

PLUG AND ABANDONMENT PROCEDURE

STATE 16-13J7

| Step | Description of Work |
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| 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 foreman or lead operator at least 24 hr prior to rig move. Request they catch and remove the plunger, isolate production equipment and remove any automation prior to MIRU. |
| 2 | Notify IOC when rig mobilizes to location to generate workorder for flowline removal & one call for line locates. |
| 3 | Prepare location for base beam equipped rig. Install perimeter fence as needed. |
| 4 | MIRU, kill well as necessary using fresh water with biocide. ND WH. NU BOP. Unseat landing jt. |
| 5 | TOOH and stand back 2.063" IJ tbgr. 229 jts = 7298' reported in hole. |
| 6 | MIRU WL. RIH gauge ring for 3 1/2" 7.7#/ft casing to 7300'. RIH CIBP w/ WL. Set at 7220'. PT Casing to 1000 psi for 15 minutes. RDWL. |
| 7 | TIH w/ 2.063" tbgr open-ended to CIBP @ 7220', hydrotesting to 3000 psi. |
| 8 | RU cementers and spot a balanced plug in 3 1/2" casing from 7220' - 6550' as follows: 25 sx "G" w/20% silica flour, 0.4% CD-32, 0.4% ASA-100 and R-3 to achieve 2:30 pump time. (34 cuft of slurry) |
| 9 | Pull and LD tbgr to ~6000' and reverse circulate clean w/fresh water treated with biocide. |
| 10 | TOOH and LD remaining 2.063" tbgr. |
| 11 | ND BOP and wellhead. Install BOP on surface casing head with 3 1/2" pipe rams. Install 3000 psi ball valves on both casing head outlets. Install a choke or choke manifold on one outlet. |
| 12 | RU WL. RIH with linear cutter or chemical cutter and cut off 3 1/2" casing at 4300' per CCL. RDMO WL. Circulate bottoms up using drilling mud and continue circulating to remove any gas from wellbore. |
| 13 | MIRU cementers and equalize an open-hole plug from 4300' to 3900': 120 sx "G" w/ 0.25pps cello flake, 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cuft/sk; 138 cuft of slurry. Precede cement with 20 bbl sodium metasilicate and 5 bbl water spacers. Cement volume based on 7" hole size with 20% excess (Caliper log on file). |
| 14 | Pull 3 1/2" tbgr up to ~3000' and circulate clean. WOC per cement company recommendation. |
| 15 | Tag plug at 3900'. LD 3 1/2" to bring end of tbgr to 900'. |
| 16 | RU Cementers. Equalize cement plug from 900' to 270': 140 sx Type III w/0.25 pps cello flake and CaCl ₂ as necessary mixed at 14.8 ppg and 1.33 cuft/sk; 140 cuft of slurry. Volume based on 7" hole 900' - 474' with 20% excess, and 7" surface casing 474' - 270'. |

- 17 TOH and WOC per cement company recommendation.
- 18 Tag cement to confirm TOC is at or above 374'.
- 19 MIRU WL. Run and set 7" CIBP at 80'. PT CIBP and surface casing 1000 psi for 15 min. Assuming successful test, RD wireline and rig.
- 20 Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries and invoices to rscDJVendors@anadarko.com within 24 hrs of the completion of the job.
- 21 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
- 22 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 23 Excavate hole around surface casing enough to allow welder to cut 7" casing minimum 5' below ground level.
- 24 Welder cut 7" casing minimum 5' below ground level.
- 25 Fill surface casing with 4500 psi compressive strength cement, (NO gravel).
- 26 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 27 Properly abandon flowlines per Rule 1103.
- 28 Obtain GPS location data per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 29 Back fill hole with fill. Clean location, level.
- 30 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed. File electronic Form 42 once abandonment complete.

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