

## Raith 6-15A: Plug & Abandonment

- 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.). Call IOC (970-506-5980) at least 24 hours prior to rig move. Request they catch and remove plunger, isolate production equipment, and remove any automation equipment prior to MIRU.
- 2 MIRU slickline. RIH to retrieve production equipment and tag for fill. Note tagged depth in OpenWells. RDMO slickline.
- 3 Prepare location for base beam equipped rig. Install perimeter fence as needed.
- 4 Check and report surface casing pressure. If surface casing is not accessible at ground level, re-plumb so valve is at ground level
- 5 MIRU WO rig. Kill well as necessary with water and biocide. ND wellhead. NU BOP.
- 6 Unland 2-3/8" tbg (249 total joints landed at 7747') and TOOHS standing back all 2-3/8" tubing.
- 7 MIRU wireline. PU and RIH with CIBP (4-1/2", 11.6#) to set at 7700' (collars at 7690' & 7732'). POOH. RDMO wireline.
- 8 MIRU hydrotester. Hydrotest 2-3/8" tubing to 3000psi while TIH open ended. Tag CIBP set at 7700'. PUH just above CIBP and circulate all gas out of the hole. Pumping water with biocide, pressure test the CIBP and production casing to 1000psi for 15 minutes. If pressure test passes, proceed to next step; otherwise contact engineering.
- 9 MIRU cementing services. Establish circulation with water and pump 70 sx Class "G" cement with 20% silica flour, 0.4% CD-32 and 0.4% ASA-301 mixed at 15.8ppg and 1.38 cuft/sx (cement volumes based on 4-1/2" 11.6# casing capacity from 7700' to 6600' with no excess). Displace cement to estimated TOC at 6600' using approx. 25 bbls water. TOOHS and stand back 21 stands of 2-3/8" tubing so EOT at +/- 6390'. Reverse circulate using approx. 50 bbls water (2 times tubing volume) or until returns are clean. RDMO cementing services.
- 10 TOOHS and stand back 4140' of 2-3/8" tubing and LD extra tubing.
- 11 MIRU wireline. PU and RIH with two 1' long 3-1/8" perf guns and shoot squeeze holes at 4110' and 4510' using 3 SPF, 0.5" EHD, 1' net, 3 total shots. RDMO wireline.
- 12 PU & TIH with CICR on 2-3/8" tubing. Set CICR at 4140' (no collar locator ran at this depth to correlate to).
- 13 MIRU cementing services. Establish circulation with water and pump 20 bbls sodium metasilicate, 5 bbl water spacer, 180 sx Class "G" cement with 0.25 pps cello flake, 0.4% CD-32 and 0.4% ASA-301 mixed at 15.8ppg and 1.15 cuft/sx (cement volumes based on 9" caliper plus 20% excess from 4510' to 4110' and 4-1/2" 11.6# casing capacity with no excess from 4510' to 3950'). Underdisplace cement in tubing using 13bbls water (3 bbls short of CICR set at 4140'). TOOHS and stand back 6 stands of 2-3/8" tubing so EOT at +/- 3750'. Reverse circulate using approx. 29 bbls water (2 times tubing volume) or until returns are clean. RDMO cementing services.
- 14 TOOHS and stand back 1250' of 2-3/8" tubing and LD extra tubing.
- 15 MIRU wireline. RIH and jet cut 4-1/2" production casing at 1150'. RDMO wireline. Circulate bottoms up and continue circulating to remove any gas from wellbore.
- 16 ND BOP. Install BOP on surface casing head with 4-1/2" pipe rams. Install 3000 psi ball valves on both casing head outlets. Install a choke or choke manifold on one outlet.
- 17 TOOHS and LD 1150' of 4-1/2" casing.
- 18 TIH w/ 2-3/8" tubing open ended to 1250' (100' inside the 4-1/2" stub).
- 19 MIRU cementing services. Establish circulation with water and pump 10 bbls SAPP mud flush, 20 bbls fresh water spacer, then balanced stub plug using 290 sx Type III cement with cello flake and CaCl<sub>2</sub> as necessary, mixed at 14.8 ppg and 1.33 cuft/sx (cement volumes based on 100' inside 4-1/2" casing, 489' in 9" hole with 40% excess, and 200' in 8-5/8" surface casing). RDMO cementing services.
- 20 TOOHS and LD 2-3/8" tubing until EOT at +/- 200'. Circulate down tubing and up surface casing/tubing annulus until returns are clean to ensure CIBP can be set in clean surface casing. Finish TOOHS and LD 2-3/8" tubing. WOC to set up per cementing company recommendation.

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- 21 MIRU wireline. RIH to tag cement plug at +/- 460'. If cement is not above 460' contact engineer, otherwise proceed to next step.
- 22 PU and RIH with CIBP (8-5/8", 24#/ft). Set CIBP at 80' and pressure test the CIBP to 1000psi for 15mins. If pressure test fails contact engineering, otherwise proceed to next step.
- 23 RDMO wireline. RDMO WO rig.
- 24 Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com) within 24 hours of completion of job.
- 25 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
- 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 casing minimum of 5' below ground level.
- 28 Welder cut casing minimum of 5' below ground level.
- 29 Fill casing to surface using 4500psi 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](mailto:rscDJVendors@anadarko.com)
- 32 Properly abandon flowline per Rule 1103. File electronic Form 42 once abandonment complete.
- 33 Back fill hole with fill. Clean and level location.
- 34 Submit Form 6 to COGCC ensuring to provide "As Performed" WBD identifying operations completed.

Casey Decker - Production Engineer II

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