

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.
3. Run pressure bomb and obtain pressure gradient survey from surface to 8193' making gradient stops every 1000'. Forward pressure bomb results to Sabrina Frantz. RDMO slickline services
4. Provide notice to COGCC prior to MIRU per Form 6 COA.
5. Notify IOC when rig moves on location to generate work order for flowline removal and one call for line locates.
6. Prepare location for base beam rig.
7. MIRU WO rig. Kill well; circulate as necessary, with water containing biocide. ND wellhead. NU BOP's. Unseat landing joint and lay down.
8. Place cement services on will call when rig moves on location, providing expected volumes of cement needed. (~ 100 sacks for NB/CD suicide squeeze job; ~ 200 sacks for SX/SH suicide squeeze job, ~ 470 sacks for Fox Hills/ surface plug). See attached WBD for cement blends.
9. TOOH and stand back 2-3/8" TBG.
10. MIRU wireline services. RIH gauge ring for 4-1/2" (13.5#) casing to 8200'.
11. PU 4-1/2" (13.5#) CIBP and RIH on W/L to +/-8120'. Set CIBP. P/T CIBP to 1000 psi. Dump bail 2 sacks of cement on top of CIBP.
12. PU two 1' 3-1/8" perf guns loaded with 3 spf, 0.5" EHD, 120 phasing. Shoot 1' of squeeze holes at 7100' and 6800'. RD wireline.

13. PU 4-1/2" (13.5#) CICR and RIH on 2-3/8" TBG to +/- 6830'. Hydrotest TBG to 3000 psi while RIH. Set CICR.
14. Initiate circulation using water containing biocide. Note rate and pressure.
15. MIRU cementing services.
16. Pump 100 sacks of 50/50 Poz "G" w/ 20% silica flour, 3% gel, 0.1% sodium metasilicate and 0.4% FL-52. Mixed at 13.5 ppg and 1.71 cuft/ sk yield with 20% excess and 9" hole size. Cement from 7100' to 6800'.
17. Underdisplace by 3 BBL. Unsting from CICR and dump remainder on CICR.
18. PUH 9 stands. Circulate (TBG Vol + Excess) to CLR TBG. RD cementing services.
19. P & SB 5130' (83 stands) of TBG. LD remainder.
20. RU 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 5400' and 5100'. RD wireline.
21. PU 4-1/2" (13.5#) CICR and RIH on 2-3/8" TBG to 5130'. Set CICR
22. Initiate circulation through CICR using water containing biocide. Note rate and pressure.
23. MIRU cementing services. Preflush with 5 bbl of H2O; 20 bbl of sodium metasilicate; 5 bbl of H2O.
24. Pump 200 sacks 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 calculated with 20% excess and 9" hole size. Cement from 5400' to 5100'.
25. Underdisplace by 10 BBL. Unsting from CICR and dump remainder on CICR.
26. PUH to 4420'. Circulate (TBG Vol + Excess) to CLR TBG. RD cementing services.
27. P & SB 1560' (25 stands) of TBG. LD remainder.
28. RU wireline services. Crack closest coupling at 1460' or shoot off. RD wireline.
29. NDBOP, NDTH.
30. NU BOP on casing head. Install 4-1/2" pipe rams.
31. TOOH with 4-1/2" casing and lay down. Install 2-3/8" pipe rams.

32. RIH with 2-3/8" TBG into casing stub to 1560'.
33. RU Cementing services. Pump 470 sacks of Type III w/ cello flake and CaCl₂, mixed at 14.0 ppg and 1.53 cuft/sk, calculated with 12" hole size and 20% cement excess. Cement from 1560' to 600'.
34. PUH to 600' & circulate w/ biocide + water to clear TBG. TOOH. WOC 4 hrs
35. TIH and tag cement plug. If plug top is below 600', top as necessary.
36. MIRU wireline services. PU 8-5/8" CIBP and RIH to 80'. Set CIBP. Pressure test CIBP to 1000 psi for 15 minutes. If plug tests, RDMO wireline and WO rig.
37. 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.
38. 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.
39. Have excavation contractor notify One-Call to clear for excavating around wellhead and flowline removal.
40. 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.
41. Have welder cut off 8-5/8" surface casing at least 5' below ground level.
42. MIRU ready cement mixer. Use 4,500 psi compressive strength redi-mix cement (sand and cement only, no gravel) Fill STUB. RDMO cement services.
43. 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.
44. Properly abandon flowlines as per Rule 1103.
45. Have excavation contractor back fill hole with native material. Clean up location and have leveled.

46. Submit Form 6 to COGCC. Provide "As Plugged" wellbore diagram identifying the specific plugging completed.