

PLUG AND ABANDONMENT PROCEDURE

Michael Schwarz - Production Engineer I
(970) 339-1067 – Office (832) 623-8140 - Cell
Michael.Schwarz@anadarko.com

MATHISEN JAMES H "B" #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 catch and remove plunger, isolate production equipment and remove any automation prior to rig MIRU. |
| 2 | MIRU slickline services. Pull bumper spring and tag bottom. RDMO slickline services. |
| 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. |
| 5 | MIRU, kill as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing jt, LD. Spot trailer with additional 2-3/8" WS (approximately 14 jts.) |
| 6 | TOOH and stand back 2 3/8" production tubing (250 jts landed @ 7974'). |
| 7 | PU and RIH with scraper for 4-1/2" 11.6#/10.5# csg to 7950'. TOOH and LD scraper and 37 jts of 2-3/8" tbg. |
| 8 | PU and RIH with 4-1/2" CIBP and 2-3/8" for 10.5# csg and set at 7860'. Circulate gas out of wellbore and pressure test CIBP to 1000psi. TOOH and SB 2-3/8" tbg. |
| 9 | MIRU WL. RIH with CBL to 7800' and log to surface. Forward results immediately to Michael Schwarz and Brent Marchant in Evans Engineering. Pending results, we may wish to re-run the log from ~1400' to surface under pressure. PU dumpbailer and 2 sks cmt and set on top of CIBP at 7910'. |
| 10 | PU and RIH with 3-1' 3-1/8" perf guns with 3 spf, 0.5" diam, 120 phasing. Shoot 1' of squeeze holes at 7220' and 2' @ 6750'. RDMO WL. Notify cementers to be on call. |
| 11 | PU 4-1/2" CICR and RIH on 2-3/8" tbg while hydrotesting to 3000 psi. Set CICR at 6780' (+/- 10' per CCL) |
| 12 | RU Cementers. Establish injection through perfs. Pump Niobrara Suicide plug : 342 cu-ft (200 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 cf/sk. Underdisplace by 3 bbls and sting out of CICR to leave final 3 bbls on top of retainer. Volume based on 10" hole with 40% excess. Calculated TOC in the 4-1/2" csg is 6600' |
| 13 | PUH to leave end of tubing at 5150' and circulate hole clean. SB 166 jts of 2-3/8" tbg. |

- 14 Pump Sussex Balanced plug: 90.5 cu-ft (80 sks) "G" w/ 0.4% CD-32, 0.4% ASA-301 with CaCl₂ as necessary mixed at 15.8 ppg, 1.15 cuft/sack. Calculated top of plug at 4090' based in the 4-1/2" csg covering SQZ holes at 4241' and 4951'. RD Cementers.
- 15 PUH to ~3900' and circulate hole clean. WOC per cement company recommendation.
- 16 RIH and tag top of plug at 4090'. POOH, standing back 46 jts and laying down the rest.
- 17 MIRU Wireline. PU and RIH with 3-1' 3-1/8" perf guns with 3 spf, 0.5" diam, 120 phasing. Shoot 1' of squeeze holes at 1410' and 2' @ 800'. (Note: Adjust top sqz hole based on CBL, should be 15-20' from BOC at DV Tool at 778')
- 18 PU and RIH with 4-1/2" CICR and set at 830' (+/- 10' per CCL). RDMO WL.
- 19 PU stinger for 4-1/2" CICR and RIH on 2-3/8" tbg and sting into CICR at ~830'.
- 20 RU Cementers. Establish injection through perfs. Pump 10 bbls SAPP mud flush followed by 20 bbls spacer of fresh water w/ biocide. Pump Fox Hills Suicide plug: 591 cu-ft (450 sx) Type III w/cello flake and CaCl₂ as deemed necessary, mixed at 1.33 cf per sack, 14.8 ppg. Underdisplace by 55 sx and sting out of CICR placing the final 55 sx on top of the CICR. Plug size is based on 11" hole with 40% excess covering 1410' to BOC of DV Tool at 778', plug to surface into the 4-1/2" csg, covering the DV Tool and sqz holes. RD Cementers.
- 21 POOH and lay down stinger. WOC per cement company recommendation.
- 22 RIH and tag top of plug. Plug needs to be tagged at 50' or shallower. Consult Evans Engineering to confirm tag. POOH and LD 2-3/8" tbg.
- 23 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.
- 24 Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
- 25 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 26 Excavate hole around surface casing enough to allow welder to cut casing minimum 5' below ground level.
- 27 Welder cut casing minimum 5' below ground level.
- 28 Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
- 29 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 30 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 31 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 32 Back fill hole with fill. Clean location, level.
- 33 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.