

PLUG AND ABANDONMENT PROCEDURE

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SCHMIDT GEORGE UN 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 Automation Removal Group at least 24 hr prior to rig move. Request they pull plunger, isolate production equipment and remove any automation prior to rig MIRU.
2	Check and report surface casing pressure. If surface casing is not accessible at ground level, re-plumb so valve is at ground level.
3	MIRU slickline. RIH to retrieve production equipment. Note tagged depth in OpenWells. RDMO slickline.
4	Prepare location for base beam equipped rig. Install perimeter fence as needed.
5	This well as a gyro from 10/22/12
6	MI trailer with an additional 25 joints of 2 3/8" tubing.
7	MIRU, kill as necessary using clean fresh water with biocide. ND WH. NU BOP. Unseat landing jt, LD. Tbg is landed @ 8158' KB w/ 266 jts.
8	TOOH and stand back 2 3/8" tbg.
9	PU 4 1/2" casing scraper on 2 3/8" tbg and RIH to 8100'. **NOTE: the production casing is a mix of 10.5# and 11.6# 4.5" casing.
10	Pull and stand back tubing. RIH 4 1/2" CIBP on 2 3/8" tbg and set at 8045' to abandon J Sand perms. Circulate to remove gas.
11	RUWL. RIH with CCL-GR-CBL-VDL. Log from CIBP at 8045' to surface to verify cement coverage. No CBL can be found. TOC is calculated to be at +/- 7560' and from the DV tool at 925' to 425'. Contact engineering before proceeding to verify procedure. Remaining steps assume there is NOT adequate cement squeeze coverage over Niobrara. PU dump bailer and spot 2 sxs of cement of CIBP. RDMO wireline services.
12	Pressure test CIBP at 8045' and casing to 1000 psi for 15 minutes.
13	RUWL. PU 3' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 7500' and 2' of squeeze holes at 6860'. RDWL.
14	PU CICR on 2 3/8" tbg. RIH while hydrotesting to 4000psi and set CICR at 6890'.
15	RU Cementers. Establish circulation with fresh water treated with biocide. If circulation cannot be established contact Evans engineering before proceeding.
16	Pump Niobrara suicide squeeze from 7500' to 6860' as follows: 210 sx Thermal 35 + 0.5% CFR - 2 + 0.25% FMC, mixed at 13.5 ppg and 1.66 cuft/sk. (348 cuft of slurry). Cement volume based on 9.5" hole with 20% excess. Caliper log dated 1/4/1975 on file.
17	POH to ~6650' and circulate tbg clean using fresh water treated with biocide. TOOH standing back 5050' of tbg.
18	RUWL. PU 3' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 4990' and 2' of squeeze holes at 4540'. RDWL.
19	PU CICR on 2 3/8" tbg. RIH and set CICR at 4570'.

- 20 RU Cementers. Establish circulation with fresh water treated with biocide. If circulation cannot be established contact Evans engineering before proceeding. Pump 5 bbl water w/ biocide, 20 bbl Sodium Metasilicate, and another 5 bbl spacer immediately preceding cement.
- 21 Pump Sussex Suicide from 4990' to 4540' as follows: 260 sx class "G" + 0.6% CFL - 2 + 0.5% CFR + 0.6% SMS + 0.2% SPC - 2 + 0.1% LTR mixed at 14.6 ppg and 1.12 cuft/sk (288 cuft of slurry) to place cement between perms. Underdisplace and sting out of CICR to leave 3 bbls cement on top of retainer. Cement volume based on 10.5" hole with 20% excess. Caliper log dated 1/4/1975 on file.
- 22 POH to ~4300. Circulate water containing biocide to clear tubing. POOH standing back 1700' tbg.
- 23 RUWL. PU 3' 3-1/8" perf guns with 3 spf, 0.5" dia 120° phasing. Shoot 1' of squeeze holes at 1700' and 2' of squeeze holes at 980'. RDWL.
- 24 PU tension set CICR on 2 3/8" tbg. RIH and set CICR at 1010'.
- 25 RU cementers. Establish circulation with fresh water treated with biocide and get bottoms up. If circulation cannot be established contact Evans engineering before proceeding. Pump 10 bbl SAPP (Sodium Acid Pyrophosphate) followed by 20 bbl (min.) fresh water spacer immediately preceding cement.
- 26 Pump Fox Hills squeeze: 420 sx Type III + 0.3% CFL - 3 + 0.3% CFR - 2 + 0.25 lb/sk Polyflake (NO CaCl₂) mixed at 14.8 ppg and 1.33 cf/sx (557 cuft of slurry). Cement volume based on 10.5" hole with 40% excess. Sting out of CICR, circulate casing clean and spot 10 sxs of cement on CICR up to ~860' to cover DV tool. You will use a total of 430 sxs for this interval.
- 27 RU WL. Crack coupling or cut casing at 400'. RDMO WL. Circulate bottoms up and continue circulating to remove any gas from wellbore.
- 28 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.
- 29 TOOH and LD 400' of 4 1/2" casing.
- 30 RIH with 2 3/8" tubing open-ended to 500' (100' inside 4 1/2" stub).
- 31 RU cementers. Establish circulation with fresh water treated with biocide. If circulation cannot be established contact Evans engineering before proceeding. Pump 10 bbl SAPP (Sodium Acid Pyrophosphate) followed by 20 bbl (min.) fresh water spacer immediately preceding cement and get bottoms up.
- 32 Pump balanced Stub Plug: 130 sx Type III + 0.3% CFL - 3 + 0.3% CFR - 2 + 0.25 lb/sk Polyflake and and CaCl₂ as deemed necessary mixed at 14.8 ppg and 1.33 cf/sx (241 cuft of slurry). Cement volume based on 100' in 4 1/2" csg, 216' in 8 5/8" csg, and 184' in 10.5" OH + 40% excess. (based on caliper log 1/4/1975). We should see cement to surface.
- 33 TOOH. WOC per cementing company recommendation. Tag Cement. TOC should be at or above 110'. If not, consult Evans Engineering.
- 34 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.
- 35 Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
- 36 Excavation crew to notify One Call to clear excavation area around wellhead and for flowlines.
- 37 Excavate hole around surface casing enough to allow welder to cut 8 5/8" casing minimum 5' below ground level.
- 38 Welder cut 8 5/8" casing minimum 5' below ground level.
- 39 Fill casing to surface using 4500 psi compressive strength cement, (NO gravel).

- 40 Spot weld on steel marker plate. Marker should contain Well name, Well number, legal location (1/4 1/4 descriptor) and API number.
- 41 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 42 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 43 Back fill hole with fill. Clean location, level.
- 44 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.