

## OCCIDENTAL PETROLEUM CORPORATION

Please contact your area engineer with any questions concerning this procedure.

3/24/2023

**PLUG and ABANDONMENT PROCEDURE**

RUSSELL 13-31

API: 05-123-27062

**Step Description**

1	Review Previous Open Wells Reports/Well History. If you have questions or concerns, contact Foreman/Engineer.
2	<b>COA: Provide 48 hour notice to COGCC prior to rig up per request on approved Form 6 (e.g. call field coordinator, submit Form 42, etc.).</b>
3	Notify Automation Removal Group at least 24 hours prior to rig move. Request they catch and remove plunger, isolate production equipment, and remove any automation prior to rig MIRU.
4	MIRU Slickline. Pull production equipment and tag bottom. Record tag depth, casing/tubing pressures and fluid level in Open Wells. Gyro was run on 10/25/14. RDMO Slickline.
5	Prepare location for base beam equipped rig. Install perimeter fence as needed.
6	<b>COA: Verify Form 17 (State Bradenhead Test) has been run within 60 days of RU.</b>
7	<b>Refer to the Rockies Well Services Guidelines document whenever rigging up BOP and WL, or whenever tripping in or out of the well. Consult with Foreman/Engineer before deviating from these guidelines. All cement jobs (excluding injections squeezes) must be pumped at 4-6 BPM. All cement plugs pumped through tubing must use the Diverter tool. Final top-out can be pumped between 2-4 BPM.</b>
8	Upon RU, check and record bradenhead pressure. If bradenhead valve is not accessible, re-plumb so that valve is above GL. Blow down bradenhead and leave open during working hours. Re-check pressure each day and input value in the "Casing press." box in Open Wells.
9	MIRU WO rig. Spot a min of 132 jts of 2-3/8", 4.7#, J-55, EUE tbg. Verify BOP and wellhead rating, inspect for appropriate API standards, pressure test BOP. Kill well as necessary using biocide treated fresh water. ND WH. NU BOP. Unland tbg. **Barrier Management** Fluid will be the only barrier while NU BOP. Stop and review JSA.
10	TOOH and SB all 2-3/8" tbg.
11	MIRU WL. PU and RIH with (4-1/2", 11.6#) gauge ring to 6942'. POOH.
12	PU and RIH with (4-1/2", 11.6#) CIBP and set at ~6932'. Collar at 6925'. POOH. Slowly top fill well to clear out all gas. Pressure test CIBP to 1000 psi. RIH and dump 2 sx cement on CIBP. POOH.
13	RIH w/ WL & CBL and log from ~6900' to Surface. Send logs to Rig Super & Engr.
14	<b>PU and RIH with one 4', 3-1/8" deep penetrating perf gun with 4 spf. Shoot squeeze holes at 4057'. POOH. RDMO WL.</b>
15	PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 4000'.
16	Note: Do not exceed 40 bbls of cement on injection squeezes.
17	MIRU cementers. Pump Sussex Squeeze: 100 sx (21.2 bbl or 119 cf) of the Sussex AGM: Class G with 0.4% B547 Gas Block (Latex) and 2% D053 Expansion (Gyp) and 0.25% D255 FLA (Fluid Loss) 0.3% D065 (Dispersant). Underdisplace by 2.3 bbls leaving 15 sx on top of CICR. Collect wet and dry samples of cement to be left on rig. RDMO Cementers.
18	Pull Tbg up to 3600' and reverse circulate 2x well volumes until well is clean.
19	TOOH and SB 21600' of 2-3/8" tbg. LD stinger, and remaining tbg.
20	<b>MIRU WL. PU and RIH with two 4', 3-1/8" perf guns with 4 spf. Shoot 16 squeeze holes at 2800' and 16 squeeze holes at 2100'. RDMO WL.</b>
21	PU and TIH with (4-1/2", 11.6#) packer on 2-3/8" tbg. Set packer at 2160'.
22	Initiate circulation at low rate monitoring returns for fluid. Add mud thinner to hydrate/clean mud. Slowly increase circulation rate to 4-6 BPM using mud thinner and gel polymer sweeps as needed.
23	Pump 55 bbls of 160F HSF and let soak for ~2 hours.
24	Continue circulating at 4-6 BPM if possible. If returns show hydrocarbons or a 1 hr build-up shows pressure, swab and vent well and clean open tank. Circulate clean fluid before pumping cement.
25	Release packer. TOOH, SB 2-3/8" tbg. LD packer.
26	PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 2160'.

