

PLUG AND ABANDONMENT PROCEDURE

Engineer: David Dalton
Cell: 970-590-6245

Martin Raymond D GU 1

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 catch and remove plunger, isolate production equipment and remove any automation prior to rig MIRU.
2	MIRU slickline services. Pull bumper spring and tag bottom. RDMO slickline.
3	Arrange delivery of a work string: + - 7900' 2 3/8" tubing.
4	Check and report surface casing pressure. If surface casing is not accessible at ground level, re-plumb so valve is at ground level.
5	Prepare location for base beam equipped rig. Install perimeter fence as needed.
6	MIRU, kill well as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing jt, LD.
7	TOOH and LD 1.90" production tbg.
8	PU and TIH scraper for 4 1/2" 11.6# csg on 2 3/8" work string. Run scraper to top of J sand perfs @ 7748'
9	TOOH and SB 6600' of WS. LD scraper and remaining tbg.
10	MIRU Warrior WL. PU and RIH 4 1/2" CIBP. Set at 7700' to abandon J sand perfs. Pressure test csg and CIBP to 1000 psi for 15 minutes.
11	TIH 2 3/8" tbg to 2500' and circulate fresh water with biocide to ensure all gas has been removed from wellbore for CBL.
12	Run a CBL/VDL from CIBP to surface. Forward results to Evans Engineering for possible changes to procedure.
13	Run a gyro directional survey from CIBP to surface with 100' stations. Forward results to Sabrina Frantz in Evans Engineering
14	PU dump bailer and spot 2 sx cement on CIBP @ 7700'.
15	PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 7160' and 6570'. RDWL
16	PU CICR on 2 3/8" tbg. TIH to 6600' while hydro-testing tbg to 3000 psi. Set CICR @ 6600'.
17	RU Cementers. Pump Niobrara Suicide job : 200 sx 50/50 Poz "G" w/ 20% silica flour, 3% gel, 0.1% sodium metasilicate and 0.4% FL-52 mixed at 13.5 ppg and 1.71 cf/sk (342 cuft of slurry). Underdisplace and sting out of CICR to leave 3 bbls cmt on top of retainer. Volume based on 9.5" hole size with 20% excess. Caliper log on file.
18	POH 10 stands and circulate tbg clean using fresh water treated with biocide. POH standing back 4000' of tbg.
19	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 3960'. RDWL.
20	PU CICR on 2 3/8" tbg. RIH and set CICR at 3990'.
21	RU Cementers. Pump 5 bbl water w/ biocide, 20 bbl Sodium Metasilicate, and another 5 bbl spacer immediately preceding cement.

- 22 Pump Sussex Suicide job: 350 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 (402 cuft of slurry) to place cement between perms. Underdisplace and sting out of CICR to leave 3 bbls cement on top of retainer. Cement volume based on 11" hole with 20% excess. Caliper log on file.
- 23 POH 15 stands. Circulate water containing biocide to clear tubing. POH standing back ~1080' of tbq.
- 24 RU WL. Crack coupling or cut casing at 980'. RDMO WL. Circulate bottoms up and continue circulating to remove any gas from wellbore.
- 25 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.
- 26 TOOH and LD 970' of 4 1/2" casing.
- 27 RIH with 2 3/8" tubing open-ended to 1080' (100' inside 4 1/2" stub).
- 28 RU cementers. Pump 10 bbl SAPP (Sodium Acid Pyrophosphate) followed by 20 bbl (min.) fresh water spacer immediately preceding cement.
- 29 Pump a balanced Stub Plug from 1080' to 100' : 550 sx Type III w/0 .25#/sk cello flake and CaCl₂ as deemed necessary mixed at 14.8 ppg and 1.33 cf/sk (732 cuft of slurry). Cement volume based on 100' in 4 1/2" csg, 179' in 8 5/8" csg, and 701' in 11" OH + 40% excess.
- 30 TOOH. WOC per cementing company recommendation. Tag Cement. TOC should be at or above 179'. If not, consult Evans Engineering.
- 31 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.
- 32 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.
- 33 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
- 34 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 35 Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
- 36 Welder cut 8 5/8" casing minimum 5' below ground level.
- 37 Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
- 38 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 39 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 40 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 41 Back fill hole with fill. Clean location, level.
- 42 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.