Engineer: Chris Cordaro
Cell: 432-209-1371

PLUG and ABANDONMENT PROCEDURE

VOLLMER 8-17

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. Gyro was run on 11/10/2011
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 and spot in empty pipe trailer. Kill well as necessary using biocide treated fresh water. ND WH. NU BOP. Unland tbg using unlanding joint and LD.
6. TOOH and SB 2-3/8" tbg.
7. PU and TIH with bit and casing scraper for 4 ½" 11.6#. Tally in to 7100'. If tag high, contact engineer. TOH and LD bit and scraper.
8. TIH with tubing and tubing set 4-1/2", 11.6# CIBP with mechanical setting tool and set at 7050' (Collars at 7030' and 7070'). POOH and RD WL.
9. MIRU Cementers. **Niobrara/Codell Balance Plug:** Pump minimum of 25 sxs (38 cf, 6.8 bbl) 15.8 ppg & 1.53 cf/sk. Volume based on 438'+ inside 4-1/2" production casing with no excess. Cement will be from 7050' – 6612'. RD Cementers.
10. Slowly pull out of the cement and LD tubing to keep 4125'. Reverse circulate tbg clean to ensure no cement is left in the tbg. TOH with remaining tubing and SB. LD setting tool
11. PU and RIH with 3-1/8" perf guns with 4 spf, min 0.5" EHD, 90° phasing. Shoot 4' of squeeze holes at 4553' and 4' of squeeze holes at 4153'. RDMO WL.
12. PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 4183'.
13. Establish circulation to surface with biocide treated fresh water, and pump 100 bbls to clean up hole.
14. RU Cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump **GAS BLOK Sussex Squeeze**: 115 sx (36.7 bbl or 205 cf) assuming 12 ppg & 1.79 cf/sk. Slurry could be different– confirm yield, volume, and max pressure before pumping. Confirm circulation with water at 2 bpm under 1400# - if not possible contact engineer. Pump cement at 2 bpm and under displace by 3 bbls. Volume is based on 370' below the CICR inside 4-1/2", 11.6# production casing with no excess, 400' in the 4-1/2" annulus assuming 7.88" bit size with 60% excess and 205' on top of the CICR to cover top perfs. Leave approximately 200# on production casing and surface casing overnight. RD Cementers.
15. Slowly pull out of the cement and TOOH to 3300'. Reverse circulate to ensure no cement is left in the tbg.
16. After pumping the squeeze at 4183', SD and WOC at minimum 4 hrs; verify gas migration has been eliminated. If evidence of gas migration or pressure remains, contact engineer.
17. TOOH and SB 1300' of 2-3/8" tbg. LD stinger, and remaining tbg.
18. RIH and jet cut 4-1/2" casing at 1200'. RDMO WL.
19. Attempt to circulate with biocide treated fresh water to remove any gas.
20. 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.
21. Install BOP on casing head with 4-1/2" pipe rams.
22. TOOH and LD all 4-1/2" casing. Remove 4-1/2" pipe rams and install 2-3/8" pipe rams.
23. TIH with 2-3/8" tbg to 1300'.
24. Establish circulation with biocide treated fresh water and pump pump 200 bbls to clean up hole. Call engineer if any gas is present.

Engineer: Chris Cordaro
Cell: 432-209-1371

PLUG and ABANDONMENT PROCEDURE

VOLLMER 8-17

25. **If no gas is present, pump stub plugs back to back**. RU Cementers. **Pump GAS BLOK Lower Stub Plug:** Pump 10 bbls (min) SAPP and 5 bbls fresh water spacer followed by 310 sx (356 cf, 63.5 bbl), 14 ppg, & 1.15 cf/sk cement. Slurry could be different – confirm yield, volume, and max pressure before pumping. Volume is based on 100' in 4-1/2" production casing with no excess, and 500' in 7-7/8" bit size OH with 100% excess. The plug will cover 1300'– 700'. RDMO Cementers.
26. Slowly pull out of the cement and TOH to 700'. Reverse circulate using biocide treated fresh water to ensure the tbg is clean. Put 200# on Production casing and leave overnight. WOC at minimum 8 hrs; verify gas migration/pressure on surface casing has been eliminated.
27. TIH and tag cement with tapped bull plug on bottom of tubing and perforated sub. Contact Engineer with tag. Pull up and get ready for next plug.
28. RU Cementers. **Pump GAS BLOK Upper Stub Plug:** Pump 10 bbls (min) SAPP and 5 bbls fresh water spacer followed by 190 sxs (219 cf, 39 bbl), 14 ppg, & 1.15 cf/sk cement. Slurry could be different– confirm yield, volume and max pressure before pumping. Volume is based on 197' in 7 7-8" OH with 100% excess, and 200' in 8 5/8" casing with no excess. The plug will cover 700'– 303'. RDMO Cementers.
29. Slowly pull out of the cement and TOH. Reverse circulate using biocide treated fresh water to ensure the tbg is clean. Put 200# on Production casing and leave overnight .WOC at minimum 8 hrs; verify gas migration/pressure on surface casing has been eliminated.
30. MIRU wireline – tag TOC. Must be at least 453'. If less, contact engineer.
31. Pressure test casing. Test shall be 500psi for 15mins. If well fails pressure test PU TIH with (8-5/8", 24#) packer and set just above cement top. Re-test casing. If casing still fails test, contact engineering.
32. RIH (8-5/8", 24#) CIBP to 80' and set. RDMO WL and WO rig.
33. 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.
34. Supervisor submit paper copies of all invoices, logs, and reports to Platteville Engineering Specialist.
35. Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
36. 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.
37. Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
38. Welder cut casing minimum 5' below ground level.
39. Fill casing to surface using 4500 psi compressive strength cement (NO gravel).
40. Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
41. Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
42. Properly abandon flow lines per Rule 1103. File electronic Form 42 once abandonment is complete.
43. Back fill hole with fill. Clean location, and level.
44. Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.