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#### PLUG and ABANDONMENT PROCEDURE

##### DUNN 10-36

##### Description

1. Provide 48 hour notice to COGCC prior to rig up per request on approved Form 6 (e.g. call field coordinator, submit Form 42, etc.). Notify Automation Removal Group at least 24 hours prior to rig move. Request they catch and remove plunger, isolate production equipment, and remove any automation prior to rig MIRU.
2. MIRU Slickline. Pull production equipment and tag bottom. Record tag depth in Open Wells. Gyro was run on 02/26/15. RDMO Slickline.
3. Prepare location for base beam equipped rig. Install perimeter fence as needed.
4. Verify COAs before RU.
5. Upon RU, check and record bradenhead pressure. If bradenhead valve is not accessible, re-plumb so that valve is above GL. Blow down bradenhead and re-check pressure the next day. Repeat until pressure stays at 0 psi.
6. MIRU WO rig. Kill well as necessary using biocide treated fresh water. ND WH. NU BOP. Unland tbg using unlanding joint and LD.
7. TOOH and SB 6970' 2-3/8" tbg. LD any remainder.
8. PU and TIH with (4-1/2", 11.6#) Bit and Scraper on 2-3/8" tbg to 6980'. TOOH, SB all 2-3/8" tbg. LD Bit and Scraper.
9. MIRU WL. PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 6970' (collars at 6938' & 6980'). POOH. RDMO WL.
10. MIRU Hydrotesters. TIH with 2-3/8" tbg to 6970' while hydrotesting to 3000 psi. RDMO Hydrotesters.
11. Load hole with biocide treated fresh water and circulate all gas out of well. PT CIBP to 1000psi for 15 minutes.
12. MIRU Cementers. Pump Niobrara Balance Plug: Pump 25 sx (6.9 bbl or 39 cf), assuming 15.8 ppg & 1.53 cf/sk. Volume based on 400' inside 4-1/2", 11.6# production casing with no excess. Cement will be from 6970'-6570'. RD Cementers.
13. Slowly pull out of the cement and TOOH to 6070'. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOOH and SB 4430' of 2-3/8" tbg. LD remaining tbg.
14. MIRU WL. PU and RIH with two 3-1/8" perf guns with 3 spf, min 0.5" EHD, 120° phasing. Shoot 2' of squeeze holes at 4840' and 4' of squeeze holes at 4400'. RDMO WL.
15. PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 4430'.
16. Establish circulation to surface with biocide treated fresh water, and pump 100 bbls to clean up hole.
17. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump GAS BLOK Sussex Squeeze: 175 sx (47.1 bbl or 265 cf) with 0.25 lb/sk polyflake, assuming 15.8 ppg & 1.16 cf/sk. Underdisplace by 1 bbl. Volume is based on 410' below the CICR inside 4-1/2", 11.6# production casing with no excess, 440' in the 4-1/2", 11.6# annulus assuming 7.88" bit size with 60% excess and 65' on top of the CICR to cover top perfs. RD Cementers.

