

## PLUG AND ABANDONMENT PROCEDURE

### MAYER 27-2L

- | 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 IOC (970-506-5980) at least 24 hr prior to rig move. Request they catch plunger, 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.  |
| 3    | Prepare location for base beam equipped rig. Install perimeter fence as needed.   |
| 4    | MIRU slickline services. Pull bumper spring and tag bottom. RDMO slickline services.  |
| 5    | MIRU, kill as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing jt, LD.   |
| 6    | TOOH and SB 1.66" IJ production tubing (223 jts landed @7276').   |
| 7    | MIRU Warrior WL. RIH w/ gauge ring for 2 7/8" 6.5# tbg to 7000'. RIH 2 7/8" CIBP and set at 6985' to abandon Codell/Niobrara perms. Pressure test plug and csg to 2500 psi for 15 minutes.  |
| 8    | Run a gyro directional survey from CIBP to surface with 100' stops. Forward results to Sabrina Frantz in Evans.   |
| 9    | Run a CBL from CIBP to surface to verify cement coverage. Forward results to Evans Engineering for plugging modifications as necessary.   |
| 10   | RIH 1.66" IJ tbg open-ended to CIBP @ 6985'. Hydro-test tbg to 3000 psi.  |
| 11   | RU cementers and equalize a balanced plug above CIBP from 6985' to 5923' as follows: 25sx "G" w/20% silica flour, 0.4% CD-32, 0.4% ASA-301 and R-3 to achieve 2:30 pump time, mixed at 15.8 ppg and 1.38 cuft/sk. (34.5 cuft of slurry)   |
| 12   | Pull and LD tbg to ~5000' and reverse circulate clean w/fresh water treated with biocide.   |
| 13   | TOOH and LD tbg to place EOT @ 4570'.   |
| 14   | RU cementers and equalize a balanced plug from 4570' to 3685' as follows: 25 sx class "G", w/0.4% CD-32, 0.4% ASA-301, and CaCl2 as deemed appropriate mixed at 15.8 ppg and 1.15 cuft/sk (29 cuft of slurry).  |
| 15   | POH to ~3000. Circulate tbg and csg clean with fresh water treated w/biocide.. WOC per cementing company recommendation.  |
| 16   | Tag cement @ 3685'. POH and LD tbg.   |
| 17   | RU WL, RIH w/ chemical cutter or jet cutter and cut 2 7/8" casing at 970'. Circulate bottoms up using drilling mud and continue circulating to remove any gas from wellbore. RD WL.   |
| 18   | ND BOP and wellhead. Install BOP on surface casing head with 2 7/8" pipe rams. Install 3000 psi ball valves on both casing head outlets. Install a choke or choke manifold on one outlet. NOTE:   |

- If 2 7/8" casing did not pass PT in step 7, TOOH and hydro-test in to 2500 psi before proceeding to step 19.
- 19 RU cementers. Pump 10 bbl SAPP (Sodium Acid Pyrophosphate) followed by 20 bbl (min) fresh water spacer immediately preceding cement.
  - 20 Pump a balanced plug 970'-350': 260 sx (346 cuft.) Type III cement w/ 0.25 pps cello flake and CaCl<sub>2</sub> as deemed necessary mixed at 14.8 ppg and 1.33 cf/sk . Design to fill 412' in 10" OH + 20% excess and 208' in 8 5/8" surface casing. Caliper log on file.
  - 21 TOOH and LD 2 7/8" tbg. WOC per cementing company recommendation. Tag plug; TOC should be 458' or higher. If not, Consult Evans engineering before proceeding.
  - 22 MIRU WL. RIH 8 5/8" CIBP to 80'. Set and PT to 1000 psi for 15 min. If tests, RDMO WL and WO rig.
  - 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 Joleen Kramer.
  - 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 8 5/8" casing minimum 5' below ground level.
  - 27 Welder cut 8 5/8" 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.

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