

OCCIDENTAL PETROLEUM CORPORATION

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

2/2/2023

PLUG and ABANDONMENT PROCEDURE

WARDELL H 17-33

API: 05-123-27021

**Step Description**

1	Review Previous Open Wells Reports/Well History. If you have questions or concerns, contact Foreman/Engineer.
2	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.).
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 08/25/14. RDMO Slickline.
5	Prepare location for base beam equipped rig. Install perimeter fence as needed.
6	COA: Verify Form 17 (State Bradenhead Test) has been run within 60 days of RU.
7	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.
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. 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 7012' of 2-3/8" tbg. LD remaining 2-3/8" tbg.
11	J-SAND CIBP
12	MIRU WL. PU and RIH with (4-1/2", 11.6#) gauge ring to 7730'. POOH.
13	PU and RIH with (4-1/2", 11.6#) CIBP and set at +/- 7720' (no CCL coverage here). POOH. RIH and dump 2 sx cement on CIBP. POOH.
14	NIO INJECTION SQUEEZE
15	PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 7012'.
16	MIRU cementers. Max injection pressure (burst limited) is 6100 psi with water, 3400 psi with cement. Pump Niobrara Injection Squeeze: 100 sx (27.1 bbl or 152 cf) of the Niobrara Cement blend: Class G with 0.4% B547 Gas Block (Latex) and 0.4% D255 FLA (Fluid Loss) and 35% D066 Silica Flour and 0.2% D800 (Retardant) and 0.3% D065 (Dispersant). Underdisplace by 1 bbls. Volume is based on 30' in the casing below the CICR, cement squeezed into formation, and 63' on top of the CICR. Collect wet and dry samples of cement to be left on rig. RDMO cementers.
17	Pull out of cement. Stop and clean up at 6850'. TOOH, SB 4661' of 2-3/8" tbg. LD remaining tbg.
18	Sussex SQZ
19	PU and RIH with one 4', 3-1/8" deep penetrating perf gun with 4 spf. Shoot squeeze holes at 4691'. POOH. RDMO WL.
20	PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 4661'.
21	MIRU cementers. Tubing is neutral at 4300 psi with water, 3700 psi with cement. If unable to establish injection with water, sting out, spot cement to EOT, and attempt to pump Sussex Squeeze. 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 1 bbls. Volume is based on 30' in the casing below the CICR, cement squeezed into formation, and 61' on top of the CICR. Collect wet and dry samples of cement to be left on rig. RDMO Cementers.
22	TOOH and SB 2770' of 2-3/8" tbg. LD stinger, and remaining tbg.

23	COA: Confirm and document static conditions in the well before placing the next plug. If there is evidence of pressure or fluid migration at any time after placing the Sussex plug, contact Engineering.
24	2800' Squeeze
25	MIRU WL. PU and RIH with one 4', 3-1/8" deep penetrating perf gun with 4 spf. Shoot squeeze holes at 2800'. POOH. RDMO WL.
26	PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 2770'.
27	MIRU cementers. Tubing is neutral at 2500 psi with water, 2200 psi with cement. If unable to establish injection with water, sting out, spot cement to EOT, and attempt to pump squeeze job. Pump Squeeze: 100 sx (21.6 bbl or 121 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 1 bbls. Volume is based on 30' in the casing below the CICR, cement squeezed into formation, and 60' on top of the CICR. Collect wet and dry samples of cement to be left on rig. RDMO Cementers.
28	Pull out of cement. TOO H to 2610'. Reverse circulate a minimum of 2 hole volume after cementing to ensure no cement is left in the tbg or annulus. SB 1770' of tbg. LD remaining tbg.
29	1800' SQUEEZE
30	PU and TIH with (4-1/2", 11.6#) packer on 2-3/8" tbg. Set packer at 1770'.
31	PU and TIH with (4-1/2", 11.6#) CICR on 2-3/8" tbg. Set CICR at 1770'.
32	MIRU cementers. Tubing is neutral at 1600 psi with water, 1400 psi with cement. If unable to establish injection with water, sting out, spot cement to EOT, and attempt to pump squeeze job. Pump Squeeze: 100 sx (21.6 bbl or 121 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 1 bbls. Volume is based on 30' in the casing below the CICR, cement squeezed into formation, and 60' on top of the CICR. Collect wet and dry samples of cement to be left on rig. RDMO Cementers.
33	Pull out of cement. TOO H to 1610'. Reverse circulate a minimum of 2 hole volume after cementing to ensure no cement is left in the tbg or annulus.
34	TOOH and SB 830' of 2-3/8" tbg. LD stinger, and remaining tbg.
35	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.
36	SHOE PLUG
37	PU and TIH with mechanical cutter on 2-3/8" tbg. Cut 4-1/2", 11.6# casing at 830'. TOO H and LD cutter.
38	Attempt to establish circulation with biocide treated fresh water. Circulate in 35 bbls of HSF on backside and let soak for 2 hrs. This is all HSF that should be required for remaining work scope.
39	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.
40	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.
41	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.
42	TIH with diverter tool on 2-3/8" tubing to 830'. Establish circulation to surface with biocide treated fresh water.
43	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.
44	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.
45	COA: Verify and document that all pressure and fluid migration has been eliminated prior to placing the SC shoe plug at 830'. If there is evidence of pressure or fluid migration, contact Engineering.
46	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 Surface AGM blend: Class G with 0.4% B547 Gas Block (Latex) and 2% S001 CC (Calcium Chloride) and 4% D053 Expansion (Gyp). Volume is based on 101' in 7.875" bit size open hole with 100% excess factor. 204' in the 8-5/8", 24# surface casing with no excess. The plug is designed to cover 830'-525'. Collect wet and dry samples of cement to be left on rig. RDMO Cementers. Notify engineering if circulation is ever lost during job.

47	COA: If cement was not circulated to surface, then WOC 4 hours. Tag TOC. TOC must be 679' or shallower. If tag is too deep or there is evidence of pressure or fluid migration, contact Engineering.
48	Pull out of cement. TOOH to 260'. Forward circulate tbg clean with fresh water. TOOH & SB 260' of tubing. WOC 4 hours.
49	Note: Plug can be tagged after a 4 hour WOC, but must have a 6 hour WOC prior to pressure testing.
50	SURFACE PLUG
51	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.
52	MIRU WL. PU and RIH with (8-5/8", 24#) CIBP and set at 260'. POOH. RDMO WL.
53	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.
54	DO NOT PUMP WATER AHEAD OF CEMENT. 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.
55	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.
56	Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries to DJVendors@oxy.com within 24 hours of completion of the job.
57	Supervisor submit paper copies of all invoices, logs, and reports to Well Services Engineering Specialist.
58	Excavation crew to notify One Call to clear excavation area around wellhead and for flow lines.
59	Excavate hole around surface casing enough to allow welder to cut casing a minimum 5' below ground level.
60	Welder cut casing minimum 5' below ground level.
61	Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
62	Obtain GPS location data and provide to GPS Teams page and Oxy GIS database.
63	If applicable, properly abandon flow lines per Rule 1105. File electronic Form 42 and/or Form 44 once abandonment is complete.
64	Back fill hole with fill. Clean location, and level.
65	Submit Form 6 Subsequent Report to COGCC ensuring to provide 'As performed' WBD identifying operations completed.