

PLUG AND ABANDONMENT PROCEDURE (RE-ENTER)

REHDER 1

Step	Description of Work
1	Locate and expose casing stub. Extend 4 1/2" casing to GL and install 3M well head with 3000 psi ball valves in both outlets. Prepare location for workover rig. Install perimeter fence as needed.
2	Provide notice to COGCC prior to rig up per request on approved Form 6 (e.g. call field coordinator, submit Form 42, etc.).
3	MIRU workover rig. NU 7 1/16" 3000 psi BOP stack on casing head. PT BOP and csg head per approved Form 2. Function test BOPE. NU rotating head on BOP. Hook up return line to shale shaker on flat tank
4	PU 3 7/8" mill tooth bit, necessary drill collars and drill pipe/work string (WS). Drill through existing cement plug at surface (Reported to be 10' - 300') using water with biocide.
5	Once surface plug is drilled, RIH to 2 sk cement cap on CIBP @ 7800' (calculated top is 7774').
6	TOOH standing back WS. LD bit and DCs.
7	MIRU WL. Run gyro survey from PBTD to surface. Run CBL to find TOC @ the Niobrara and check cement coverage from 800' to surface. If the production casing is free below the surface casing shoe @ 215', it may be possible to pull some of the 4 1/2". Forward results to Evans Engineering.
8	PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 7350' and 6685'. Adjust perf depths according to cement top per CBL. Desired bottom perf is 20' above TOC.
9	PU CICR. RIH and set at 6715'+/-20' pending collar locator on CBL. RD WL.
10	RIH w/ WS and stinger for CICR while hydrotesting to 3,000 psi.
11	RU Cementers. Pump Niobrara Suicide squeeze: 230 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. Underdisplace and sting out of CICR to leave 3 bbls on top of retainer. Cement volume based on 9 1/2" hole with 20% excess.
12	PUH 10 stands. Circulate with water containing biocide to clear tubing. TOH standing back ~ 4100' of WS.
13	RUWL & PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 4653' and 4250'. Adjust perf depths as necessary per CBL.
14	PU CICR. RIH and set at 4280'+/-20' pending collar locator on CBL. RD WL.
15	RIH w/ WS and stinger.
16	RU cementers. Pump 5 bbls water with biocide, 20 bbls Sodium Metasilicate solution, and another 5 bbl spacer immediately preceding cement.
17	Pump Sussex squeeze consisting of 360 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 cf/sk. Underdisplace and sting out of CICR to leave 3 bbls of cement on top of retainer. (Cement volume based on 12 1/2" hole with 20% excess).
18	PUH 10 stands. Circulate with water containing biocide to clear tubing. TOH standing back ~ 810' of WS.
19	RUWL & PU 2 - 1' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 1340' and 780'. Adjust perf depths as necessary per CBL.
20	PU CICR. RIH and set at 810'+/-20' pending collar locator on CBL. RD WL.

- 21 RIH w/ WS and stinger.
- 22 RU Cementers. Pump Surface Suicide: 430 sx Type III cement w/ 0.25 pps cello flake and CaCl₂ as deemed necessary mixed at 14.0 ppg and 1.53 cf/sk (1225' inside 4 1/2" Casing and 560' in 13" OH + 20% excess). Pump all but ~3 bbls. Sting out of CICR and spot ~3 bbls cmt on top of retainer.
- 23 TOO H circulating WS and 4 1/2" csg clean to 115' from surface.
- 24 MIRU WL. RIH 4 1/2" CIBP to 100'. Set, PT to 1000 psi for 15 min. If tests, RDMO WL and WO rig.
- 25 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.
- 26 Supervisor submit paper copies of all invoices, logs, and reports to Joleen Kramer.
- 27 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 28 Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
- 29 Welder cut casing minimum 5' below ground level.
- 30 MIRU ready cement mixer. Use 4500 psi compressive strength cement, (NO gravel) fill stubout.
- 31 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 32 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 33 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 34 Back fill hole with fill. Clean location, level.
- 35 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.

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