

## PLUG AND ABANDONMENT PROCEDURE

MOSER 28-4

- | Step | Description of Work   |
|------|---|
| 1    | ALL TUBING SIZE REFERENCES IN THIS PROCEDURE REFER TO THE OUTER DIAMETER OF THE TUBING. 1.66" tubing has been incorrectly referred to as "inch and a quarter", but we're changing that now. Note: Production Casing = 2 7/8" OD, 6.5#/ft, J-55; Production Hole Drilled @ 7 7/8";   |
| 2    | 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 rig showing up. Install perimeter fence as needed. |
| 3    | MIRU slickline services. Pull bumper spring and tag bottom. RDMO slickline services.  |
| 4    | Notify IOC when rig mobilizes to location to generate workorder for flowline removal & one call for line locates.   |
| 5    | Prepare location for base beam equipped rig. MI ~15 additional 1.66" prod tbg jts.  |
| 6    | MIRU, kill as necessary using clean fresh water with biocide and circulate. ND WH. NU BOP. Unseat landing jt, LD.   |
| 7    | Notify cementers to be on call. Provide volumes listed below:   |
| 7.1  | Niobrara Plug: 25 sx class G w/ 20% silica flour, 0.4% CD-32, 0.4% ASA-301 and R-3 mixed at 15.8 ppg and 1.38 cuft/sk (2 bbls) (Inside 2 7/8" Casing, no excess)  |
| 7.2  | Sussex Casing Plug: 25 sx class "G", 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cf/sx (5 bbls) (inside 2 7/8" casing)  |
| 7.3  | Stub Plug: 440 sx Type III CaCl <sub>2</sub> cement w/0.25 pps cello flake mixed at 14.0 ppg and 1.53 cf/sx (118.2 bbls) (100' in 2 7/8" prod casing, 599' in 12 1/4" OH + 20% excess, and 201' in 8 5/8" surface casing)   |
| 8    | TOOH 1.66" production tubing. Stand Back.   |
| 9    | MIRU WL. RIH gauge ring for 2 7/8" 6.5#/ft casing to 6958'.   |
| 10   | RIH CIBP w/ WL. Set at 6870'. RDMO Wireline. PT 2 7/8" casing to 1000 psi.  |
| 11   | RIH to 6870' w/ 1.66" tubing while hydrotesting to 3,000 psi.   |
| 12   | RU Cementers. Pump Niobrara Plug: 25 sx class G w/ 20% silica flour, 0.4% CD-32, 0.4% ASA-301 and R-3 mixed at 15.8 ppg and 1.38 cuft/sk (2 bbls) (Inside 2 7/8" Casing, no excess) to place balanced plug.   |
| 13   | PUH 20 stands. Circulate 25 bbls water containing biocide to clear tubing. P&LD tbg to 4640'.   |
| 14   | RU Cementers. Pump Sussex Casing Plug: 25 sx class "G", 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cf/sx (5 bbls) (inside 2 7/8" casing) to place balanced plug from 4640' to 4035'.   |
| 15   | PUH 12 stands. Circulate 20 bbls water containing biocide to clear tubing. TOOH & WOC 4 hrs. Tag Cement. If Cement is below 4035', call production engineer. Otherwise, P&LD tbg to 1410'. SB Remainder.  |
| 16   | RU WL. Shoot off casing at or below 1310'. RDMO WL. Circulate a full circulation with water containing biocide to remove any gas.   |
| 17   | NDBOP, NDTH.  |
| 18   | Install BOP on casing head with 2 7/8" pipe rams.   |

- 19 TOOH with 2 7/8" casing, LD.
- 20 RIH with 1.66" tubing to 1410'.
- 21 RU Cementers. Spot Stub Plug: 440 sx Type III CaCl<sub>2</sub> cement w/0.25 pps cello flake mixed at 14.0 ppg and 1.53 cf/sx (118.2 bbls) (100' in 2 7/8" prod casing, 599' in 12 1/4" OH + 20% excess, and 201' in 8 5/8" surface casing).
- 22 Circulate 5 bbls water containing biocide to clear tubing.
- 23 TOOH. WOC 4 hrs. Tag Cement. Cement top needs to be above 611'; Proceed assuming TOC is above 611'. Otherwise, call production engineer.
- 24 MIRU WL. RIH 8 5/8" CIBP to 100'. Set, PT to 1000 psi for 15 min. If tests, RDMO WL and WO rig.
- 25 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.
- 26 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
- 27 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 28 Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
- 29 Welder cut 8 5/8" casing minimum 5' below ground level.
- 30 MIRU ready cement mixer. Use 4500 psi compressive strength cement, (NO gravel) fill stubout.
- 31 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 32 Properly abandon flowlines per Rule 1103.
- 33 Back fill hole with fill. Clean location, level.
- 34 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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