note rate, pressure and circulation.
14. MIRU cementing services. Spot 30 sacks (~ 35 cu. ft.) of "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 1.15 cuft/sk. Cement from 7120' to 6750'.
15. PUH ~ 15 stands. Circulate (2 X TBG Vol + Excess) with water + biocide to CLR TBG. RD cementing services.
16. TOOH and stand back 4600' (75 stands) of 2-3/8" TBG. LD remainder.
17. MIRU wireline services. PU two 1' 3 1/8" perf guns loaded with 3 spf, 0.5" EHD, 120 phasing. Shoot 1' of squeeze holes at 4600' and 4200'. RD wireline.
18. PU 4 1/2" CICR (11.6#) and RIH on 2 3/8" TBG to 4230'. Set CICR.
19. Initiate circulation using water containing biocide. Note rate, pressure and circulation.
20. MIRU cementing services. Preflush with 5 bbl of H2O; 20 bbl of sodium metasilicate; 5 bbl of H2O.
21. Pump 330 sacks (370 cu. ft.) of "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 with 20% excess used and considering hole size of 12". Cement from 4600' to 4200'.
22. Underdisplace by 3 BBL. Unsting from CICR and dump remainder on CICR.
23. PUH 9 stands. Circulate (2 X TBG Vol + Excess) to CLR TBG. RD cementing services.
24. P & SB 1300' (25 stands) of TBG. LD remainder.
25. RU wireline services.
26. PU two 1' 3 1/8" perf guns loaded with 3 spf, 0.5" EHD, 120 phasing. Shoot 1' of squeeze holes at 1300' and 600'. RD wireline.
27. PU 4 1/2" CICR (11.6#) and RIH on 2 3/8" TBG to 630'. Set CICR.

28. Initiate circulation using water containing biocide. Note rate, pressure and circulation.
29. MIRU cementing services.
30. Pump 490 sacks (~650 cu. ft) of Type III w/ cello flake and CaCl₂, mixed at 14.8 ppg and 1.33 cuft/sk. Cement from 1300' to 600'. Volumes calculated considering 12" hole size and 20% excess.
31. Unsting from CICR. Spot 40 sacks of (~ 50 cu. ft) of Type III and CaCl₂, mixed at 14.8 ppg and 1.33 cuft/sk. Cement from +/- 630' to 100'.
32. PUH Circulate (TBG Vol + Excess) to CLR TBG. RD cementing services. TOO. Wait on cement overnight.
33. TIH and tag cement plug. If plug top is below +/- 100', top as necessary. P/T cement plug to 1000 psi for 15 minutes, if plug fails P/T then call engineer to discuss next step.
34. If plug tests, RDMO WO rig and cementing services.
35. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries and invoices to rscDJVendors@anadarko.com within 24 hrs of the completion of the job.
36. Wellsite supervisor turn all paper copies of cementing reports/invoices and logs in to Joleen Kramer. NOTE: During the job, wellsite supervisor should instruct the logging and cementing contractors to e-mail all logs, job reports/invoices to Joleen Kramer.
37. Have excavation contractor notify One-Call to clear for excavating around wellhead and flowline removal.
38. Excavate hole around surface casing of sufficient size and depth to allow welder to cut off 8-5/8" surface casing and at least 5' below ground level.
39. Have welder cut off 8-5/8" surface casing at least 5' below ground level.

40. MIRU ready cement mixer. Use 4,500 psi compressive strength redi-mix cement (sand and cement only, no gravel) Fill STUB. RDMO cement services.
41. Have welder spot weld steel marker plate on top of surface casing. (Note: marker shall be labeled with well name and number, legal location (¼ ¼ description) and API number.
42. Properly abandon flowlines as per Rule 1103.
43. Have excavation contractor back fill hole with native material. Clean up location and have leveled.
44. Submit Form 6 to COGCC. Provide “As Plugged” wellbore diagram identifying the specific plugging completed.