

## **PLUG AND ABANDONMENT PROCEDURE**

Engineer: Taj Brar (970-339-1088)

Cell: 303-720-1810

1. Call IOC at 970-506-5980 before rig up to isolate and remove automation and production equipment. Install fence if needed.
2. Provide notice to COGCC prior to MIRU per Form 6 COA.
3. Prepare location for base beam rig.
4. MIRU WO rig. Kill well; circulate as necessary, with water containing biocide. ND wellhead. NU BOP's. Unseat landing joint and lay down.
5. Place cement services on will call when rig moves on location, providing expected volumes of cement needed. (~ 330 sacks (375 cu.ft) for SXSH plug, ~ 240 sacks (320cu.ft) for top plug). See attached WBD for cement blends.
6. RIH & tag cement at 6633' ( needs to be above 6709').
7. TOOH and stand back 4420' (72 stands) 2 3/8" TBG. LD remainder.
8. MIRU wireline services. RIH gauge ring for 4 1/2 " (15.1#) casing to 4900'.
9. PU two 1' 3 1/8" perf guns loaded with 3 spf, 0.5" EHD, 120 phasing. Shoot 1' of squeeze holes at 4900' and 4390'. RD wireline.
10. PU 4 1/2 " CICR (15.1#) and RIH on 2 3/8" TBG to 4420'. P/T tubing to 3000 psi while RIH. Set CICR.
11. Initiate circulation using water containing biocide. Note rate, pressure and circulation.
12. MIRU cementing services. Preflush with 5 bbl of H2O; 20 bbl of sodium metasilicate; 5 bbl of H2O.
13. Pump 330 sacks (375 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 40% excess used and considering hole size of 10". Cement from 4900' to 4390'. Note: Uncemented Stage tool at 4800'. Underdisplace by 3 BBL. Unsting from CICR and dump remainder on CICR.
14. PUH 9 stands. Circulate (2 X TBG Vol + Excess) to CLR TBG. RD cementing services.
15. P & SB 956' (16 stands) of TBG. LD remainder.
16. RU wireline services. Crack closest coupling at +/- 850' or shoot off. RD wireline.
17. Circulate with water w/ biocide to remove any gas from 4 1/2 " and OH annulus.
18. NDBOP, NDTH.
19. NU BOP on casing head. Install 4 1/2" pipe rams.
20. TOOH with 4 1/2 " casing and lay down.
21. RIH with 2 3/8" TBG into casing stub to +/- 950' inside 4 1/2".
22. RU Cementing services.
23. Precede cement with 10 bbl SAPP and 20 bbl fresh water spacer. Pump 240 sacks (~320 cu. ft) of Type III w/ cello flake and CaCl<sub>2</sub>, mixed at 14.8 ppg and 1.33 cuft/sk. Cement from 956' to 400'. Volumes calculated considering 12" hole size and 20% excess.

24. PUH to +/- 300'. Circulate (2 X TBG Vol + Excess) to CLR TBG. RD cementing services. TOOH. WOC 4 hrs.
25. TIH and tag cement plug. If plug top is below +/- 400', top as necessary. RDMO cementing services.
26. 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.
27. 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.
28. 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.
29. Have excavation contractor notify One-Call to clear for excavating around wellhead and flowline removal.
30. 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.
31. Have welder cut off 8-5/8" surface casing at least 5' below ground level.
32. MIRU ready cement mixer. Use 4,500 psi compressive strength redi-mix cement (sand and cement only, no gravel) Fill STUB. RDMO cement services.
33. Have welder spot weld steel marker plate on top of surface casing. (Note: marker shall be labeled with well name and number, legal location (1/4 1/4 description) and API number.
34. Properly abandon flowlines as per Rule 1103.
35. Have excavation contractor back fill hole with native material. Clean up location and have leveled.
36. Submit Form 6 to COGCC. Provide "As Plugged" wellbore diagram identifying the specific plugging completed.