

## PLUG AND ABANDONMENT PROCEDURE

UPRC 5-3K

- | 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 IOC (970-506-5980) at least 24 hr prior to rig move. Request they isolate production equipment prior to rig MIRU.   |
| 2    | Prepare location for base beam equipped rig. Install perimeter fence as needed.  |
| 3    | Check and report surface casing pressure. If surface casing is not accessible at ground level, re-plumb so valve is at ground level.   |
| 4    | MIRU, kill as necessary using clean fresh water with biocide. ND WH. Install full opening 3000 psi valve on 2 3/8" casing. No production tbg in well.  |
| 5    | MIRU WL. RIH w/ gauge ring for 2 3/8" 4.7# tbg to 7400'. RIH 2 3/8" CIBP and set at 7340' to abandon Cd/Nb perms. Pressure test plug and csg to 3000 psi for 15 minutes.   |
| 6    | PU dump bailer and spot one sack cement on CIBP @ 7340'.   |
| 7    | PU 1 - 1', 1 11/16" perf gun with 3 spf. Shoot 1' of squeeze holes at 4550'. RDWL.   |
| 8    | RU Cementers. Establish circulation down 2 3/8" csg taking returns on surface csg. Pump 5 bbl water w/ biocide, 20 bbl Sodium Metasilicate, and another 5 bbl spacer immediately preceding cement. Note: If unable to circulate, consult Evans Engineering.  |
| 9    | Pump Sussex cement consisting of 300 sx class "G" w/ 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cf/sk. (345 cuft of slurry). Follow cement with a wiper plug for 2 3/8" tbg and displace w/15 bbls water to leave cement top @ 3900' in 2 3/8". Use no cello-flake in this cement due to small squeeze perms. Cement volume based on 450' annular coverage in 10" hole with 40% excess. |
| 10   | WOC per cementing company recommendation. RU slick line unit and RIH w/gauge ring to tag plug at 3900'. RD slick line  |
| 11   | ND BOP and wellhead. Install BOP on surface casing head with 2 3/8" 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 w/ chemical cutter or jet cutter and cut off 2 3/8" casing at 1100'. RDMO WL. Circulate bottoms up using drilling mud and continue circulating to remove any gas from wellbore. RD WL.  |
| 13   | RU cementers. Pump 10 bbl SAPP (Sodium Acid Pyrophosphate) followed by 20 bbl (min) fresh water spacer immediately preceding cement.   |
| 14   | Pump a balanced stub plug 1100'-340': 380 sx (505 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 551' in 10" OH + 40% excess and 209' in 8 5/8" surface casing ).   |

- 15 TOOH and WOC per cementing company recommendation. Tag plug; TOC should be 449' or higher. If not, Consult Evans engineering before proceeding.
- 16 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.
- 17 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.
- 18 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
- 19 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 20 Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
- 21 Welder cut 8 5/8" casing minimum 5' below ground level.
- 22 Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
- 23 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 24 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 25 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 26 Back fill hole with fill. Clean location, level.
- 27 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.

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