

**Frederick 9-27A**  
**PLUG & ABANDON PROCEDURE**

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- 1 Provide 48 hr notice to COGCC prior to rig up per request on approved Form 6. Submit Form 42 and call Automation Removal Group at least 24 hr prior to rig move. If not already completed, request that they catch and remove plunger, isolate production equipment and remove any automation equipment prior to the rig showing up. Install perimeter fence as needed.
1. MIRU slickline services. Pull bumper spring and tag bottom. Run pressure bomb and obtain pressure gradient survey from surface to halfway between the perfs, making gradient stops every 1000'. Forward pressure bomb results to Evans Engineering. Note: Be sure to run pressure bomb **prior to blowing well down** and killing it. Record tag depth in Open Wells. RD slickline. Gyro run 12/16/2014.
- 2 Prepare location for base beam equipped rig. Install perimeter fence as needed.
- 3 Check and record bradenhead pressure. If bradenhead valve is not accessible, re-plumb so that valve is above GL. The last Form 17 test on 01/27/2015 recorded a bradenhead pressure of 1 psi, blown dead with no fluids produced. Blow down bradenhead and re-check pressure the next day. Repeat until pressure stays at 0 psi. Contact Evans Engineering if pressure does not blow down to 0 and stay at 0.
- 4 Spot 50 jts of 2-3/8" 4.7# J-55 8RD EUE tbg.
- 5 MIRU WO rig. Kill well with fresh water and biocide. ND WH, NU BOP.
- 6 PU tbg to break any possible sand bridges. Do not exceed 80% of tubing tensile strength, or 57,384 lb. LD landing jt. TOO H with 2-3/8" tbg.
- 7 PU gauge ring (4.5" 11.6 #/ft) and RIH on 2-3/8" tbg to 8250'. TOO H and LD gauge ring.
- 8 MIRU WL. RIH w/ 4-1/2" CIBP (4-1/2" 11.6#) Set CIBP at +/- 8230' (Collars at 8222' and 8255').
- 9 Pressure test CIBP to 1000 psi for 15 minutes. If pressure test passes, proceed.
- 10 PU and RIH to 8230' with 2-3/8" tbg while hydrotesting in to 3000 psi. Circulate all gas out of the hole.
- 11 MIRU cementers. Establish circulation with fresh water and biocide. Pump 70 sx of Class G cement w/ Thermal 35 + 0.3% CFR-2 + 0.3% ASM-3 (AS-3) to achieve 2:30 pump time, mixed at 15.6 ppg and 1.51 cuft/sx. Plug to cover 8230' – 7150'.
- 12 PUH to 6750' and reverse circulate fresh water with biocide to clear tbg.
- 13 PUH to 5600'.
- 14 MIRU cementers. Establish circulation with fresh water and biocide. Pump 100 sx of class G Shannon/Sussex inside pipe cement blend 0:1:0 'G' +0.5% CFR-2 + 0.2% FMC + 0.5% LWA + 0.25 lb/sk Polyflake mixed at 15.8 ppg and 1.15 cuft/sx. Plug to cover 5600' – 4330'.
- 15 PUH to 3900' and reverse circulate fresh water with biocide to clear tbg.
- 16 WOC 4 hrs and tag plug. Tag needs to be 4330' or higher.
- 17 TOO H. Stand back 1170' of 2-3/8" tbg and LD remainder.
- 18 MIRU WL. PU jet cutter and RIH to 1070', cut 4-1/2" csg. Circulate to remove any gas from wellbore. RDMO WL.
- 19 ND BOP, ND tbg head. NU BOP on surface csg with 4-1/2" pipe rams. Install 3000 psi ball valves on csg head outlets. Install choke or choke manifold on one outlet.

- 20 TOO H with 4-1/2" csg and LD.
- 21 Uninstall 4-1/2" pipe rams in BOP and install 2-3/8" pipe rams.
- 22 TIH with 2-3/8" tbg to +/- 1170', 100' inside 4-1/2" csg stub. Establish circulation with fresh water containing biocide and get bottoms up.
- 23 MIRU cementers. Pump 10 bbls SAPP, 20 bbls fresh water and biocide followed with 230 sx of Type III cement of the Base of the Surface Casing blend with CaCl<sub>2</sub>, mixed at 14.8 ppg and 1.33 cf/sk (cement from 1170' to 600' over Fox Hills, 9.5" avg hole from caliper, adding 20% excess).
- 24 PUH to 150' and circulate fresh water with biocide to clear tbg.
- 25 TOO H with 2-3/8" tbg. WOC 4 hrs (or per cement company recommendation), tag plug. Tag needs to be 600' or higher. TOO H.
- 26 MIRU WL. RIH with 8-5/8" CIBP and set at 80'. Pressure test to 1000 psi for 15 min. If pressure holds, RDMO WL and RDMO WO rig.
- 27 Instruct cementing and wireline contractors to e-mail copies of all job logs/job summaries and invoices to rscDJVendors@anadarko.com within 24 hrs of the completion of the job.
- 28 Supervisor submit paper copies of all invoices, logs, and reports to Evans Engineering Specialist.
- 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 8-5/8" casing minimum 5' below ground level.
- 31 Welder cut 8-5/8" casing minimum 5' below ground level.
- 32 MIRU Redi Cement mixer. Use 4500 psi compressive strength cement, (NO gravel) to fill stubout.
- 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 Properly abandon flowlines per Rule 1103. File electronic Form 42 once abandonment complete.
- 35 Obtain GPS location data as per COGCC Rule 215 and send to rscDJVendors@anadarko.com.
- 36 Back fill hole with fill. Clean location, level.
- 37 Submit Form 6 to COGCC ensuring to provide 'As performed' WBD identifying operations completed.