

## PLUG AND ABANDONMENT PROCEDURE

Engineer: Nicole Foster

Cell: 720-503-9440

### MOSER H27-32

- | 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 Automation Removal Group at least 24 hr prior to rig move. Request they pull 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    | This well as a gyro from Feb 7, 2013   |
| 5    | Spot in tubing trailer with ~6800' of 2 3/8" tubing. There is no tubing currently in the hole and there are two existing CIBP's at 7000' and 6792'. There is 10' of cement on top of the CIBP set at 6792'. ND wellhead. NU BOP.   |
| 6    | RU hydrotesters. Pressure test CIBP and casing to 1000 psi for 15 minutes. RDWL.   |
| 7    | TIH w 2 3/8" tbg open ended to CIBP/cement at 6782' and tag cement. Hydro -test tbg to 3000 psi. RD hydrotester.   |
| 8    | RU cementers and equalize a balanced plug above CIBP from 6782' to 6450' as follows: 25 sx "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. (35 cuft of slurry).  |
| 9    | POH to ~6250' and circulate tbg clean using fresh water treated with biocide. TOOH standing back 4500' of tbg.   |
| 10   | RU cementers and equalize a balanced plug across Sussex from 4435' to 4025' as follows: 35 sx class "G", w/ 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cuft/sk (40 cuft of slurry).   |
| 11   | POH to ~3825. Circulate water containing biocide to clear tubing. POH standing back ~1320' of tbg.   |
| 12   | RU WL. Crack coupling or cut casing at 1220'. RDMO WL. Circulate bottoms up and continue circulating to remove any gas from wellbore.  |
| 13   | 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.  |
| 14   | TOOH and LD 1220' of 4 1/2" casing.  |
| 15   | RIH with 2 3/8" tubing open-ended to 1320' (100' inside 4 1/2" stub).  |

- 16 RU cementers. Establish circulation with fresh water treated with biocide. If circulation cannot be established contact Evans engineering before proceeding. Pump 10 bbl SAPP (Sodium Acid Pyrophosphate) followed by 20 bbl (min.) fresh water spacer immediately preceding cement.
- 17 Pump balanced Stub Plug to surface: 265 sx Type III w/0 .25#/sk cello flake and CaCl<sub>2</sub> as deemed necessary mixed at 14.8 ppg and 1.33 cf/sx (350 cuft of slurry). Cement volume based on 100' in 4 1/2" csg, 202' in 8 5/8" csg, and 568' in 8.5" OH + 20% excess. (based on caliper log 8/1/07).
- 18 TOOH. WOC per cementing company recommendation. Tag Cement. TOC should be at or above 550'. If not, consult Evans Engineering.
- 19 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.
- 20 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.
- 21 Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
- 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 8 5/8" casing minimum 5' below ground level.
- 24 Welder cut 8 5/8" casing minimum 5' below ground level.
- 25 Fill casing to surface using 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 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 28 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 29 Back fill hole with fill. Clean location, level.
- 30 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.