

Engineer: Tod Haanes

Cell: 303-929-2339

Date: 6/11/2015

## PLUG and ABANDONMENT PROCEDURE

**UPRR 42 Pan Am M1** API# 05 123 08153 Wins# 74562

### 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.). 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. Pull bumper spring and tag bottom. Run pressure bomb and obtain pressure gradient survey from surface to 8115' (halfway between J Sand perfs) making gradient stops every 1000'. Forward pressure bomb results to Evans Engineering. **Note: Do not run the BHP Survey after blowing down or killing the well with fluid.** 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. The last Form 17 test on 1/21/2015 recorded a Bradenhead pressure of 1 psi, no liquids, and no pressure buildup after 15 minutes.
5. MIRU WO rig. Kill well as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing joint, and LD.
6. **NOTE: There is no available CBL for this well. After running a CBL, design criteria will probably change.**
7. TOOH and SB 2-3/8" tubing.
8. PU scraper and RIH to 8070' for 4-1/2" 11.6 lb/ft casing. POOH, SB 8040' of tubing, and LD scraper.
9. MIRU hydrotester. PU CIBP and hydro test 2-3/8" tubing at 3000 psi to 8040'. Set CIBP at 8040' (collars unknown) to abandon the J Sand perfs. PU 5' and pressure test CIBP to 1000 psi for 15 minutes. Circulate gas from well bore to prepare for a CBL. TOOH and SB 6900' of 2-3/8" tubing.
10. RU WL. **Run a CBL from 8040' to the surface.** Forward results to Tod.Haanes@Anadarko.com in Evans Engineering.
11. PU dump bailer and spot 2 sxs of "G" cement on the CIBP at 8040'.
12. RIH with two 3-1/8" perf guns with 3 spf, 0.50" EHD, 120° phasing. Shoot 1' of squeeze holes at 7400' and 2' at 6870'. RD WL.
13. RU 4-1/2" CICR and RIH on 2-3/8" tubing and set at 6900'.
14. RU Cementers. Establish circulation through squeeze holes. **Pump Niobrara suicide squeeze:** 160 sxs (266 cf) 1:1:3 'Poz G Gel'+20% silica+0.4% CFL-3+0.4% CFR-2+0.1% SMS, mixed at 13.5 ppg & 1.66 cf/sk. Under-displace by 2 bbls and un-sting from CICR spotting a minimum of 100' cement on top of the squeeze holes. The plug will cover 7400' - 6770'. Volume is based on 530'

This well needs a CBL.

Calculated TOC 7421'

FHM 1377'; Sussex Top 4564'; Sussex Base 4866'; Shannon Base absent'; Niobrara Top 7295'

Closest HZ Offset Pad: 74' to the Wagner Pad 1-1N67W15

STIPs: No wildlife stips.

GYRO status: 10/16/2012

DV Tool at 832'.

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- in 9.0" OH from caliper with 20% excess, 630' in 4-1/2" production casing with no excess. RD cementers.
15. Slowly pull out of the cement and PUH to 6500'. Circulate tubing clean to ensure no cement is left in the tubing.
  16. TOOH and SB 4385' 2-3/8" tubing.
  17. MIRU WL. RIH with two 3-1/8" perf guns with 3 spf, 0.50" EHD, 120° phasing. Shoot 1' of squeeze holes at 4920' and 2' at 4355'. RD WL.
  18. RU 4-1/2" CICR and RIH on 2-3/8" tubing to set at 4385'.
  19. RU Cementers. Establish circulation through squeeze holes, and pump 5 bbls water with biocide, 20 bbls sodium metasilicate, and another 5 bbls spacer immediately preceding cement. **Pump Sussex suicide squeeze:** 340 sxs (391 cf) 0:1:0 'G'+0.5% CFR-2+0.2% FMC+0.5% LWA+0.25 lb/sk Polyflake, mixed at 15.8 ppg & 1.15 cf/sk. Under-displace by 2 bbls and un-sting from CICR spotting a minimum of 100' on top of the squeeze holes. The plug will cover 4920' - 4255'. Volume is based on 565' in 10.5" OH from caliper with 20% excess, 665' in 4-1/2" production casing with no excess. RD cementers.
  20. Slowly pull out of the cement and PUH to 4000'. Circulate tubing clean to ensure no cement is left in the tubing.
  21. TOOH and SB 880' 2-3/8" tubing.
  22. MIRU WL. RIH with two 3-1/8" perf guns with 3 spf, 0.50" EHD, 120° phasing. Shoot 1' of squeeze holes at 1540' and 2' at 850'. RD WL. A DV Tool is located at 832'.
  23. RU 4-1/2" CICR and RIH on 2-3/8" tubing to set at 880'.
  24. RU Cementers. Establish circulation through squeeze holes, and precede cement with 10 bbls SAPP and a 20 bbl water spacer. **Pump Fox Hills suicide squeeze:** 410 sxs (546 cf) Type III+0.3% CFL-3+0.3% CFR-2+0.25 lb/sk Polyflake, mixed at 14.8 ppg & 1.33 cf/sk. Sting out of retainer and spot 3 barrels on top of the CICR, which should be about 160' of cement on top of the squeeze holes. The plug will cover from 1540' to 720'. Volume is based on 690' in 10.5" OH from caliper with 40% excess, and 820' in 4-1/2" production casing with no excess. RD cementers.
  25. Slowly pull out of the cement and PUH to 500'. Circulate tubing clean to ensure no cement is left in the tubing.
  26. TOOH and SB 710' 2-3/8" tubing.
  27. RU WL. RIH and cut casing at 240'. RDMO WL.
  28. Circulate with fresh water containing biocide to remove any gas.

This well needs a CBL.

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Closest HZ Offset Pad: 74' to the Wagner Pad 1-1N67W15

STIPs: No wildlife stips.

GYRO status: 10/16/2012

DV Tool at 832'.

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29. Un-land casing. ND BOP. ND TH. Install BOP on casing head with 4-1/2" pipe rams.
30. TOOH and LD 240' of 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams.
31. RIH with 2-3/8" tubing to 710'.
32. Establish circulation with fresh water containing biocide and get bottoms up.
33. RU Cementers. Precede cement with 10 bbl (min) SAPP followed by a 20 bbl fresh water spacer.  
**Pump Stub Plug:** 80 sxs (106 cf) Type III+0.3% CFL-3+0.3% CFR-2+**0.25 lb/sk Polyflake**, mixed at 14.8 ppg & 1.33 cf/sk (470' in 4-1/2" production casing with no excess, 26' in 10.5" OH from caliper with 40% excess, 122' in 8-5/8" surface casing with no excess). The plug will cover 710' - 92'. RDMO cementers.
34. Pull up to 85'. Reverse circulate using fresh water treated with biocide to ensure that tubing is clean and that TOC is no higher than 85' (a CIBP will be set at 80'). TOOH.
35. WOC per cement company recommendation. Tag cement. Cement top needs to be above 114' (at least 100' above the surface casing shoe).
36. MIRU WL. RIH 8-5/8" CIBP to 80'. Set and pressure test to 1000 psi for 15 minutes. RDMO WL and WO rig.
37. 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.
38. Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
39. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
40. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
41. Welder cut casing minimum 5' below ground level.
42. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
43. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
44. Obtain GPS location data as per COGCC Rule 215 and send to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com).
45. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
46. Back fill hole with fill. Clean location, and level.
47. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.

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