

PLUG AND ABANDONMENT PROCEDURE

Engineer: Nicole Schaly

Cell: 419-908-8781

UPRR 38 PAN AM F 1

- | Step | Description of Work |
|------|--|
| 1 | 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 Automation Removal Group at least 24 hr prior to rig move. Request they isolate production equipment and remove any automation prior to rig MIRU. |
| 2 | Check and report surface casing pressure. If surface casing is not accessible at ground level, re-plumb so valve is at ground level. Notify Engineering immediately if pressure is found on surface casing. FM 17 on 1/20/2011 showed zero pressure. |
| 3 | Prepare location for base beam equipped rig. Install perimeter fence as needed. |
| 4 | Call KLX when preparing to RU. (Josh 970-702-1294). They are bringing in PH6 as a work string and will be fishing company. |
| 5 | MIRU, kill well as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing jt. 2 3/8" tbg is landed @ 1335' KB with 43 jts. TOOH and LD all J-55 tubing. |
| 6 | MIRU SL. RIH w/ impression block. TOOH, and inspect. Discuss with engineer. |
| 7 | PU spear, jars, bumper sub, drill collars, and PH6. RIH on PH6 to 1355', tag fish. Latch into fish (fish is 2 1/2 hydraulic packers, top of fish is the rubber elements and slips of the top packer). POOH. If fish cannot move, call engineer. |
| 8 | If fish is removed, continue with P&A as follows. LD PH6, use J55 for the remainder of the P&A. |
| 9 | PU 2 3/8" J55 workstring to be used for the remainder of the P&A. PU 4 1/2" casing scraper and RIH to 7200'. TOOH, LD scraper. |
| 10 | MIRU WL. RIH w/ 4 1/2" (10.6#/ft) CIBP and set at 7190'. Load well with water treated with biocide as WL is POOH. |
| 11 | Run a CBL from ~7000' to surface. Forward results to Evans Engineering. RDWL. Results important over the aquifer. If air still in hole when logging shallower than 950', plan to TIH and circulate gas out and then re-run that portion of CBL. |
| 12 | MIRU hydrotester. RIH w/ 2 3/8" J55 tubing while hydrotesting to 3000 psi. TIH to 7190', tag CIBP and PU 5'. RDMO hydrotester. PT CIBP to 500 psi for 15 minutes. |
| 13 | MIRU cementers. Pump Niobrara Balanced Plug: 30 sx Thermal 35 + 0.5% CHR-2 + 0.25% FMC blend mixed at 15.6 ppg and 1.51 cuft/sx (400' inside 4 1/2" casing, no excess). The plug will cover 7190' - 6790'. RD cementers. |
| 14 | RUH to 6400', reverse circulate tubing clean to ensure no cement is in tubing. |
| 15 | P&SB 4425' of tubing, LD remainder. |

- 16 MIRU WL. PU and RIH w/ 3' of 3 1/8" perf guns and shoot 1' of squeeze holes at 4795' and 2' of squeeze holes at 4395' with 3 spf, 0.59" diam, 120deg phasing (total of 9 shots). POOH and RD WL.
- 17 PU 4 1/2" CICR on 2 3/8" tbg and TIH to 4425', set CICR @ 4425'. Establish circulate with fresh water treated with biocide.
- 18 MIRU Cementers. Pump 20 bbls sodium metasilicate and a 5 bbl water spacer followed by Sussex Suicide Squeeze: 320 sx Class "G" cement with 0.25 pps cello flake, 0.5% CFR-2 + 0.2% FMC + 0.5% LWA, mixed at 15.8 ppg and 1.15 cuft/sx (400' in 12" OH from caliper with 20% excess, 500' in 4 1/2" production casing with no excess). Underdisplace by 3 bbls and unsting from CICR spotting at least 100' of cement over squeeze perfs. The plug will cover 4795' - 4395'. RDMO cementers.
- 19 PUH to 4000' and circulate tubing clean to ensure no cement is in the tubing. PUH to 950', LD remainder.
- 20 RU cementers and establish circulation. Pump a balanced plug from 950' to 100' as follows: 60 sx Type III w/ 0.3% CFL-3 + 0.3% CFR-2 mixed at 14.8 ppg and 1.33 cf/sx (850' in 4 1/2" casing with no excess). The plug will cover 950' - 100'. RD cementers.
- 21 PUH to 100' and circulate water with biocide to clear tbg. WOC per cement company recommendation.
- 22 Tag Cement. TOC should be at or above 112'. If not, consult engineer.
- 23 MIRU WL. RIH 4 1/2" CIBP to 100'. Set and PT to 1000 psi for 15 min. If tests, RDMO WL and WO rig.
- 24 Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to rscDJVendors@anadarko.com within 24 hrs of completion of the job.
- 25 Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
- 26 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 27 Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
- 28 Welder cut 8 5/8" and 4 1/2' casing minimum 5' below ground level.
- 29 Fill the 4 1/2" casing to surface using 4500 psi compressive strength cement, (NO gravel).
- 30 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 31 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 32 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 33 Back fill hole with fill. Clean location, level.
- 34 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.