27	MIRU cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump Squeeze: 225 sx (48.5 bbl or 273 cf) of the Lower AGM blend: Class G with 0.4% B547 Gas Block (Latex) and 1% S001 CC (Calcium Chloride) and 4% D053 Expansion (Gyp). Underdisplace by 2.5 bbls leaving 15 sx of AGM Cmt on top of CICR. OH 25% excess. Collect wet and dry samples of cement to be left on rig. RDMO Cementers.
28	Pull Tbg up to 1900' and reverse circulate 2x well volumes until well is clean.
29	TOOH and SB 1160' of 2-3/8" tbg. LD stinger, and remaining tbg.
30	<b>COA: Prior to pumping the 1249' Upper Pierre cement plug ensure all fluid migration has been eliminated and surface pressure &amp; LEL are Zero.</b>
31	<b>MIRU WL. PU and RIH with two 4', 3-1/8" perf guns with 4 spf. Shoot 16 squeeze holes at 1800' and 16 squeeze holes at 1100'. RDMO WL.</b>
32	PU and TIH with (4-1/2", 11.6#) packer on 2-3/8" tbg. Set packer at 1160'.
33	Initiate circulation at low rate monitoring returns for fluid. Add mud thinner to hydrate/clean mud. Slowly increase circulation rate to 4-6 BPM using mud thinner and gel polymer sweeps as needed.
34	Pump 55 bbls of 160F HSF and let soak for ~2 hours.
35	Continue circulating at 4-6 BPM if possible. If returns show hydrocarbons or a 1 hr build-up shows pressure, swab and vent well and clean open tank. Circulate clean fluid before pumping cement.
36	Release packer. TOOH, SB 2-3/8" tbg. LD packer.
37	PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 1160'.
38	MIRU cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump Squeeze: 225 sx (48.5 bbl or 273 cf) of the Lower AGM blend: Class G with 0.4% B547 Gas Block (Latex) and 1% S001 CC (Calcium Chloride) and 4% D053 Expansion (Gyp). Underdisplace by 2.5 bbls leaving 15 sx AGM Cmt on top of CICR. OH 25% excess. Collect wet and dry samples of cement to be left on rig. RDMO Cementers.
39	Pull Tbg up to 900' and reverse circulate 2x well volumes until well is clean.
40	TOOH and SB 870' of 2-3/8" tbg. LD stinger, and remaining tbg.
41	<b>COA: WOC 8 hours. If there is evidence of pressure or fluid migration, contact Engineering as there will need to be additional remediation attempts before the SC shoe plug.</b>
42	PU and TIH with mechanical cutter on 2-3/8" tbg. Tag TOC.
43	<b>PU and TIH with mechanical cutter on 2-3/8" tbg. Cut 4-1/2", 11.6# casing at 870'. TOOH and LD cutter.</b>
44	Attempt to establish circulation with biocide treated fresh water.
45	ND BOP. ND TH. Un-land casing. Rig max pull shall be 100,000#. Max pull over string weight shall be 50,000#. If unable to unland, contact Foreman/Engineer. **Barrier Management** Fluid will be the only barrier while unlanding casing. Stop and review JSA.
46	Install BOP on casing head with 4-1/2", 11.6# pipe rams. **Barrier Management** Fluid will be the only barrier while NU BOP. Stop and review JSA.
47	TOOH and LD all 4-1/2", 11.6# casing. Remove 4-1/2", 11.6# pipe rams and install 2-3/8" pipe rams.
48	TIH with diverter tool on 2-3/8" tubing to 870'. Establish circulation to surface with biocide treated fresh water.
49	Initiate circulation at low rate monitoring returns for fluid. Add mud thinner to hydrate/clean mud. Slowly increase circulation rate to 4-6 BPM using mud thinner and gel polymer sweeps as needed.
50	Pump 60 bbls of 160F HSF and let soak for ~2 hours.
51	Continue circulating at 4-6 BPM if possible. If returns show hydrocarbons or a 1 hr build-up shows pressure, swab and vent well and clean open tank. Circulate clean fluid before pumping cement.
52	<b>COA: Verify and document that all pressure and fluid migration has been eliminated prior to placing the SC shoe plug at 870'. If there is evidence of pressure or fluid migration, contact Engineering.</b>
53	MIRU cementers. Pump 10 bbls (min) of pre-flush, followed by 5 bbls fresh water spacer. Pump Surface Casing Shoe Plug: Pump 120 sx (25.9 bbl or 146 cf) of the Upper AGM blend: Class G with 0.4% B547 Gas Block (Latex) and 1.5% S001 CC (Calcium Chloride) and 4% D053 Expansion (Gyp). Volume is based on 102' in 7.875" bit size open hole with 100% excess factor. 203' in the 8-5/8", 24# surface casing with no excess. The plug is designed to cover 870'-565'. Collect wet and dry samples of cement to be left on rig. RDMO Cementers. Notify engineering if circulation is ever lost during job.
54	<b>COA: If cement was not circulated to surface, then WOC 4 hours. Tag TOC. TOC must be 718' or shallower. If tag is too deep or there is evidence of pressure or fluid migration, contact Engineering.</b>
55	Pull out of cement. TOOH to 260'. Forward circulate tbg clean with fresh water. TOOH & SB 260' of tubing. WOC 4 hours.

