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Date: 5/20/2015

PLUG AND ABANDONMENT PROCEDURE

RUSCH 34-15, API 05-123-21234

Steps

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 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. If possible, pull bumper spring and tag bottom. RDMO slickline services. Note: Appears to be stuck plunger or crimped joint at +/- 4,750'; tagged up there while running gyro survey on 11/11/2014.
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.
5. MIRU, kill as necessary using biocide treated water. NDWH. NUBOP. Unseat landing jt, LD.
6. Notify cementers to be on call. Provide volumes listed below:
 - 6.1 Niobrara plug: 60 sx (91 cu-ft) Thermal 35 w/ 0.5% CFR-2 and 0.25% FMC, mixed at 15.6 ppg and 1.51 cu-ft/sk yield. Cement volume based on 1010' in 4 1/2" casing.
 - 6.2 Sussex suicide: 270 sx (311 cu-ft) 0:1:0 'G' w/ 0.25 pps cello flake, 0.5% CFR-2, 0.2% FMC, 0.5% LWA, mixed at 15.8 ppg and 1.15 cu-ft/sk yield. Cement volume based on 670' in 4 1/2" casing and 470' in a 10" OH with 20% excess. Caliper on file.
 - 6.3 Foxhills plug: 280 sx (372 cu-ft) Type III w/ 0.25 pps cello flake, 0.3% CFL-3, 0.3% CFR-2, and CaCl2 as necessary, mixed at 14.8 ppg and 1.33 cu-ft/sk yield. Cement volume based on 100' in 4 1/2" casing, 371' in a 10" OH with 40% excess, and 200' in 8 5/8" casing. Utilized caliper readings from 4000' – 4300'.
7. TOOH 2 3/8" tubing landed at 7520'. Stand back 2 3/8" tubing.
8. MIRU WL. RIH gauge ring for 4 1/2" 11.6# casing to 7500'. POOH.
9. PU 4 1/2" 11.6# CIBP and RIH with WL. Set at +/- 7450' to abandon J Sand perfs. PT to 1000 psi for 15 minutes. RDMO WL.
10. RIH with 2 3/8" tubing to +/- 7450', tag CIBP and PUH 5'. Hydrotest tubing to 3000 psi while RIH.
11. MIRU cementers. Pump Niobrara plug: 60 sx (91 cu-ft) Thermal 35 w/ 0.5% CFR-2 and 0.25% FMC, mixed at 15.6 ppg and 1.51 cu-ft/sk yield. Plug to cover 7450' – 6440'. RDMO cementers.
12. PUH to +/- 6200'. Reverse circulate with biocide treated water to displace cement and clear tubing.
13. POOH. Stand back 3890' of tubing.
14. MIRU WL. PU 3 1/8" perf guns with 3 spf, 120 degree phasing, 0.50" EHD and RIH with WL. Shoot 1' of squeeze holes at 4330' and 2' of squeeze holes at 3860'. RDMO WL.
15. PU and RIH with CICR and 2 3/8" tubing, set CICR at +/- 3890'. Establish circulation with rig pump using biocide treated water.

TOC – 6230'

NB Top – 6847', SX Top – 4060', FHM – 799'

Offset to Merlin 13-15HZ and Jester 5-15HZ Pads

Crops

Gyro Completed 11/11/2014

No Known Casing Issues

Noble Trade Well

16. MIRU cementers. Establish circulation with biocide treated water and precede cement with 5 bbl biocide treated water, 20 bbl sodium metasilicate, and another 5 bbl water spacer.
17. Pump Sussex suicide: 270 sx (311 cu-ft) 0:1:0 'G' w/ 0.25 pps cello flake, 0.5% CFR-2, 0.2% FMC, 0.5% LWA, mixed at 15.8 ppg and 1.15 cu-ft/sk yield to place cement between perms from 4330' to 3860'. Under displace and sting out of CICR to leave 3 bbls (~200') on top of retainer. Cement volume based on 10" OH with 20% excess. Caliper readings across entire interval. RDMO cementers.
18. PUH to +/- 3400'. Reverse circulate with biocide treated water to displace cement and clear tubing.
19. POOH. Stand back 1000' of tubing.
20. MIRU WL. Shoot off 4 1/2" casing at or below 900'. RDMO WL. Circulate casing with biocide treated water to remove any gas.
21. NDBOP, NDTH.
22. Install BOP on casing head with 4 1/2" pipe rams.
23. TOOH 4 1/2" casing, LD.
24. RIH with 2 3/8" tubing to 1000' inside 4 1/2" casing.
25. MIRU cementers. Establish circulation with biocide treated water and precede cement with 10 bbl SAPP and a minimum 20 bbl fresh water spacer. Pump Foxhills plug: 280 sx (372 cu-ft) Type III w/ 0.25 pps cello flake, 0.3% CFL-3, 0.3% CFR-2, and CaCl₂ as necessary, mixed at 14.8 ppg and 1.33 cu-ft/sk yield. Plug to cover 1000' – 900' in 4 1/2" casing, 900' – 529' in 10" OH with 40% excess, and 529' – 329' in 8 5/8" casing. Utilized caliper readings from 4000' – 4300'. RDMO cementers.
26. PUH to 100' and circulate with biocide treated water to displace cement and clear tubing.
27. WOC per cement company recommendation. Tag cement at or above 429'. If not, consult with Evans Engineering.
28. MIRU WL. RIH 8 5/8" 24# CIBP to 80'. Set and pressure test to 1000 psi for 15 minutes. If tests, RDMO WL and WO rig.
29. Instruct cementing and wireline contractors to email copies of all job logs/jobs summaries to rscDJVendors@anadarko.com within 24 hours of completion of the job.
30. Supervisor is to submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
31. Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
32. Excavate hole around surface casing enough to allow welder to cut casing minimum 5' below ground level.
33. Welder cut casing minimum 5' below ground level.
34. Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
35. Spot weld on steel marker plate. Marker should contain well name, well number, legal location (1/4 1/4 descriptor) and API number.
36. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
37. Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
38. Back fill hole with fill. Clean location, level.

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