

## PLUG AND ABANDONMENT PROCEDURE

### Carl Adler Gas Unit B 2

1. Note: Production Casing = 4-1/2" OD, 10.5#/ft, K-55; Production Hole Drilled @ 7-7/8".
2. 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 foreman or lead operator at least 24 hr prior to rig move. Request they catch and remove the plunger, isolate production equipment and remove any automation prior to rig showing up. Install perimeter fence as needed.
3. Notify IOC when rig mobilizes to location to generate workorder for flowline removal & one call for line locates.
4. Prepare location for base beam equipped rig.
5. MIRU, kill as necessary using clean fresh water with biocide and circulate. ND WH. NU BOP. Unseat landing jt, LD.
6. Notify cementers to be on call. Provide volumes listed below:
  - Niobrara Plug: 30 sx class G w/ 20% silica flour, 0.4% CD-32, 0.4% ASA-301 and R-3 mixed at 15.8 ppg and 1.38 cuft/sk (400' inside 4-1/2" Casing, no excess)
  - SX Suicide Plug: 560 sx class "G" w/0.25 pps cello flake, 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cf/sx (510 sx for 13" OH + 20% excess and 50 sx 4-1/2" casing, no excess).
  - Stub Plug: 350 sx Type III CaCl<sub>2</sub> cement w/0.25 pps cello flake mixed at 14.8 ppg and 1.33 cf/sx (100' in 4-1/2" prod casing, 383' in 13" OH + 20% excess, and 202' in 8 5/8" surface casing).
7. TOOH 2 3/8 " production tubing.
8. PU 1-2 joints of 2-3/8 tbg as tail, Arrowset AS-1X packer rated to 10,000 psi, and remaining 2-3/8" tbg to surface.
9. Set packer at 6950' and land tbg at 7005'.
10. Pressure test above and below packer to 1,000 psi for 15 minutes. If both pressure tests do not hold, contact engineering. If both pressure tests hold, then TOOH and proceed to next step.
11. RIH to 6970' w/ 2-3/8 " tubing while hydrotesting to 3,000 psi.
12. RU Cementers. Pump Niobrara Plug: 30 sx class G w/ 20% silica flour, 0.4% CD-32, 0.4% ASA-301 and R-3 mixed at 15.8 ppg and 1.38 cuft/sk to place cement in 4-1/2" production casing from 6970' – 7570'.
13. PUH 9 stands. Circulate 95 bbls water containing biocide to clear tubing. Then, TOOH.
14. WOC 4 hours. Tag Cement. Cement top needs to be at or above 6570'; Proceed assuming TOC is above 6570'. Otherwise, call production engineer.
15. RU Wireline. PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120deg phasing. Shoot 1' of squeeze holes at 4440' and 3840'.
16. PU CICR. RIH and set a approximately 30' below the top perf pending collar locator on CBL. RDWL
17. RIH w/stinger on 2-3/8" tubing.
18. RU Cementers. Pump 5 bbl water w/biocide, 20 bbl Sodium Metasilicate, and another 5 bbl spacer immediately preceding cement.

19. Pump Suicide SX: 560 sx class "G" w/0.25 pps cello flake, 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cf/sx to place cement between perms and in casing. Underdisplace and sting out of CICR to leave 3 bbls on top of retainer.
20. PUH 5 stands. Circulate 50 bbls water containing biocide to clear tubing. Then, TOO H and SB remainder of tbg.
21. RU WL. Shoot off casing at or below 810'. RDMO WL. Circulate a full circulation with water containing biocide to remove any gas.
22. NDBOP, NDTH.
23. Install BOP on casing head with 4-1/2" pipe rams.
24. TOO H with 4-1/2" casing, LD.
25. TIH with 2-3/8 " tubing to 910'.
26. RU Cementers. Spot Stub Plug: 350 sx Type III CaCl<sub>2</sub> cement w/0.25 pps cello flake mixed at 14.8 ppg and 1.33 cf/sx.
27. Circulate 5 bbls water containing biocide to clear tubing.
28. TOO H. WOC 4 hrs. Tag Cement. Cement top needs to be above 227'; Proceed assuming TOC is above 227'. Otherwise, call production engineer.
29. MIRU WL. RIH 8-5/8" CIBP to 80'. Set, PT to 1000 psi for 15 min. If tests, RDMO WL and WO rig.
30. 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.
31. Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
32. Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
33. Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
34. Welder cut 8 5/8" casing minimum 5' below ground level.
35. MIRU ready cement mixer. Use 4500 psi compressive strength cement, (NO gravel) fill stubout.
36. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
37. Properly abandon flowlines per Rule 1103.
38. Back fill hole with fill. Clean location, level.
39. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed. File electronic Form 42 once abandonment complete.