

PLUG AND ABANDONMENT PROCEDURE

MIXON HAROLD R 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 IOC (970-506-5980) 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. Run a BHP survey from mid-perf J sand @ 7977' to surface with gradient stops every 1000'. Forward results to Sabrina Frantz in Evans Engineering. RDMO slickline services.
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	Prepare location for base beam equipped rig. Install perimeter fence as needed.
5	MIRU, kill as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing jt, LD.
6	TOOH and SB 2 3/8" production tubing (252 jts landed @7950').
7	PU scraper for 4 1/2" 11.6# casing . RIH to 7950'. POH and stand back tbg.
8	PU and RIH 4 1/2" CIBP on tbg. Set at 7900' to abandon J sand perfs. Fill the hole with fresh water treated with biocide and continue circulating to ensure all gas is removed from wellbore for CBL. POH and SB 6830' of tbg. Pressure test csg and CIBP to 1000 psi for 15 minutes.
9	MIRU WL. Run a CBL from CIBP to surface. Forward results to Evans Engineering. CBL may indicate modifications to plugging operations are required.
10	PU dump bailer and spot 2 sx cement on CIBP @ 7900'.
11	PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 7500' and 6800'. Adjust depth of bottom perfs as needed to place 20' above TOC per CBL. RDWL
12	PU CICR on 2 3/8" tbg. RIH to 6830' while hydro-testing tbg to 3000 psi. Set CICR @ 6830'.
13	RU Cementers. Pump Niobrara Suicide job : 280 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 (479 cuft of slurry). Underdisplace and sting out of CICR to leave 11 bbls cmt on top of retainer to cover existing squeeze perfs @ 6226'. Volume based on 10" hole size w/ 20% excess and TOC in csg @ 6120'. Caliper log on file.
14	POH 20 stands and circulate clean using fresh water treated with biocide. POH standing back 4380' of tbg.
15	RUWL. PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 4760' and 4350'. RDWL.
16	PU CICR on 2 3/8" tbg. RIH and set CICR at 4380'.
17	RU Cementers. Pump 5 bbl water w/ biocide, 20 bbl Sodium Metasilicate, and another 5 bbl spacer immediately preceding cement.
18	Pump Sussex Suicide job: 310 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 (356 cuft of slurry) to place cement between perfs. Underdisplace and sting out of CICR to leave 3 bbls cement on top of retainer. Cement volume based on 11 1/2" hole with 20% excess. Caliper log on file.
19	POH 15 stands. Circulate water containing biocide to clear tubing. POH standing back ~800' of tbg.
20	RUWL & PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 1350' and 740'. Adjust depth of top perfs as needed to place 20' below BOC @ DV Tool. (DV Tool reported @ 703').

- 21 Run 4 1/2" CICR on WL and set @ 770'. RD WL.
- 22 RIH 2 3/8" tbg and sting into CICR @ 770'. Establish circulation for suicide job.
- 23 RU cementers. Establish circulation for suicide job.
- 24 Pump Suicide job: 440 sx (585 cuft.) Type III cement w/ 0.25 pps cello flake and CaCl₂ as deemed necessary mixed at 14.8 ppg and 1.33 cf/sk (585 cuft of slurry). Sting out of CICR early and spot the final 3 bbls of cmt on top of retainer to leave cement 582' from surface in 4 1/2" casing. Volume based on 768' inside 4 1/2" Casing and 610' in 11.5" OH + 40% excess.
- 25 RU WL. Crack coupling or cut casing at 320' or 20' above TOC per CBL, whichever is deeper. RDMO WL. Circulate bottoms up and continue circulating to remove any gas from wellbore.
- 26 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.
- 27 TOO H and LD 310' of 4 1/2" casing.
- 28 RIH with 2 3/8" tubing open-ended to 420' (100' inside 4 1/2" stub).
- 29 RU cementers. Pump 10 bbl SAPP (Sodium Acid Pyrophosphate) followed by 20 bbl (min.) fresh water spacer immediately preceding cement.
- 30 Pump balanced Stub Plug from 420' to 100' : 110 sx Type III w/0 .25#/sk cello flake and CaCl₂ as deemed necessary mixed at 14.8 ppg and 1.33 cf/sk (146 cuft of slurry). Cement volume based on 100' in 4 1/2" csg, 114' in 8 5/8" csg, and 106' in 11 1/2" OH + 40% excess.
- 31 TOO H. WOC per cementing company recommendation. Tag Cement. TOC should be at or above 164'. If not, consult Evans Engineering.
- 32 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.
- 33 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.
- 34 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
- 35 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 36 Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
- 37 Welder cut 8 5/8" casing minimum 5' below ground level.
- 38 Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
- 39 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 40 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 41 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 42 Back fill hole with fill. Clean location, level.
- 43 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.

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