

Engineer: JENSINE DOYLE

PLUG and ABANDONMENT PROCEDURE

STEWARDSON 31-33

Description

1. Well needs a Fox Hills squeeze from 1420'-1220' for aquifer coverage, casing pressure test, and wellhead change.
2. Contact field foreman or field coordinator before rig up to isolate production equipment if possible. Notify Automation Removal Group at least 24 hours prior to rig move. If surface casing is not accessible at ground level, re-pipe so valve is at ground level. Plug all disconnected valves around wellhead.
3. MIRU Slickline. Pull production equipment. Record tag depth in OpenWells. WELL NEEDS GYRO. RD slickline.
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. Spot an empty tubing float. Kill well as necessary with biocide treated freshwater. ND WH, NU BOP. Unland tbg using unlanding joint and LD.
7. MIRU EMI services. EMI 2-3/8" tbg while TOO H and tally while standing back. Lay down joints that have greater than 35% penetration or wall loss. Replace all joints that fail EMI testing. Document joint numbers and depth of bad tubing and create a Production Equipment Failure Report in OpenWells. RDMO EMI services.
8. MIRU WL. PU and RIH with (4.5", 11.6#) gauge ring to 7390'. POOH.
9. PU and RIH with (4.5", 11.6#) CIBP. Set CIBP at +/- 7380' (Collars at 7370', 7410'). POOH. RDMO WL.
10. TIH with 2-3/8" tbg to 7380'. Pumping biocide treated fresh water, circulate gas out, pressure test CIBP and production casing to 1000 psi for 15 minutes. If test fails, contact Engineering.
11. TOO H and SB all 2-3/8" tubing.
12. MIRU WL and run CCL-GR-CBL-VDL from +/- 4965' to surface. Forward to Engineering. In addition to normal handling, of logs/job summaries, email copies of all cement job logs/job summaries and invoices to DJVendors@anadarko.com within 24 hours of completion of the job. Note that squeeze location may change depending on log results.
13. PU and RIH with one 1' 3-1/8" perf guns with 3 spf, 0.5" EHD, 120° phasing. Shoot 1' of squeeze holes at 1420'. POOH. RDMO WL.
14. PU and TIH with (4.5", 11.6#) CICR on 2-3/8" tbg while hydrotesting to 4000 psi and set at +/- 1390'. Establish circulation through squeeze holes with biocide treated freshwater and circulate

a minimum of 100 bbls through squeeze holes. Max circulating pressure should be 590 psi at 2 BPM.

15. MIRU Cementing. Establish circulation and pump 20 bbls (5 bbls of water, 10 bbls of sodium silicate, and 5 bbls water) spacer, 55 sx Fox Hills cement (85 cf, 15 bbls) 14 ppg, 1.55 yld. Underdisplace by 1 bbls. Calculations based on 100' in the annulus between 7.88" hole and 4.5" casing with 100% excess, 100' in the annulus between 8-5/8" surface casing and 4.5" casing, 30' below CICR in 4.5" casing, and 64' above CICR. Attempt to cement from 1420' to 1220'. Max pump pressure should not exceed 409 psi.
16. PUH to 1000' and reverse circulate tbg clean to ensure no cement is left in tbg. TOOH. SB all tbg. LD stinger. WOC 24 hours.
17. PU and TIH with 3-7/8" bit and appropriate number of 3-1/2" drill collars on 2-3/8" tbg. Time drill cement above CICR (~64'). If ROP is faster than 2 min/ft, SD and WOC 24 hours and repeat. Drill down to CICR located at 1390'. Drill CICR and cement past lower perf at 1420' and pressure test holes to 500 psi for 15 minutes.
18. TOOH and SB tbg, LD drill collars, LD bit.
19. MIRU WL and run CCL-GR-CBL-VDL from +/- 1750' to surface. Forward to Engineering. In addition to normal handling, of logs/job summaries, email copies of all cement job logs/job summaries and invoices to DJVendors@anadarko.com within 24 hours of completion of the job.
20. PU and TIH with bit on 2-3/8" tbg. Drillout CIBP at +/- 7380' and chase down to 8211'.
21. TOOH. SB all tbg. LD bit.
22. PU TIH with 2-3/8" NC, 2-3/8" XN nipple, and 2-3/8" tubing to surface. Land tubing at +/- 7401' (1 jt above top Niobrara perf). Verify XN nipple size and enter in Open Wells.
23. RU rig lubricator. Broach tubing to XN nipple. RD rig lubricator.
24. ND BOP, NU 7-1/16", 5,000 psi flanged tubing head adaptor w/ new 2-1/16", 5,000 psi flanged master valve. Replace packing on all gland nuts/lockdown pins with new packing. Replace tubing hanger seals with new o-rings. Put new R46 gasket on tubing head. Make sure all wellhead valves are rated to 5,000 psi and all nipples are XXH. Torque and test WH. Document wellhead components in an OpenWells wellhead report.
25. RU hydrotester. Install 2-3/8" pup joint above master valve. Hydrotest wellhead first to 500 psi for a low pressure test. Then, hydrotest wellhead to 5,000 psi from below tubing head through master valve for 15 minutes. No leakoff will be accepted. Please record results of pressure test. RD hydrotester.
26. Secure wellhead, clean up location. RDMO WO rig.