

## PLUG AND ABANDONMENT PROCEDURE

### GILBERT ACORD GAS UNIT 1

- | Step | Description of Work   |
|------|---|
| 1    | Note: Production Casing = 4 1/2" OD, 11.6#/ft, K-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, VES, and pressure bomb services. Pull bumper spring and tag bottom. Run pressure bomb and obtain pressure gradient survey from surface to 7662' making gradient stops every 1000'. Forward pressure bomb results to Evans Engineering. RDMO pressure bomb services. MIRU VES and run gyro survey from 7590' to surface with stops every 100'. Forward gyro survey data and invoices to tech (currently Sabrina Frantz). RDMO slickline services and VES. |
| 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 2 3/8 " 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: 35 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 (7.9 bbls) (Inside 4 1/2" Casing, no excess)  |
| 7.2  | SX Suicide: 450 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 cf/sx (87.2 bbls) (11 1/2 "+20% excess)  |
| 7.3  | Stub Plug: 480 sx Type III CaCl <sub>2</sub> cement w/0.25 pps cello flake mixed at 14.0 ppg and 1.53 cf/sx (129 bbls) (100' in 4 1/2" prod casing, 659' in 12 1/4" OH + 20% excess, and 191' in 8 5/8" surface casing)   |
| 8    | TOOH 2 3/8 " production tubing. Stand Back.   |
| 9    | MIRU WL. RIH gauge ring for 4 1/2" 11.6#/ft casing to 7643'.  |
| 10   | RIH CIBP w/ WL. Set at 7585'. PU dump bailer, dump bail 2 sx class 'G' cement on CIBP. PT Casing to 1000 psi.   |
| 11   | Run CBL from CIBP to Surface. Send results to Mark.Hinaman@anadarko.com immediately. RDWL. RDMO Wireline. If cement top is below 6753', then call production engineer for instruction to perform suicide squeeze instead of internal casing plug.   |
| 12   | RIH to 7060' w/ 2 3/8 " tubing while hydrotesting to 3,000 psi.   |

- 13 RU Cementers. Pump Niobrara Plug: 35 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 (7.9 bbls) (Inside 4 1/2" Casing, no excess) to place balanced plug.
- 14 PUH 11 stands. Circulate 90 bbls water containing biocide to clear tubing. P&LD tbg to 4470'.
- 15 RUWL & PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 4470' and 3870'.
- 16 PU CICR. RIH and set at approximately 30' below the top perf pending collar locator on CBL. RD WL.
- 17 RIH w/ stinger on 2 3/8 " tubing.
- 18 RU Cementers. Pump 5 bbl water w/ biocide, 20 bbl Sodium Metasilicate, and another 5 bbl spacer immediately preceding cement.
- 19 Pump SX Suicide: 450 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 cf/sx (87.2 bbls) (11 1/2 "+20% excess) to place suicide squeeze between perfs. Underdisplace and sting out of CICR to leave 3 bbls on top of retainer.
- 20 PUH 5 stands. Circulate 50 bbls water containing biocide to clear tubing. P&LD tbg to 1030'. SB remainder.
- 21 RU WL. Shoot off casing at or below 930'. RDMO WL. Circulate a full circulation with water containing biocide to remove any gas.
- 22 NDBOP, NDTH.
- 23 Install BOP on casing head with 4 1/2" pipe rams.
- 24 TOOH with 4 1/2" casing, LD.
- 25 RIH with 2 3/8 " tubing to 1030'.
- 26 RU Cementers. Spot Stub Plug: 480 sx Type III CaCl<sub>2</sub> cement w/0.25 pps cello flake mixed at 14.0 ppg and 1.53 cf/sx (129 bbls) (100' in 4 1/2" prod casing, 659' in 12 1/4" OH + 20% excess, and 191' in 8 5/8" surface casing).
- 27 Circulate 5 bbls water containing biocide to clear tubing.
- 28 TOOH. WOC 4 hrs. Tag Cement. Cement top needs to be above 130'; Proceed assuming TOC is above 130'. Otherwise, call production engineer.
- 29 MIRU WL. RIH 8 5/8" CIBP to 80'. Set, PT to 1000 psi for 15 min. If tests, RDMO WL and WO rig.
- 30 Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries and invoices to [rscDJVendors@anadarko.com](mailto:rscDJVendors@anadarko.com) within 24 hrs of the completion of the job.
- 31 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
- 32 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.

- 33 Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
- 34 Welder cut 8 5/8" casing minimum 5' below ground level.
- 35 MIRU ready cement mixer. Use 4500 psi compressive strength cement, (NO gravel) fill stubout.
- 36 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 37 Properly abandon flowlines per Rule 1103.
- 38 Back fill hole with fill. Clean location, level.
- 39 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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