

## PLUG AND ABANDONMENT PROCEDURE

### KOESTER 23-33

Step	Description of work
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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.). Call Automation Removal Group at least 48 hours prior to rig move. Request they isolate production equipment and remove any automation prior to rig MIRU.
2. Prepare location for base beam equipped rig, install perimeter fence as needed.
3. 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.
4. Contact the On-Call Engineer to discuss bradenhead pressure upon rig-up to determine if additional action needs to be taken beyond what the procedure proposes.
5. MIRU WO rig. Kill well as necessary using clean fresh water with biocide.
6. ND WH. NU BOP. Unland 2-1/16" tubing using unlanding joint and LD.
7. TOOH with 2-1/16" tubing and SB 6880' of tubing. LD remainder.
8. RU slickline. Run gyro from 7200' to surface, making stops every 100'. RD slickline.
9. PU bit and scraper for 3-1/2", 7.70 lb/ft casing (I.D. 3.068") and RIH with 2-1/16", 3.25 lb/ft tubing to 6880'. POOH and LD bit and scraper.
10. RU WL. PU CIBP for 3-1/2" 7.7 lb/ft casing and RIH and set at 6870' (collars located at 6845' and 6883'). POOH.
11. RU hydrotesters. TIH with 2-1/16" tubing to 6870' while hydrotesting in to 3000 psi. RD hydrotesters.
12. Pressure test casing to 2500 psi for 15 minutes. **Monitor Bradenhead pressure during test. Contact the on-call engineer if the Bradenhead pressure is affected by the casing test.**
13. RU Cementers. **Pump Niobrara Balanced Plug:** 15 sx (20.6 ft<sup>3</sup>) assumed at 15.8 ppg and 1.53 ft<sup>3</sup>/sk. The plug will cover 6870' - 6470'. Volume based on 400' in 4-1/2" casing w/ no excess. RD cementers.
14. Slowly pull out of the cement and PUH to 6250'. Reverse circulate tubing clean with fresh water to ensure no cement is left in the tubing.
15. TOOH and LD remaining 2-1/16" tubing.
16. RU WL with jet cutter. RIH and cut 3-1/2" casing at 4760'. RD WL.
17. Circulate with clean fresh water with biocide to remove any gas.
18. ND BOP. ND TH.
19. Un-land casing using a casing spear, not a lifting sub. Max pull shall be 100,000#. If unable to unland, contact Engineering.
20. Install BOP on casing head with 3-1/2" pipe rams.
21. Establish circulation with biocide treated water, get bottoms up.
22. RU Cementers. Pump 100 bbls of water with biocide, 20 bbls sodium silicate, and another 5 bbls spacer immediately preceding cement. **Pump Sussex/Shannon Open Hole Balance Plug:** 350 sx (411.9 cu.ft.) with Polyflake assumed at 15.8 ppg & 1.18 ft<sup>3</sup>/sk. The plug will cover 4760' - 4000'. Volume based on 760' in 7.88" OH w/ 60% excess. RD cementers.

Engineer: Jane Ann Moreland

Cell: 970-800-1487

23. Slowly pull out of the cement and PUH to 3800'. Reverse circulate tubing clean with fresh water to ensure no cement is left in the casing.
24. WOC per cement company recommendation. Cautiously TIH with 3-1/2" casing and tag cement. Record cement depth in OpenWells. Cement top needs to be at or above 4003'. (If tagged just below 4003', notify engineer to alert COGCC for approval).
25. PUH to 950'. LD remaining 3-1/2" casing.
26. RU cementers. Precede cement with 10 bbls (min) SAPP followed by a 20 bbl fresh water spacer.  
**Pump Stub Plug:** 285 sx (325.2 ft<sup>3</sup>) with Polyflake, assumed at 15.8 ppg & 1.16 cf/sk (468' in 7.88" OH with 60% excess, and 200' in 8-5/8" surface casing). The estimated plug will cover 950' – 282'. RD cementers.
27. Slowly pull out of cement and PUH to 90'. Reverse circulate to ensure no cement is left in the casing. TOOH with 3-1/2" casing and LD.
28. WOC per cement company recommendation. RU WL. Tag cement. Cement top is estimated to be at or above 432' (50' above surface casing shoe located at 482'). Contact the on-call engineer with tag depth to determine appropriate coverage. TOOH. LD remaining casing.
29. RU WL. RIH 8-5/8", 24# CIBP to 80'. RDMO wireline and WO rig.
30. 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.
31. Supervisor submit paper copies of all invoices, logs, and reports to the engineering Specialist.
32. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
33. Capping crew will set and secure night cap on 8 5/8" casing head, restrain the casing head, pressure test CIBP to 500 psi with hydrotest pump, then remove night cap and casing head restraints.
34. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
35. Welder cut casing minimum 5' below ground level.
36. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
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](mailto:rscDJVendors@anadarko.com).
39. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
40. Back fill hole with fill. Clean location, and level.
41. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.