

Engineer: Jacob Roland
Cell: 307-315-3626

PLUG and ABANDONMENT PROCEDURE

FITZPATRICK 4-20

Step Description of Work

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 bumper spring and tag bottom. Record tag depth in Open Wells. RDMO Slickline.
3. Prepare location for base beam equipped rig. Install perimeter fence as needed.
4. 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.
5. MIRU WO rig. Spot a min of 25 jts of 2-3/8" 4.7# J-55 EUE tbg. Kill well as necessary using biocide treated fresh water. ND WH. NU BOP. Unland tbg using unlanding joint and LD.
6. TOOH and SB all 2-3/8" tbg.
7. TIH with (4.5" 11.6#) bit and scraper to depth of 7485. Note that liner top is at 7491'. TOOH standing back 7050' tubing, laying down remainder of tubing and bit and scraper.
8. MIRU WL. PIRIH w/ (4-1/2", 11.6#) CIBP on WL and set at 7470'. POOH.
9. RIH and dump bail 2sx cement on top of CIBP at 7470'. POOH.
10. PIRIH w/ (4-1/2", 11.6#) CIBP on WL and set at 7050'. POOH. RDMO WL.
11. TIH with 2-3/8" tbg to 7050'. Load hole with biocide treated water and circulate all gas out of hole. PT csg and CIBP to 1000psi.
12. MIRU Cementers. **Niobrara/Codell Balance Plug**: Pump 20 sxs (28 cf, 5bbl) 15.8 ppg & 1.53 cf/sk. Volume based on 320' inside 4-1/2" production casing with no excess. Cement will be from 7050 – 6730'. RD Cementers.
13. Slowly pull out of the cement and PUH to 6200'. Reverse circulate tbg clean to ensure no cement is left in the tbg.
14. TOOH and SB 4210' 2-3/8" tbg, LD remaining tbg.
15. 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 4580 and 4' of squeeze holes at 4110. POOH.
16. PURIH w/ (4-1/2", 11.6#) CICR on WL and set at 4210'. POOH. RDMO WL.
17. TIH with stinger and 2-3/8" tbg to 4210 and sting into CICR at 4210.
18. Establish circulation to surface through CICR. Pump 100bbls biocide treated fresh water.
19. **Shannon Squeeze**: RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water space. Pump Sussex Squeeze: 135 sxs (35bbl, 194cf) with 0.25 lb/sk polyflake, assuming 15.8 ppg & 1.51 cf/sk cement. Underdisplace by 2 bbls. Volume is based on 370' below the CICR inside 4-1/2" production casing with no excess, 420' in the 4-1/2" annulus assuming 7-7/8" bit size with 60% excess and 100' on top of the CICR to cover top perfs. RD cementers.
20. Unsting from CICR and pump remaining 2 bbls on top of CICR.
21. Slowly pull out of cement and TOOH to 3500'. Reverse circulate to ensure no cement is left in the tubing.
22. TOOH standing back 1250' tubing, laying down remainder.

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23. MIRU WL. RIH and jet cut 4-1/2" casing at 1150'. RDMO WL.
24. Attempt to circulate with biocide treated fresh water to remove any gas.
25. 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.
26. Install BOP on casing head with 4-1/2" pipe rams.
27. TOOH and LD all 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams.
28. TIH with 2-3/8" tbg to 1250'.
29. Establish circulation with biocide treated fresh water and pump one hole volume (65 bbls).
30. RU Cementers. Pump Stub Plug: Pump 10 bbls (min) SAPP and 5 bbls fresh water spacer followed by 350 sx (519 cf, 92bbl) .25lb/sk polyflake, 15.8 ppg, & 1.5 cf/sk cement. Volume is based on 100' in 4-1/2" production casing with no excess, 649' in 7-7/8" bit size OH with 100% excess, and 200' in 8-5/8" surface casing with no excess. The plug will cover 1250' – 301'. RDMO Cementers.
31. Slowly pull out of the cement and PUH to 100'. Reverse circulate using biocide treated fresh water to ensure the tbg is clean. WOC per cement company recommendation.
32. MIRU WL. RIH and tag cement. Cement top needs to be at or above 461' (50' above surface casing shoe at 501'). Call Engineering if tag is lower than 461'. POOH.
33. RIH (8-5/8", 24#) CIBP to 80'. RDMO WL and WO rig.
34. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to rscDJVendors@anadarko.com within 24 hours of completion of the job.
35. Supervisor submit paper copies of all invoices, logs, and reports to Platteville Engineering Specialist.
36. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
37. 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.
38. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
39. Welder cut casing minimum 5' below ground level.
40. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
41. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
42. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
43. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
44. Back fill hole with fill. Clean location, and level.
45. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.