10/6/2014

Engineer: Tyler Davis

Cell: 303-717-0764

PLUG AND ABANDOMENT PROCEDURE

Strong P 21-7JI

1. Note: Production Casing = 4 1/2" OD, 10.5#/ft; Production Hole Drilled @ 7 7/8."
2. Provide 48 hr notice to COGCC prior to rig up per request on approved Form 6 (e.g. call field coordinator, submit Form 42, etc.). Call IOC (970-506-5980) at least 24 hr prior to rig move. Request they catch and remove plunger, isolate production equipment and remove any automation prior to rig MIRU.
3. MIRU slick line services and VES. Pull bumper spring and tag bottom. Run gyro survey from 7480' to surface with stops every 100'. Run pressure bomb and obtain pressure gradient survey from surface to 7520' making gradient stops every 1000'. Forward gyro survey data and pressure bomb results to Sabrina Frantz. RDMO slick line services and VES.
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.
6. MIRU, kill well as necessary using clean fresh water with biocide and circulate. ND WH. NU BOP. Unseat landing jt, LD.
7. Notify cementers to be on call. Provide volumes listed below:
   - 7.1 Niobrara Plug: 171 cu ft/ 100 sx 50/50 Poz "G" w/20% silica flour, 3% gel, 0.1% sodium metasilicate and 0.4% FL-52 Mixed at 13.5 ppg and 1.71 cuft/sk yield (150' inside 8" OH + 20% excess and 150' inside 4-1/2" casing).
   - 7.2 SX Suicide: 402 cu ft/ 350 sx class "G" w/0.25 pps cello flake, 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cf/sx (1000' between 8.25" OH + 20% excess. 1000' inside 4 1/2" casing, no excess).
   - 7.3 Stub Plug: 239 cu ft/ 180 sx Type III CaCl2 cement w/0.25 pps cello flake mixed at 14.8 ppg and 1.33 cf/sx (100' inside 4-1/2" csg, 313' in 8.25" OH + 40% excess, and 209' in 8-5/8" surface casing).
8. TOOH 2-3/8" production tubing. Stand back 6430' of tbg. LD remaining.
9. MIRU WL. RIH gauge ring for 4-1/2" 11.6#/ft casing to 7480'. POOH.
10. RIH CIBP w/ WL. Set at +/- 7410'. POOH. PT CIBP to 1000 psi for 15 minutes. Dump bail 2 sx class "G" cement on CIBP.
11. PUH to 7000' and circulate all gas out of the hole and ensure the hole is full. POOH.
12. Run CBL from CIBP to Surface to verify there is no cement above 6550'. Send results to Tyler.Davis@anadarko.com and Brent.Marchant@anadarko.com immediately. Do not proceed without engineering consent. If there is any cement present around the SN/SX or Fox Hills we will need to re-evaluate cement jobs.
13. PU two 1' x 3-1/8" perf guns with 3 spf, 0.5" dia 120deg phasing. Shoot 1' of squeeze holes at 6540' and 6400'. RD WL.
14. PU CICR and RIH on 2-3/8" tbg while hydrotesting tbg to 3000 psi. Set CICR at approximately 30' below the top perf.
15. RU Cementers. Pump Niobrara Suicide: 171 cu ft/ 100 sx 50/50 Poz "G" w/20% silica flour, 3% gel, 0.1% sodium metasilicate and 0.4% FL-52 mixed at 13.5 ppg and 1.71 cuft/sk yield to place suicide squeeze between perfs from 6550' to 6400' (8.25" OH + 20% excess). Underdisplace and sting out of CICR to leave 3 bbls on top of retainer.
16. PUH to 6000'. Circulate 95 bbls water containing biocide to clear tubing. Then, TOOH and SB 3830' of tbg.
17. PU two 1' x 3-1/8" perf guns with 3 spf, 0.5" dia 120deg phasing. Shoot 1' of squeeze holes at 4800' and 3800'.
18. PU and RIH w/ CICR and 2-3/8" tubing and set CICR at 3830'.
19. RU Cementers. Pump 5 bbl water w/biocide, 20 bbl Sodium Metasilicate, and another 5 bbl spacer immediately preceding cement.

20. Pump SX Suicide: 402 cu ft/ 350 sx class "G" w/0.25 pps cello flake, 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cf/sx (1000’ in 8.25” OH + 20% excess and 1000’ inside 4-1/2” casing) to place suicide squeeze between perfs from 4800’ to 3800’. Under displace and sting out of CICR to leave 3 bbls on top of retainer.
21. PUH 3500’. Circulate 55 bbls water containing biocide to clear tubing. Then, TOOH and LD all but 1030’ of tbg.
22. RU WL. Shoot off casing at or below 930'. RDMO WL. Circulate water containing biocide to remove any gas.
23. NDBOP, NDTH.
24. Install BOP on casing head with 4-1/2" pipe rams.
25. TOOH with 4-1/2" casing, LD.
26. RIH with 2-3/8 " tubing to 1030'.
27. RU Cementers. Pump 10 bbl SAPP with a minimum of 20 bbl fresh water spacer. Spot Stub Plug: 239 cu ft/ 180 sx Type III CaCl2 cement w/0.25 pps cello flake mixed at 14.8 ppg and 1.33 cf/sx (100' in 4-1/2" prod casing, 313' in 8.25" OH + 40% excess, and 209' in 8-5/8" surface casing) from 930’ to 410’
28. PUH to 200’ and circulate 15 bbls water containing biocide.
29. TOOH. WOC 4 hrs. Tag Cement. Cement top needs to be above 410'; Proceed assuming TOC is above 410'. Otherwise, call production engineer.
30. MIRU WL. RIH 8-5/8” CIBP to 80'. Set, PT to 1000 psi for 15 min. If tests, RDMO WL and WO rig.
31. Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries and invoices to rscDJVendors@anadarko.com within 24 hrs of the completion of the job.
32. Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
33. Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
34. Excavate hole around surface casing enough to allow welder to cut 8 5/8” casing minimum 5’ below ground level.
35. Welder cut 8 5/8" casing minimum 5' below ground level.
36. MIRU ready cement mixer. Use 4500 psi compressive strength cement, (NO gravel) fill stubout.
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. Properly abandon flowlines per Rule 1103.
39. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
40. Back fill hole with fill. Clean location, level.
41. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed. File electronic Form 42 once abandonment complete.