

PLUG AND ABANDONMENT PROCEDURE

HSR-WARREN 12-35A

- | 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 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. |
| 3 | Prepare location for base beam equipped rig. Install perimeter fence as needed. |
| 4 | MIRU, check and bleed off any pressure on casing (all perfs are below a bridge plug). ND WH. NU BOP. |
| 5 | PU 2 3/8" tbg to tag cement plug @ 6565'. 197 jts reported in well landed @ 6467'. Tally out and stand back 4280' tbg. |
| 6 | RUWL. PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 4660' and 4250'. RDWL. |
| 7 | PU CICR on 2 3/8" tbg. RIH, hydro-testing to 3000 psi, and set CICR at 4280'. |
| 8 | RU Cementers. Pump 5 bbl water w/ biocide, 20 bbl Sodium Metasilicate, and another 5 bbl spacer immediately preceding cement. |
| 9 | Pump Sussex Suicide: 260 sx class "G", w/0.25 pps cello flake, 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cuft/sk (299 cuft of slurry) to place cement between perfs. Underdisplace and sting out of CICR to leave 3 bbls cement on top of retainer. Cement volume based on 10.5" hole with 20% excess. Caliper log on file. |
| 10 | POH 10 stands. Circulate water containing biocide to clear tubing. POH standing back 1470' of tbg. |
| 11 | RU WL. Crack coupling or cut casing at 1370'. RDMO WL. Circulate bottoms up and continue circulating to remove any gas from wellbore. |
| 12 | ND BOP and wellhead. 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. |
| 13 | TOOH and LD 4 1/2" casing. |
| 14 | RIH with 2 3/8" tubing open-ended to 1470' (100' inside 4 1/2" stub). |
| 15 | RU cementers. Pump 10 bbl SAPP (Sodium Acid Pyrophosphate) followed by 20 bbl (min.) fresh water spacer immediately preceding cement. |
| 16 | Pump balanced Stub Plug: 340 sx Type III w/0.25#/sk cello flake and CaCl ₂ as deemed necessary mixed at 14.8 ppg and 1.33 cf/sx (452 cuft of slurry). Cement volume based on 100' in 4 1/2" csg, 205' in 8 5/8" csg, and 615' in 9 1/2" OH + 20% excess. Caliper log on file. |

- 17 TOOH. WOC per cementing company recommendation. Tag Cement. TOC should be at or above 705'. If not, consult Evans Engineering.
- 18 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.
- 19 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.
- 20 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
- 21 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 22 Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
- 23 Welder cut 8 5/8" casing minimum 5' below ground level.
- 24 Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
- 25 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 26 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 27 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 28 Back fill hole with fill. Clean location, level.
- 29 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.

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