

PLUG AND ABANDONMENT PROCEDURE

Harkis 32-2

1. Note: Production Casing = 4 1/2" OD, 11.6#/ft; 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 Automation Removal Group at least 24 hr prior to rig move. Request they catch and remove plunger, isolate production equipment and remove any automation prior to rig MIRU.
3. MIRU slickline services. Pull bumper spring and tag bottom. RD slickline services.
4. Prepare location for base beam equipped rig. Install perimeter fence as needed.
5. Check and record Bradenhead pressure. If Bradenhead valve is not accessible, re-plumb so that valve is above GL.
6. MIRU, kill as necessary using clean fresh water with biocide and circulate. ND WH. NU BOP. Unseat landing jt, LD.
7. Notify cementers to be on call. Provide volumes listed below:
 - 7.1 Niobrara Plug: 96 cu ft/ 70 sx "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 yield (1020' inside 4-1/2" casing).
 - 7.2 SX Suicide: 115 cu ft/ 100 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 (200' between 8-1/4" OH + 20% excess. 200' inside 4 1/2" casing, no excess).
 - 7.3 Stub Plug: 305 cu ft/ 230 sx Type III CaCl₂ cement w/0.25 pps cello flake mixed at 14.8 ppg and 1.33 cf/sx (100' inside 4-1/2" casing, 426' inside 8-1/4" OH + 40% excess, and 204' inside 8 5/8" surface casing).
8. TOO H 2-3/8" production tubing. Stand back.
9. RU WL. RIH gauge ring to 7550'. TOO H.
10. RIH bailer and tag CIBP at 7755' and dump 2 sx class "G" cmt. POOH. RD WL.
11. RIH CIBP w/ 2-3/8" tbg. Set at +/- 7520'. PT CIBP to 1000 psi.
12. RIH 2-3/8" tbg to 5000'. Circulate 80 bbls water to get all gas out of the hole. POOH.
13. RU WL. Run CBL from top of CIBP to surface. Send results to Tyler.Davis@anadarko.com and Brent.Marchant@anadarko.com. Check cement interval with WBD. If CBL cement doesn't match with WBD existing cement, contact engineering and do not proceed. RD WL. Note: it is important to get a good quality CBL. It may be necessary to run second CBL under 1000 psi pressure.
14. RIH 2-3/8" tbg while hydrotesting to 7520'.
15. RU Cementers. Pump Niobrara Balanced Plug: 96 cu ft/ 70 sx "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 yield from 7520' to 6500'.
16. PUH to 6200'. Circulate 100 bbls water containing biocide to clear tubing. Then, TOO H and LD all but 3960' of tubing.
17. RU WL. PU 3-1/8" perf guns with 3 spf, 0.5" dia 120deg phasing. Shoot 1' of squeeze holes at 4130' and 3930'. RD WL.
18. PU and RIH w/ CICR on 2-3/8" tubing and set CICR at approximately 3960'.
19. RU Cementers. Pump 5 bbl water w/biocide, 20 bbl Sodium Metasilicate, and another 5 bbl spacer immediately preceding cement.

20. Pump SX Suicide: 115 cu ft/ 100 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 suicide squeeze between perms and in casing from 4130' to 3930'. Under displace and sting out of CICR to leave 3 bbls on top of retainer.
21. PUH to 3600'. Circulate 60 bbls water containing biocide to clear tubing. Then, TOO H and LD all but 1410' of tbg.
22. MIRU WL. Shoot off casing at 1310'. RDMO WL. Circulate water containing biocide to remove any gas.
23. NDBOP, NDTH.
24. Install BOP on casing head with 4-1/2" pipe rams.
25. TOO H with 4-1/2" casing, LD.
26. RIH with 2-3/8 " tubing to 1410'.
27. RU Cementers. Pump 10 bbl SAPP with a minimum of 20 bbl fresh water spacer. Pump FH Suicide: 305 cu ft/ 230 sx Type III CaCl₂ cement w/0.25 pps cello flake mixed at 14.8 ppg and 1.33 cf/sx from 1410' to 680' (8.25" OH + 40% excess).
28. PUH to 300'. Circulate 20 bbls water containing biocide to clear tubing. Then, TOO H.
29. WOC 4 hrs. Tag Cement. Cement top needs to be at or above 680'; Proceed assuming TOC is at or above 680'. Otherwise, call production engineer.
30. MIRU WL. RIH 8-5/8" CIBP to 80'. Set, PT to 1000 psi for 15 min. If tests, RDMO WL and WO rig.
31. 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.
32. Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
33. Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
34. Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
35. Welder cut 8 5/8" casing minimum 5' below ground level.
36. MIRU ready cement mixer. Use 4500 psi compressive strength cement, (NO gravel) fill stubout.
37. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
38. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
39. Properly abandon flowlines per Rule 1103.
40. Back fill hole with fill. Clean location, level.
41. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed. File electronic Form 42 once abandonment complete.