

PLUG AND ABANDONMENT PROCEDURE

RADEMACHER 14-30 (HSR)

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. RDMO slickline.
3	Prepare location for base beam equipped rig. Install perimeter fence as needed.
4	Check and record Bradenhead pressure. If Bradenhead valve is not accessible, re-plumb so that valve is above GL.
5	MIRU, kill as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing jt, LD.
6	TOOH and SB 2 1/16" production tubing (219 jts landed @ 7220').
7	MIRU wireline. Run gyro survey from 100' above PBD (~7372') recorded in step 2 to surface with stops every 100'. Forward gyro survey data and invoices to Sabrina Frantz.
8	RIH gauge ring for 3 1/2" 7.7 #/ft casing to 7000'. POOH.
9	Set CIBP at 6980' to abandon Codell and Niobrara perms. RDMO WL. Pressure test to 1,000 psi.
10	RIH 2 1/16" tubing to 6980' while hydrotesting to 3000 psi.
11	RU Cementers. Pump Niobrara plug: 20 sx (28 cuft) class "G" w/ 20% silica flour, 0.4% CD-32, 0.4% ASA-301 and R-3 to achieve 2:30 pump time mixed at 15.8 ppg and 1.38 cuft/sx (538' inside 3 1/2" csg, no excess). The plug will cover 6980' - 6442'. RD cementers.
12	PUH to 6200' and circulate tubing clean to ensure no cement is left in the tubing.
13	P & SB 4910' of 2 1/16" tubing, LD remainder.
14	RIH w/ 2 1/16" tubing to 4910'.
15	RU Cementers. Pump Sussex/Shannon balanced plug: 50 sx (58 cuft) class "G" w/ 0.4% CD-32, 0.4% ASA-301 mixed at 15.8 ppg and 1.15 cuft/sx (1120' inside 3 1/2" csg, no excess). The plug will cover 4910' - 3790'. RD cementers.
16	PUH to 3600' and circulate with water to ensure no cement is left in the tubing.
17	WOC per cement company recommendation, tag cement, cement top needs to be above 3790'.
18	P & SB 1030' of 2 1/16" tubing, LD remainder.
19	RU WL. Shoot off casing at or below 930'. RDMO WL. Circulate to remove any gas.
20	NDBOP, NDTH. Install BOP on casing head with 3 1/2" pipe rams.
21	POOH with 930' of 3 1/2" casing, LD. Install 2 1/16" pipe rams.

- 22 RIH 100' past casing stub w/ 2 1/16" tubing to 1030'.
- 23 RU Cementers. Precede cement w/ 10 bbl SAPP and a 20 bbl fresh water spacer. Spot Fox Hills Stub plug: 200 sx (266 cuft) Type III w/cello flake and CaCl₂ as deemed necessary, mixed at 14.8 ppg and 1.33 cuft/sx (100' inside 3 1/2" casing stub with no excess, 301' covering 9.5" OH from caliper with 20% excess, and 209' inside 8 5/8" surface casing with no excess). The plug will cover 1030' - 520'. RD cementers.
- 24 PUH to 200' and circulate with water to ensure no cement is left in the tubing.
- 25 WOC per cement company recommendation, tag cement, cement top needs to be above 520'.
- 26 MIRU WL. RIH 8 5/8" CIBP to 80'. Set and pressure test to 1000 psi for 15 minutes. RDMO WL and WO rig.
- 27 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.
- 28 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
- 29 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 30 Excavate hole around surface casing enough to allow welder to cut casing minimum 5' below ground level.
- 31 Welder cut casing minimum 5' below ground level.
- 32 Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).
- 33 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 34 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 35 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 36 Back fill hole with fill. Clean location, level.
- 37 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.

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