

Engineer: Jacob Jones

Cell: 936-525-8393

PLUG and ABANDONMENT PROCEDURE

SHARKEY 8-35

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 services. Pull bumper spring and tag bottom. Record tag depth in Open Wells.
3. No Gyro needed, Gyro on 10/30/14.
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. 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 clean fresh water with biocide. ND WH. NU BOP. Unland tbg using unlanding joint and SB.
7. MIRU WL. RIH with 4.5", 11.6# Gauge ring to 6900'. POOH.
8. PU and RIH with (4.5", 11.6#) CIBP and set at +/- 6850' to abandon the Niobrara/Codell formation. POOH. RDWL.
9. RU cementers. Pump Codell Balance Plug: Pump 25 sxs (35cf) 5.8 ppg & 1.55 cf/sk. Volume based on 345' inside 4.5" production casing w/ no excess. Cement will be from 6850-6505.
10. Slowly pull out of the cement and TOO H to 6750'.
11. Reverse circulate to ensure tubing is clean. TOO H and SB 3958' tbg. LD remainder.
12. PU and RIH with one 6' 3-1/8" perf gun with 3 spf, .50 EHD, 120° phasing. Shoot 2' at 4535' and 4' at 3928'. POOH. RDMO WL.
13. PU and RIH with 4.5", 11.6# CICR on 2 3/8" tbg, hydrotesting at 3000 psi while TIH, and set at 3958' (30' below top squeeze holes). Establish circulation through squeeze holes with biocide treated fresh water. Circulate a minimum of 200 bbls through squeeze holes.
14. RU Cementers. Pump Sussex Suicide w/ Gas Blok cement: 115 sxs (140 cf) 12 ppg and 1.79 cf/sx. Pump 10 bbls sodium silicate followed by 105 sx. Underdisplace the remaining 3 bbls (~190 ft) on top of the retainer. Cement will cover 4535-3928' on the back side. Volume is based on 400' in 7-7/8" OH from caliper with 50% excess, 577' below retainer in 4.5" production casing with no excess and 190' on top of CICR in 4.5" casing. Slowly pull up to 3600' and reverse circulate to ensure the tbg string is clean. RDMO cementers.
15. RIH WL and jet cut 4 1/2" csg at 877'.
16. Circulate with fresh water containing biocide to remove any gas.
17. ND BOP. ND TH. Un-land casing using a casing spear, not a lifting sub. Max pull shall be 100,000#. If unable to unland, contact Engineering.
18. Install BOP on casing head with 4-1/2" pipe rams.
19. TOO H and LD all 4.5" casing. Remove 4.5" pipe rams and install 2-3/8" pipe rams.
20. RIH with 2-3/8" tubing to 977'.
21. Establish circulation with biocide treated fresh water and pump two hole volume (220 bbls). Pump 10 bbls (min) SAPP, followed by 5 bbls fresh water spacer.
22. RU Cementers. Pump Stub Plug: 130 sxs (486 cf) with 0.25 lb/sk Polyflake, 14 ppg & 1.15 cf/sk (100' in 4.5" production casing with no excess, 144' in 7-7/8" open hole with 100%

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- excess and 200' in 8-5/8" surface casing with no excess). The plug will cover 977'-533'. RD cementers. Notify Engineering if circulation is lost while pumping cement.
23. Slowly pull out of the cement and PUH to 450'. Reverse Circulate using biocide treated fresh water, to ensure the tubing is clean. TOO. LD all 2-3/8" tbg.
 24. RU WL. RIH 8-5/8", 24# CIBP to 80'. RDMO WL and WO rig.
 25. 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.
 26. Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
 27. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
 28. 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.
 29. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
 30. Welder cut casing minimum 5' below ground level.
 31. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
 32. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
 33. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
 34. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
 35. Back fill hole with fill. Clean location, and level.
 36. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.