56	<b>Note: Plug can be tagged after a 4 hour WOC, but must have a 6 hour WOC prior to pressure testing.</b>
57	ND 7-1/16" BOP. NU 9" or 11" BOP. RIH with bit and scraper. Clean csg and tag TOC. Circulate Clean. POOH. PT casing to 500 psi. Contact engineering if test fails.
58	MIRU WL. PU and RIH with (8-5/8", 24#) CIBP and set at 260'. POOH. RDMO WL.
59	TIH with diverter tool on 2-3/8" tubing to 260'. Either swab well down or use rig air to remove water from well. (Note: Do not exceed 175 psi if using rig air). If either methods cannot be performed, contact engineering to discuss excess cement volume for top out plug.
60	<b>DO NOT PUMP WATER AHEAD OF CEMENT.</b> MIRU Cementers. Pump Surface Plug: Pump 80 sx (17.3 bbl or 97 cf) of the Surface AGM blend: Class G with 0.4% B547 Gas Block (Latex) and 2% S001 CC (Calcium Chloride) and 4% D053 Expansion (Gyp). Volume based on 260' inside 8-5/8", 24# surface casing with no excess. Cement will be from 260' to surface. Verify and document cement to surface. Collect wet and dry samples of cement to be left on rig.
61	TOOH and remove diverter tool. Insert ~5' of 2-3/8" Tbg. Circulate FW to clean Csg & Csg Valves. LD final joint of 2-3/8" Tbg. RDMO cementers. ND BOP. Install night cap. RDMO WO rig.
62	Supervisor submit paper copies of all invoices, logs, and reports to Well Services Engineering Specialist.
63	Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
64	Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
65	Welder cut casing minimum 5' below ground level.
66	Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
67	Obtain marker plate GPS location data and provide to GPS Teams page and Oxy GIS database.
68	If applicable, abandon flow lines per Rule 1105. File electronic Form 42 and/or Form 44 once abandonment is complete.
69	Back fill hole with fill. Clean location, and level.
70	Submit Form 6 Subsequent Report to COGCC ensuring to provide 'As performed' WBD identifying operations completed.