

**PLUG AND ABANDONMENT PROCEDURE**

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GYRO DATE: 2/25/2014

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. Notify IOC when rig moves on location to generate work order for flowline removal and one call for line locates.
5. Prepare location for base beam rig.
6. MIRU WO rig. Kill well; circulate as necessary, with water containing biocide. ND wellhead. NU BOP's. Unseat landing joint and lay down.
7. Place cement services on will call when rig moves on location, providing expected volumes of cement needed. (~ 20 sacks for NBCD plug; 230 sacks for SXSH plug, ~ 130 sacks for top plug). See attached WBD for cement blends.
8. TOOH and stand back 1-1/4" TBG.
9. MIRU wireline services. RIH gauge ring for 2-7/8" casing to 6900'.
10. PU 2-7/8" CIBP and RIH on W/L to +/- 6880'. Set CIBP. P/T CIBP to 2000 psi.
11. RIH on 1-1/4" TBG to +/- 6880'. Hydrotest TBG to 3000 psi while RIH.
12. Initiate circulation using water containing biocide. Note rate, pressure and circulation.
13. MIRU cementing services. Spot 20 sacks 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 6880' to 6220'.

14. PUH 18 stands. Circulate (2 X TBG Vol + Excess) to CLR TBG. RD cementing services
15. Load hole and circulate with 9.0 ppg mud containing biocide.
16. P & LD 1-1/4" TBG.
17. RU wireline services. Crack closest coupling at 4360' or shoot off. RD wireline.
18. Circulate with mud w/ biocide to remove any gas.
19. NDBOP, NDTH.
20. NU BOP on casing head. Install 2-7/8" pipe rams.
21. TOO H with 2-7/8" casing and stand back.
22. RIH with 2-7/8" TBG to casing stub to 4360'.
23. RU Cementing services. Preflush with 5 bbl of H<sub>2</sub>O; 20 bbl of sodium metasilicate; 5 bbl of H<sub>2</sub>O.
24. Pump 230 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 with 20% excess used and considering hole size of 8". Cement from 4360' to 3750'.
25. PUH to +/- 3750' or TOC. Circulate (2 X TBG Vol + Excess) to CLR TBG. RD cementing services.
26. Load hole and circulate with 9.0 ppg mud containing biocide.
27. PUH to 860. LD remainder.
28. Initiate circulation using water containing biocide. Note rate, pressure and circulation.
29. MIRU cementing services.
30. Pump 130 sacks of Type III w/ cello flake and CaCl<sub>2</sub>, mixed at 14.0 ppg and 1.53 cuft/sk. Cement from 860' to 360'. Volumes calculated considering 8" hole size and 20% excess.
31. PUH to 360'. Circulate ( 2 X TBG Vol + Excess) to CLR TBG. RD cementing services.

32. Load hole and circulate with 9.0 ppg mud containing biocide to remove any gas.
33. TIH and tag cement plug. If plug top is below 360', top as necessary.
34. MIRU wireline services. PU 8-5/8" CIBP and RIH to 100'. Set CIBP. Pressure test CIBP to 1000 psi for 15 minutes. If plug tests, RDMO wireline and WO rig
35. 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.
36. Have excavation contractor notify One-Call to clear for excavating around wellhead and flowline removal.
37. 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.
38. Have welder cut off 8-5/8" surface casing at least 5' below ground level.
39. MIRU ready cement mixer. Use 4,500 psi compressive strength redi-mix cement (sand and cement only, no gravel) Fill STUB. RDMO cement services.
40. 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.
41. Properly abandon flowlines as per Rule 1103.
42. Have excavation contractor back fill hole with native material. Clean up location and have leveled.
43. Submit Form 6 to COGCC. Provide "As Plugged" wellbore diagram identifying the specific plugging completed.