

Hatch UPRR 31-11 3 Bradenhead Procedure

- 1 Well needs GYRO.
- 2 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.
- 3 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. PBDT should be at 7434'. RIH with GYRO and run from SN (7345') to surface making stops every 100'. RDMO slickline.
- 4 Prepare location for base beam rig.
- 5 Spot a minimum of 25 jts of 2-3/8", 4.7#, J-55, EUE tbg for replacement and 170 jts 1-1/4", 2-33#/ft, J-55, 10rd IJ for annular cement job.
- 6 MIRU WO rig and auxiliary equipment. Check pressures. Rig up 2" line from the casing head annulus to work tank. Kill well with fresh water. ND tree and adapter flange, NU BOP's.
- 7 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 **57,380-lb**. Clean out as necessary to 7434'.
- 8 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.
- 9 TIH with 2-3/8" tbg and 4.5" RBP. Set RBP @ +/-6330', (collars are at 6348' and 6320'). Pressure test RBP to 1000 psi. Spot 2sx of sand on top of RBP and TOOH. **Note: do not test higher than 1000 psi due to age.**
- 10 Bleed off pressure. ND BOP's, ND wellhead, Un-land 4-1/2" casing, NU dual entry flange, NU BOP.
- 11 PU 1-1/4" 2.3#/ft J-55 10rd IJ tubing, and TIH outside 4-1/2" casing in open hole to ~5300'. Circulate with the rig pump while TIH to clean up the annulus. Use sweeps as necessary until clean returns are seen. Make sure no pressure is present on the bradenhead before moving on to the next step. If gas is detected, contact engineering to discuss a plan for moving forward.
- 12 Contact Imperial mud (min of 24hrs. in advance) to bring out 40bbbls of 10.0ppg mud. Pump 40bbbls of mud at 5300'. Leave 1-1/4" tbg full of mud to avoid a wet trip and PUH to 5100' to displace cement.
- 13 MIRU cement services (**Sanjel**). Pump 5bbbls water, 10bbbls mud flush, 5bbbls water, 20bbbls SMS, and 5bbbls of water.
- 14 Mix and pump **620sx (~123.7bbbls)** of 14.6 ppg (1.12 cuft/sk) neat Class G cement and ¼ lb/sk Cello Flake. The cement is to be retarded for 120 °F and 6 hour pump time.
- 15 TOOH 44 joints to ~3700' and circulate 2 times the tubing volume of water or until clean returns are seen.
- 16 PUH to 1400'. Mix and pump **460sx (~109bbbls)** of 14.8 ppg (1.33 cuft/sk) Type III and ¼ lb/sk Cello Flake. The cement is to be retarded for 80 °F and 3 hour pump time.
- 17 TOOH 38 joints to ~200' and circulate 2 times the tubing volume of water or until clean returns are seen. TOOH with 1-1/4" tubing.
- 18 RDMO cementing company.
- 19 ND BOP. ND dual entry flange and crossover. Pick up and land 4-1/2" casing in slips. NU 4-1/2" 5000 psi tubing head with 2-5000 psi valves (use new style flanged well head equipment). NU BOP's to tubing head. Make sure all valves and nipples are rated to 5000 psi.
- 20 Leave well shut in for ~24hrs.
- 21 MIRU wireline and run CCL-GR-CBL-VDL from 6000' to surface. Verify new cement coverage with Evans Engineering. Design is for coverage from ~5100' to 4160' and ~1400' to 501'. In addition to normal handling of logs/job summaries, email copies of all cement job logs/job summaries and invoices to rscDJVendors@anadarko.com within 24 hours of the completion of the job.

- 22 RDMO wireline.
- 23 PU and TIH with 2-3/8" tbg and retrieving head. Circulate sand off RBP at @ +/-6330'. TOOH with RBP and SB tbg.
- 24 TIH with 2-3/8" NC, 2-3/8" XN SN and 2-3/8" 4.7# J55 EUE tbg, circulate out fill or bail if necessary to 7434'. Land tbg @ +/- 7334' (1 joint above top Codell perf).
- 25 Broach tubing to seating nipple. ND BOP's, NU master valve and tubing head adaptor. Hydrotest tubing head to 5000 psi for 15 minutes.
- 26 RDMO WO rig.
- 27 Clean location and swab well back to production. Notify Field Foreman/Field Coordinator of finished work and turn well back over to production team.

