Anadarko Petroleum Corporation

Hulstrom 6-22 Bradenhead Procedure

1 GYRO ran on 1/28/14.

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. PBTD should be at 8540'. RDMO slickline.

4 Prepare location for base beam rig.

5 Spot a minimum of 27 jts of 2-3/8", 4.7#, J-55, EUE tbg for replacement and 155 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 8540'.

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 @ +/-7630', (collars are at 7598' and 7640'). **Pressure test RBP to 5000 psi**. Spot 2sx of sand on top of RBP and TOOH.

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 ~4800'.

12 Contact Imperial mud (min of 24hrs. in advance) to bring out 40bbls of 10.0ppg mud. Circulate with the rig pump while TIH to clean up the annulus. Use sweeps as necessary with the 10.0ppg mud until no pressure is seen on the backside and returns are clean. 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. Could run into solid cement or potential sticking hazard at ~4820'.

13 MIRU cement services (**Sanjel**). Cirulate 5bbls water, 10bbls mud flush, 5bbls water, 10bbls SMS, and 5bbls of water.

14 Mix and pump **155sx (~30.9bbls)** 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 at ~4800'.

15 TOOH 32 joints to ~3800' and circulate 2 times the tubing volume of water or until clean returns are seen.

16 PUH to 1500'. Mix and pump **170sx (~40.3bbls)** 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 35 joints to ~400' 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 if available)**. NU BOP's to tubing head. **Make sure all valves and nipples are rated to 5000 psi**.

20 Leave well shut in for ~36hrs.

21 MIRU wireline and run CCL-GR-CBL-VDL from 5200' to surface. Verify new cement coverage with Evans Engineering. Design is for coverage from ~4800' to 4300' and ~1500' to 822'. 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 @ +/-7630'. TOOH with RBP and SB tbg.

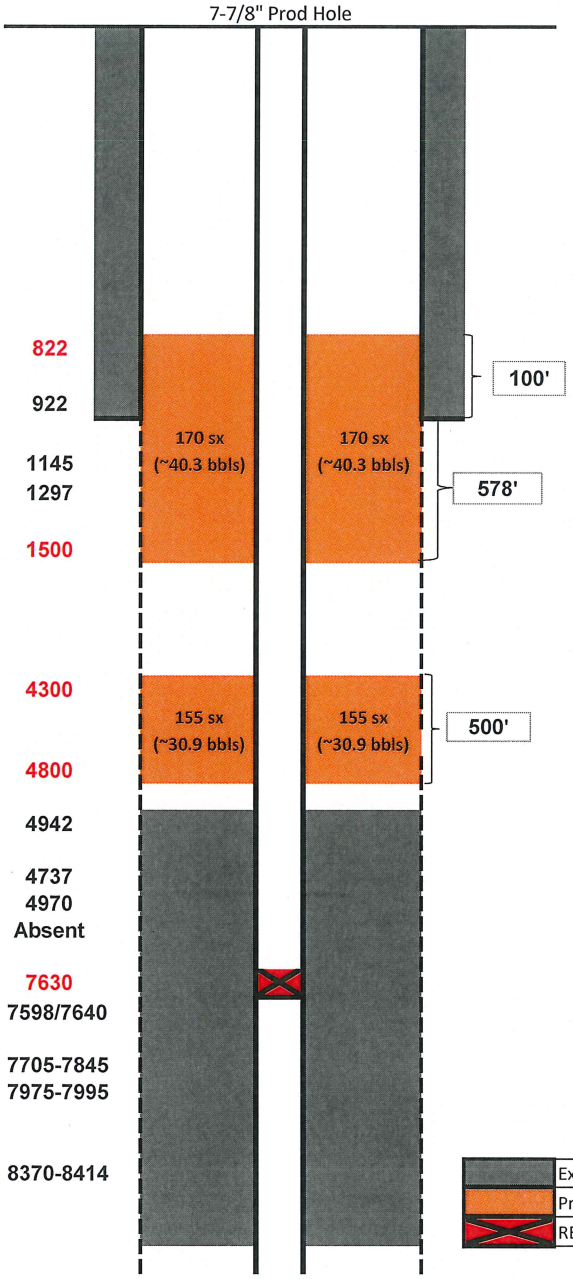
24 TIH with 2-3/8" NC, 2-3/8" XN SN and 2-3/8" 4.7# J55 EUE tbg, circulate out fill or bail if necessary to 8540'. Land tbg @ +/- 8340' (1 joint above top J Sand perf).

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.

Hulstrom 6-22 05-123-21795 Proposed WBD (Bradenhead)
wins: 75082
12-1/4" Surface Hole
7-7/8" Prod Hole



Proposed Zone 2 TOC	822
Surface Casing Shoe	922
Fox Hills Base	1145
Fox Hills Marker	1297
Proposed Zone 2 Base	1500
Proposed Zone 1 TOC	4300
Proposed Zone 1 Base	4800
Current TOC	4942
SX Top	4737
SX Base	4970
SH Base	Absent
RBP	7630
Collars	7598/7640
Niobrara Perfs	7705-7845
Codell Perfs	7975-7995
J-Sand Perfs	8370-8414

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	0.6108	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 ~8-1/2" near Zone 1
No caliper near FHM

0.2 excess

Zone 2 (Fox Hills)

(0.2836*(1500-922))/1.33 * 1.2	=	147.9	sx	
(0.24715*(922-822))/1.33	=	18.6	sx	
Total 166.5 sx	~	170	sx	
(0.05051*(1500-922)) * 1.2	=	35.0	bbl	
(0.04402*(922-822))	=	4.4	bbl	
Total 39.4 bbls	~	40.3	bbls	

Zone 1 (SX/SH)

(0.2836*(4800-4300))/1.12 * 1.2	=	151.9 sx	~	155 sx
(0.05051*(4800-4300)) * 1.2	=	30.3 bbls	~	30.9 bbls