

## Sarchet 22-21 BradenHead Procedure

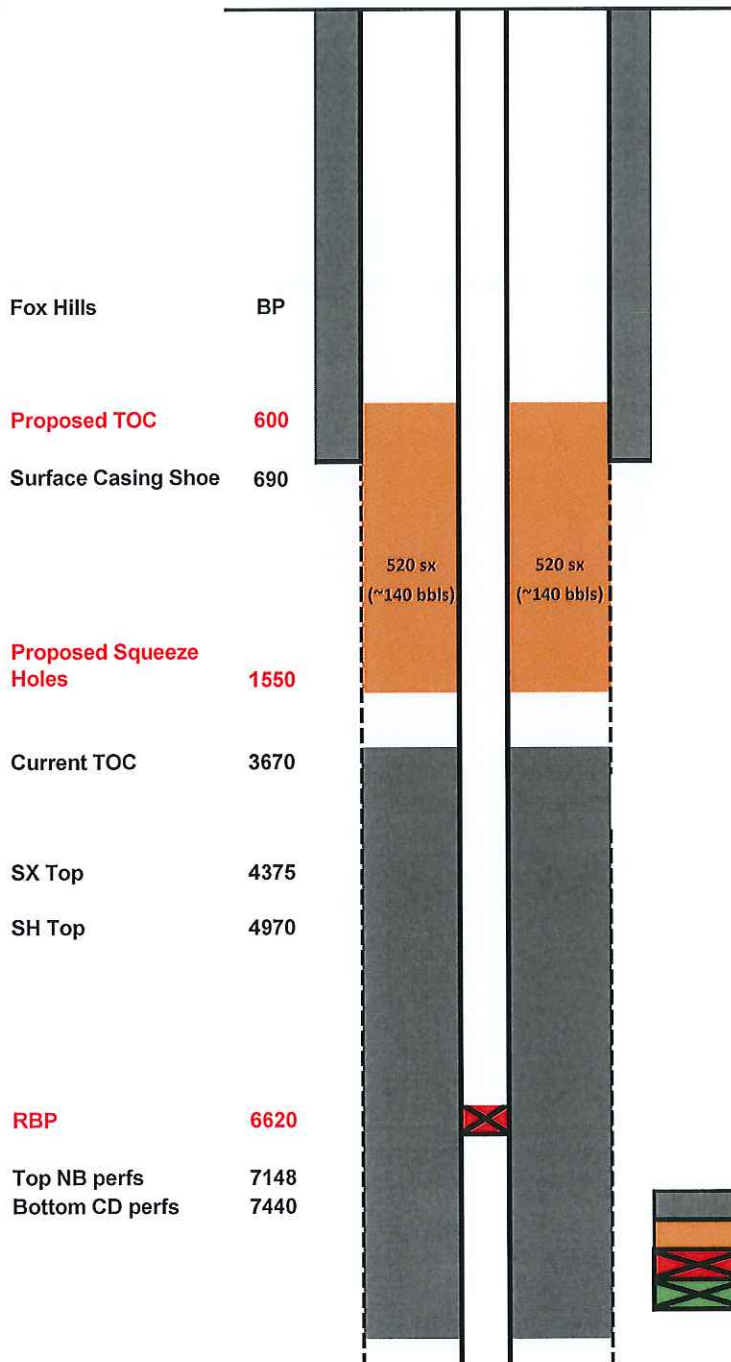
- 1 Call Foreman or Lead Operator at least 24 hr prior to rig move. If not already completed, request that they catch and remove plunger, isolate production equipment and remove any automation equipment prior to the rig showing up. Install perimeter fence as needed.
- 2 MIRU slickline. Fish plunger from lubricator. RIH and pull the bumper spring and standing valve if necessary. RBIH with sinker bars and tag bottom. Report findings. PBTB (should be at 7550'). RDMO slickline.
- 3 Prepare location for base beam rig.
- 4 Spot 23 jts of 2-3/8" 4.7# J-55 8RD EUE tbg.
- 5 MIRU WO rig and auxiliary equipment. Check pressures. Rig up one 3" line or two 2" lines from the casing head annulus to work tank. Kill well with fresh water. ND tree and adapter flange, NU BOP's.
- 6 PU 8-10' landing joint. TIW valve on top and screw into the tbg hanger. Back out the lock down pins and pull up on tbg string to break any possible sand bridges, unseat landing joint and lay down. Do not exceed 80% of tubing tensile strength, or **57,384-lb**. Clean out as necessary to 7550'.
- 7 MIRU EMI equipment. TOOH with 2-3/8" tbg. EMI tbg while TOOH. Lay down joints with wall loss or penetrations >35%. Replace joints as necessary. Note joint number and depth of tubing leak(s) on production equipment failure report in Open Wells. Clearly mark all junk (red band) tubing sent to yard.
- 8 MIRU wireline, NU lubricator and RIH with Gauge Ring to 6700', POOH.
- 9 RIH on wireline with 4.5" RBP (Retrievable Bridge Plug). Set RBP at +/- 6620' (Collars at 6604' and 6646'). POOH and Pressure test RBP to 2,000 psi for 15 minutes. ND lubricator.
- 10 ND BOP, ND tubing head. Install 4-1/2" 7.5K frac valve on 4-1/2" csg.
- 11 Dump bail 2 sx of sand on top of RBP and POOH.
- 12 NU lubricator, PU one 3-1/8" 1ft perf gun (3 SPF 0.58" 120° phasing) and RIH to 1550' (Collars at 1529' and 1571'), Fire gun and perforate 1ft.
- 13 POOH with wireline. RDMO wireline.
- 14 Establish circulation down csg up annulus and make certain well is dead.
- 15 Circulate water using a red dye pill/coloring to confirm annular volume (report findings to engineer before proceeding).
- 16 NU cement head and RU cement services. Circulate 140 bbls (1 annular volume) of water at 6 bpm, followed by a 30bbl (5bbls water, 20bbls SMS, 5bbls water) spacer. Prepare to cement.
- 17 Mix and pump **~140bbls (520 sx)** of 14.0 ppg (1.53 cuft/sk) Type III w/cello-flake and CaCL.
- 18 Shut down, Drop wiper plug and displace 1bbl of cement on top of wiper plug followed by 21 bbls of fresh water, break lines and clean. **Note: Under displace to within no more than 150ft of perfs**, catch final displacement pressure, shut in 4-1/2" frac valve.
- 19 ND cementing head and RDMO cement company.
- 20 Leave well shut in overnight.
- 21 ND 4-1/2" frac valve, NU BOP's. PU 3-7/8" bit and TIH with 2-3/8" tbg, rig up power swivel, tag cement and mill until past squeeze holes and TOOH.
- 22 MIRU wire line and run CCL-GR-CBL-VDL from 1700' to surface.