Hatch UPRR 31-11 3 05-123-13096 Proposed WBD (Bradenhead)

Wins: 76557

12-1/4" Surface Hole

7-7/8" Prod Hole

Fox Hills Base

BP

Proposed Zone 2 TOC

501

Surface Casing Shoe

601

Fox Hills Marker

1091

Proposed Zone 2 Base

1400

Proposed Zone 1 TOC

4160

SX Top

4360

SX Base

4662

SH Base

5037

Proposed Zone 1 Base

5100

Current TOC

5650

RBP

6330

Collars

6348/6320

Niobrara Perfs

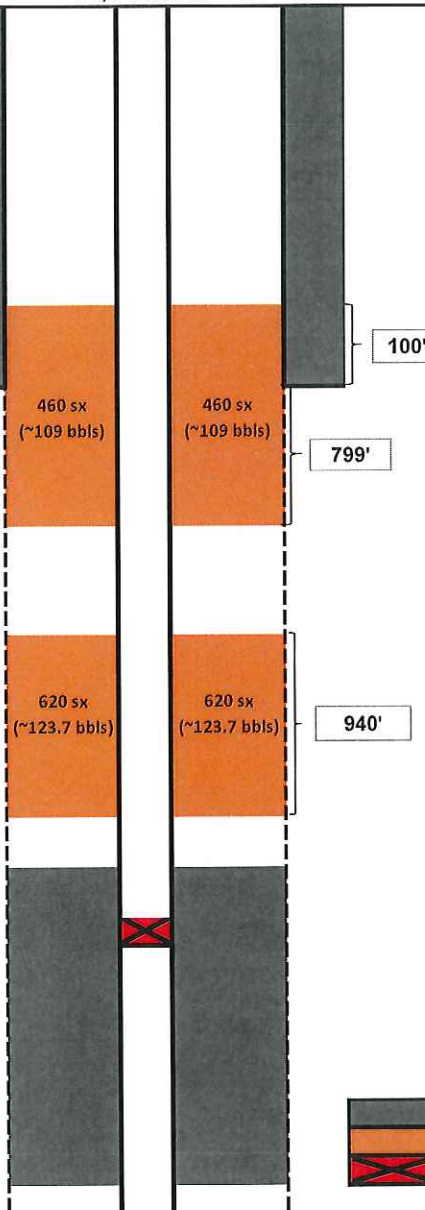
7096-7154

Codell Perfs

7374-7386

PBMD

7434



Between 8-5/8" Casing 24# and 4.5" casing	0.24715	ft ³ /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 ³ /ft
7 7/8" Open hole and 4.5" casing	0.0406	bbl/ft
8" Open hole and 4.5" casing	0.2386	ft ³ /ft
8" Open hole and 4.5" casing	0.0425	bbl/ft
8.5" Open hole and 4.5" casing	0.2836	ft ³ /ft
8.5" Open hole and 4.5" casing	0.05051	bbl/ft
9" Open hole and 4.5" casing	0.3313	ft ³ /ft
9" Open hole and 4.5" casing	0.0590	bbl/ft
9.5" Open hole and 4.5" casing	0.3818	ft ³ /ft
9.5" Open hole and 4.5" casing	0.0680	bbl/ft
10" Open hole and 4.5" casing	0.435	ft ³ /ft
10" Open hole and 4.5" casing	0.0775	bbl/ft
11" Open hole and 4.5" casing	0.5495	ft ³ /ft
11" Open hole and 4.5" casing	0.0979	bbl/ft
11.5" Open hole and 4.5" casing	0.61085	ft ³ /ft
11.5" Open hole and 4.5" casing	0.1088	bbl/ft
12.0" Open hole and 4.5" casing	0.6749	ft ³ /ft
12.0" Open hole and 4.5" casing	0.1202	bbl/ft
Class Cement yield (zone 1, SX/SH) 14.6ppg	1.12	ft ³ /sk
Class Cement yield (zone 2, Fox Hills) 14.8ppg	1.33	ft ³ /sk

Caliper looks like ~11.5" near Zone 1

No caliper at Zone 2

0.2 excess

Zone 2 (Fox Hills)

$$(0.61085 \times (1400 - 601)) / 1.33 \times 1.2 = 440.4 \text{ sx}$$

$$(0.24715 \times (601 - 501)) / 1.33 = 18.6 \text{ sx}$$

$$\text{Total } 459 \text{ sx} \sim 460 \text{ sx}$$

$$(0.1088 \times (1400 - 601)) \times 1.2 = 104.3 \text{ bbl}$$

$$(0.04402 \times (601 - 501)) = 4.4 \text{ bbl}$$

$$\text{Total } 108.7 \text{ bbls} \sim 109.0 \text{ bbls}$$

Zone 1 (SX/SH)

$$(0.61085 \times (5100 - 4160)) / 1.12 \times 1.2 = 615.2 \text{ sx} \sim 620 \text{ sx}$$

$$(0.1088 \times (5100 - 4160)) \times 1.2 = 122.7 \text{ bbls} \sim 123.7 \text{ bbls}$$

Existing Cement
Proposed Cement
RBP