18. Slowly pull out of the cement and TOO H to 4350'. Reverse circulate to ensure no cement is left in the tbg and squeeze holes can be shot at 4350'. TOO H to 3500' and leave 200 psi on well and WOC as recommended by cement company to ensure no cement moves up hole.
19. TOO H and SB 4025' of 2-3/8" tbg. LD remaining tbg.
20. MIRU WL. Tag cement to ensure holes can be shot at 4350'. PU and RIH with two 3-1/8" perf guns with 3 spf, min 0.5" EHD, 120° phasing. Shoot 2' of squeeze holes at 4350' and 4' of squeeze holes at 3995'. RDMO WL.
21. PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 4025'.
22. Establish circulation to surface with biocide treated fresh water, and pump 100 bbls to clean up hole.
23. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump GAS BLOK Sussex Squeeze: 155 sx (47.1 bbl or 265 cf) with 0.25 lb/sk polyflake, assuming 15.8 ppg & 1.16 cf/sk. Underdisplace by 3 bbls. Volume is based on 325' below the CICR inside 4-1/2", 11.6# production casing with no excess, 355' in the 4-1/2", 11.6# annulus assuming 7.88" bit size with 60% excess and 190' on top of the CICR to cover top perfs. RD Cementers.
24. Slowly pull out of the cement and TOO H to 3200'. Reverse circulate to ensure no cement is left in the tbg.
25. TOO H and SB 1230' of 2-3/8" tbg. LD stinger, and remaining tbg.
26. MIRU WL. RIH and jet cut 4-1/2", 11.6# casing at 1130'. RDMO WL.
27. Attempt to establish circulation and circulate (100 bbl) with fresh water containing biocide to remove any gas.
28. ND BOP. ND TH. Un-land casing using a casing spear, not a lifting sub. Rig max pull shall be 100,000#. Max pull over string weight shall be 50,000#. If unable to unland, contact Engineering.
29. Install BOP on casing head with 4-1/2", 11.6# pipe rams.
30. TOO H and LD all 4-1/2", 11.6# casing. Remove 4-1/2", 11.6# pipe rams and install 2-3/8" pipe rams.
31. \*\*\* If pressure on surface casing still exists, we will use fiberglass tubing from pre-nup tool to 1230'.\*\*\*
32. Install pre-nup tool at 870' (12 jts below tool) and Citadel diverter tool at bottom of string. Contact is Ben Hollar (970-420-9940).
33. TIH with 2-3/8" tubing to 1230' while circulating water across open hole section to ensure open hole is clean.
34. Establish circulation to surface with biocide treated fresh water and pump at least three hole-volumes (54 bbl) to circulate all gas out of the well. Contact engineering if evidence of gas migration persists.
35. As a pre-job sweep, pump 20 bbls DF-20-20 to clean up hole.
36. RU Cementers (O-TEX). Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump RSP blend Stub Plug: 85 sx (18 bbl or 101.2 cf) with 0.25 lb/sk Polyflake, assuming 14.5 ppg & 1.19 cf/sk. Volume is based on 100' in 4-1/2", 11.6# production casing with no excess and 200' in 7.88" bit size with 20% excess factor using caliper log. The plug is designed to cover 1230'-930'. RDMO Cementers. Notify engineering if circulation is ever lost during job.
37. Once cement job is finished, disconnect from pre-nup tool and TOO H to (cement company recommendation)'. Reverse circulate using biocide treated fresh water to ensure tubing is clean. TOO H, SB 870' 2-3/8" tbg and LD remainder.

38. WOC as recommended by cement company then TIH and tag cement. Cement must be below shoe.
39. \*\*\* If pressure and fluid migration is 0, proceed. Otherwise, contact engineering. \*\*\*
40. TIH with 2-3/8" tubing to 870'.
41. Establish circulation to surface with biocide treated fresh water and pump at least three hole-volumes (290 bbl) to circulate all gas out of the well. Contact engineering if evidence of gas migration persists.
42. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump GAS BLOK Stub Plug: 320 sx (66.1 bbl or 371.2 cf) with 0.25 lb/sk Polyflake, assuming 15.8 ppg & 1.16 cf/sk. Volume is based on 426' in 7.88" bit size with 100% excess factor and 204' in the 8-5/8", 24# surface casing with no excess. The plug is designed to cover 870'-240'. RDMO Cementers. Notify engineering if circulation is ever lost during job.
43. Slowly pull out of the cement and TOOH to 100'. Reverse circulate using biocide treated fresh water to ensure the tubing is clean. TOOH, LD all 2-3/8" tbg.
44. MIRU WL. Tag cement as needed. After tagging top of cement, and verifying appropriate coverage above the surface casing shoe, pressure test surface casing to 500 psi and hold for 15 minutes.
45. RIH 8-5/8", 24# CIBP to 80'. RDMO WL and WO rig.
46. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com) within 24 hours of completion of the job.
47. Supervisor submit paper copies of all invoices, logs, and reports to VWP Engineering Specialist.
48. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
49. Capping crew will set and secure night cap on 8-5/8", 24# casing head, restrain the casing head, pressure test CIBP to 500 psi with hydrotest pump, then remove night cap and casing head restraints.
50. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
51. Welder cut casing minimum 5' below ground level.
52. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
53. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
54. Obtain GPS location data as per COGCC Rule 215 and send to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com).
55. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
56. Back fill hole with fill. Clean location, and level.
57. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.