- 23 RDMO wireline.
- 24 Close the blind rams and pressure test squeeze holes to 1000 psi for 15 min.
- 25 ND BOP's, NU 4-1/2" 5000 psi tubing head with 2-5000 psi valves. NU master valve and tubing head adaptor.
- 26 TIH with 2-3/8" tubing and retrieving head to +/- 6500', leave tubing string in the hole and release additional tubing to yard.
- 27 RDMO WO rig, hang temporary shut in sign due to HZ activity on wellhead and return well to production team.
- 28 **END OF SAFETY PREP STEPS. BELOW ARE STEPS FOR UN-PREPPING THE WELL**
- 29 When notification is sent to un-prepare the well, MIRU WO rig. Kill well as necessary with water and biocide. ND wellhead. NU BOP.
- 30 Spot enough joints of 2-3/8" 4.7# J-55 8RD EUE tubing to reach PBMD.
- 31 PU 2-3/8" tubing as needed and drop down to tag RBP at +/- 6620'. Circulate sand off, latch onto and release RBP. TOOH standing back all 2-3/8" tubing and LD RBP.
- 32 If sand fill tagged above 7440' (depth of bottom Codell perms), either reverse circulate or use a bailer to cleanout to PBMD at +/- 7550'.
- 33 TIH with 2-3/8" NC, 2-3/8" XN SN and 2-3/8" 4.7# J55 EUE tubing, Land tubing @ +/- 7374'.
- 34 Broach tubing to seating nipple. ND BOP's, NU master valve and tubing head adaptor. Hydrotest tubing head to 5000 psi for 15 minutes.
- 35 RDMO WO rig.
- 36 Clean location and swab well back to production. Notify field foreman/field coordinator of finished work and turn well back over to production team.

Sarchet 22-21 05-123-24558 Proposed WBD (Bradenhead)

12-1/4" Surface Hole

7-7/8" Prod Hole



Between 8-5/8" Casing 24# and 4.5" casing	0.24715	ft <sup>3</sup> /ft
Between 8-5/8" Casing 24# and 4.5" casing	0.04402	bbl/ft
7 7/8" Open hole and 4.5" casing	0.2278	ft <sup>3</sup> /ft
7 7/8" Open hole and 4.5" casing	0.0406	bbl/ft
8" Open hole and 4.5" casing	0.2386	ft <sup>3</sup> /ft
8" Open hole and 4.5" casing	0.0425	bbl/ft
8.5" Open hole and 4.5" casing	0.2836	ft <sup>3</sup> /ft
8.5" Open hole and 4.5" casing	0.05051	bbl/ft
9" Open hole and 4.5" casing	0.3313	ft <sup>3</sup> /ft
9" Open hole and 4.5" casing	0.0590	bbl/ft
10" Open hole and 4.5" casing	0.4350	ft <sup>3</sup> /ft
10" Open hole and 4.5" casing	0.0775	bbl/ft
10.5" Open hole and 4.5" casing	0.4909	ft <sup>3</sup> /ft
10.5" Open hole and 4.5" casing	0.0874	bbl/ft
11" Open hole and 4.5" casing	0.5495	ft <sup>3</sup> /ft
11" Open hole and 4.5" casing	0.0979	bbl/ft
11.5" Open hole and 4.5" casing	0.6108	ft <sup>3</sup> /ft
11.5" Open hole and 4.5" casing	0.1088	bbl/ft
12.5" Open hole and 4.5" casing	0.7417	ft <sup>3</sup> /ft
12.5" Open hole and 4.5" casing	0.1321	bbl/ft
Class Cement yield (zone 1, SX/SH) 15.8ppg	1.15	ft <sup>3</sup> /ft
Class Cement yield (zone 2, Fox Hills) 14ppg	1.53	ft <sup>3</sup> /ft

0.2 excess

Zone 2 (Fox Hills)

$$(0.7417 \times (1550 - 600)) / 1.53 \times 1.2 = 520 \text{ sx}$$

$$(0.1321 \times (1550 - 600)) \times 1.2 = 140 \text{ bbls}$$