

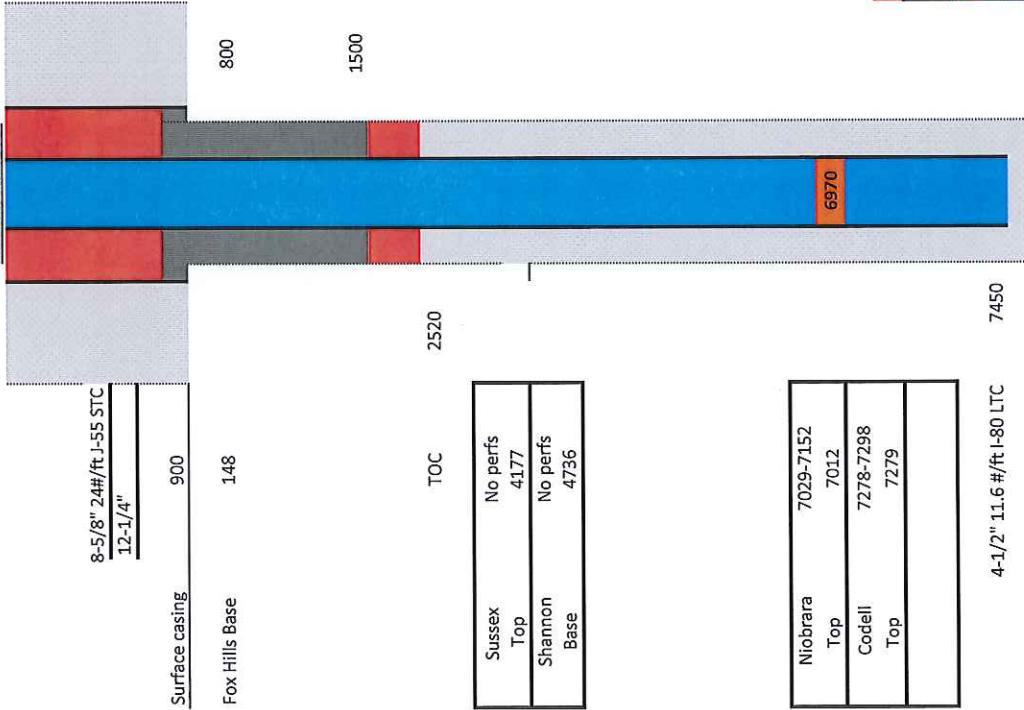
Rademacher 10-25 – Bradenhead Procedure

- 1 Call Foreman or Lead Operator 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.
- 2 MIRU Slick line. Fish plunger if necessary and tag for PBTD (should be at 7422').
- 3 Prepare location for base beam rig.
- 4 Spot 12 jts of 2-3/8" 4.7# J-55 8RD EUE tbg.
- 5 Spot 6 2 7/8" 16# drill collars
- 6 MIRU WO rig. Kill well with fresh water with biocide. ND wellhead, NU BOPs.
- 7 Run two 2" or one 3" line(s) from starting head to return tanks. (Need to be able to circulate at 10 bbl/min).
- 8 PU 8-10' landing joint with TIW safety valve on top and screw into the tbg hanger. Back out the lock down pins and pull up on the tbg string to break any possible sand bridges. Do not exceed 80% of tubing tensile strength, or 57,384-lb.
- 9 Unseat tbg hanger and LD tbg hanger and landing joint. Install rubber wiper in stripping head.
- 10 MIRU EMI equipment. TOO H with 2-3/8" tbg. EMI tbg while TOO H. Lay down joints with wall loss or penetrations >35%. Replace joints as necessary. Keep yellow and blue band tubing. Note joint number and depth of tubing leak(s) on production equipment failure report in OpenWells. Clearly mark all junk (red band) tubing sent to yard.
- 11 MIRU wire line.
- 12 RIH with CCL/Gauge Ring to 7422'. POOH with wire line.
- 13 RIH with wire line and 4.5" RBP (4.5" 11.6# I-80). Set RBP at +/- 6970' (Collars at 6942' and 6984'). Dump bail 2 sx sand on top of RBP. RDMO wire line.
- 14 Pressure test RBP to 1,000 psi for 15 minutes. (Pressure test to make sure plug is set correctly)
- 15 PU and RIH with CCL and 3-1/8" perforating gun, 0.60" EHD charge, 3 spf. Perforate 4 1/2" csg @ +/- 1500' avoiding any collars identified by CCL. POOH with wire line. RDMO wire line company.
- 16 MIRU Cement company. Establish circulation with 9.0 ppg drilling mud at 10 bbl/min or maximum rate achievable.
- 17 Commence pumping cement job at pump rate of 5 bbl/min consisting 5 bbl fresh water, 20 bbl sodium meta silicate and 5 bbl fresh water; 41 bbl (150 sx) of Type III + with CaCl₂ and 2 lb/sk PS Flake mixed at 14.0 ppg and 1.53 cuft/sk (Cement from 1500' to 800'). Drop wiper plug and Under displace by 1.5 bbl (21.75 bbl total, leave 100' of cement in csg. Do not over displace).
- 18 Break lines and clean up with fresh water. RDMO cement company.
- 19 NU tbg head and BOP.
- 20 Leave well shut in overnight with 100 psi on it.
- 21 Circulate gas out of hole with fresh water with biocide.
- 22 PU 6 2 7/8" 16# drill collars with 3-7/8" bit/mill and TIH with 2-3/8" tbg and crossover. Rig up power swivel and mill to +/- 1500.
- 23 TOO H with bit and SB tbg. LD collars.
- 24 MIRU wire line and run CCL-GR-CBL-VDL from 1600' to 100'. If cement is not above 950', contact engineering for further instructions. RDMO wire line.
- 25 PU and TIH with 2 3/8" tbg and land at +/- 6940' (1 jt above RBP).

- 26 Install 7 1/16" x 5,000 psi tubing head adaptor with new 5,000 psi master valve threaded 2 3/8" connection. Make sure all wellhead valves are rated to 5,000 psi.
- 27 Install 2 3/8" pup joint above the master valve. Pressure test the tubing head from below the tubing head through the master valve to 5,000 psi with hydro tester.
- 28 Pressure test csg to 1,000 psig. NU wellhead.
- 29 RMDO WO rig. Return well to production team.
- 30 END OF SAFETY PREP STEPS. BELOW ARE STEPS FOR UN PREPPING THE WELL.
- 31 MIRO WO rig. Kill well as necessary with fresh water treated with biocide. ND wellhead, NU BOP.
- 32 Un land 2-3/8" tbg as needed and TOOH. SB tbg.
- 33 TIH with 2-3/8" tbg and retrieving head and tag sand above RBP. Circulate sand off RBP. Latch onto RBP at +/- 6970' and release RBP. TOOH standing back all 2 3/8" tbg and LD RBP.
- 34 TIH with 2-3/8" XN SN and 2-3/8" 4.7# J55 EUE tbg. Land tbg @ +/- 7249' (1 jt above top Codell perf). Broach tbg to XN nipple.
- 35 ND BOP, NU master valve and hydro test tubing head to 5,000 psi for 15 minutes.
- 36 RMDO WO rig.
- 37 Clean location and swab well back to production. Notify field foreman/field coordinator of finished work and turn well back over to production team.

Existing

KB=10'
Rademacher 10-25
API #0512327092



8-5/8" 24#/ft J-55 STC
12-1/4"

Surface casing 900

Fox Hills Base 148

TOC 2520

Sussex	No perfs
Top	4177
Shannon	No perfs
Base	4736

Niobrara	7029-7152
Top	7012
Codell	7278-7298
Top	7279

4-1/2" 11.6 #/ft I-80 LTC

Mud
Existing cement
Sand Plug
RBP
New Cement
Fresh Water w/ Bro