

Gunzner 22-13 Bradenhead Procedure

- 1 GYRO ran on 1/27/09.
- 2 The CBL from 2/19/09 shows that there could be cement bridges as high as 1400' but the first real TOC on the log is at ~1790'. If there is difficulty un-landing the 4-1/2" production casing due to a lack of stretch, call Engineering to discuss a plan moving forward.
- 3 Call Foreman or Lead Operator at least 24 hrs 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.
- 4 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. PBMD should be at 7498'. RDMO slickline.
- 5 Prepare location for base beam rig.
- 6 Spot a minimum of 25 jts of 2-3/8", 4.7#, J-55, EUE tbg for replacement and 65 jts 1-1/4", 2.33#/ft, J-55, 10rd IJ for annular cement job.
- 7 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.
- 8 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 7498'.
- 9 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. 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.
- 10 TIH with 2-3/8" tbg and 4.5" RBP. Set RBP @ +/-7030', (collars are at 7012' and 7040'). Pressure test RBP to 5000 psi. Spot 2sx of sand on top of RBP and TOO H.
- 11 Bleed off pressure. ND BOP's, ND wellhead, Un-land 4 1/2" casing, NU dual entry flange, NU BOP.
- 12 PU 1-1/4" 2.33#/ft J-55 10rd IJ tubing, and TIH outside 4-1/2" casing in open hole to ~1500'. 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 bradenhead before moving on to the next step. If gas is detected, contact engineering to discuss plan moving forward.
- 13 Contact Imperial mud (min of 24hrs. in advance) to bring out 40bbls of 10.0ppg mud. Pump 40bbls of mud at 1500'. Leave 1-1/4" tbg full of mud to avoid wet trip and PUH to 1300' to displace cement.
- 14 MIRU cement services. Circulate 5 bbls water, 10 bbls mud flush and 5 bbls water. Prepare to cement.
- 15 Mix and pump **150sx (~35.5bbls)** of 14.8 ppg (1.33 cuft/sk) Type III w/ 1/4 lb/sk cello-flake. The cement is to be retarded for 80 °F and 3 hour pump time. Design is for coverage from ~1300' to ~687'.
- 16 TOO H ~35 joints to ~300' and reverse circulate 2 times the tubing volume of water or until clean returns are seen. TOO H with 1-1/4" tubing.

- 17 RDMO cementing company.
- 18 ND BOP. ND dual entry flange and crossover. Pick up and land 4-1/2" casing in slips. NU new 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.
- 19 Leave well shut in for ~36hrs.
- 20 MIRU wireline and run CCL-GR-CBL-VDL from **2000' to surface**. If top of cement is below 687' notify Engineering. 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.
- 21 RDMO wireline.
- 22 PU and TIH with 2-3/8" tbg and retrieving head. Circulate sand off RBP at @ +/-7030'. TOOH with RBP and SB tbg.
- 23 TIH with 2-3/8" NC, 2-3/8" XN SN and 2-3/8" 4.7# J55 EUE tbg, circulate out fill if necessary to 7498'. Land tbg @ +/- 7356' (1 jt above bottom Codell perf).
- 24 Broach tubing to seating nipple. ND BOP's, NU master valve and tubing head adaptor. Hydrotest tubing head to 5000 psi for 15 minutes.
- 25 RDMO WO rig.
- 26 Clean location and swab well back to production. Notify Field Foreman/Field Coordinator of finished work and turn well back over to production team.

Gunzner 22-13 05-123-29595 Proposed WBD (Bradenhead)

12-1/4" Surface Hole

7-7/8" Prod Hole

Fox Hills Base

BP

Proposed Zone 1 TOC

687

Surface Casing Shoe

787

Fox Hills Marker

877

Proposed Zone 1 Base

1300

Current TOC

~1790

SX top

4272

SX base

4499

SH base

4888

RBP

7030

Collars

7012/7040

NB perfs

7100-7254

CD perfs

7370-7386

150 sx
(~35.5 bbls)

150 sx
(~35.5 bbls)

100'

513'

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	0.059	bbl/ft
9.5" Open hole and 4.5" casing	0.3818	ft ³ /ft
9.5" Open hole and 4.5" casing	0.068	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
12.5" Open hole and 4.5" casing	0.7417	ft ³ /ft
12.5" Open hole and 4.5" casing	0.1321	bbl/ft
Class Cement yield (SX/SH) 15.8ppg	1.15	ft ³ /sk
Class Cement yield (Fox Hills) 14.8ppg	1.33	ft ³ /sk

*Caliper shows ~8-1/2" near SH/SX

0.2 excess

Zone 1 (Fox Hills)

$$(0.2836 * (1300 - 787)) / 1.33 * 1.2 = 131.3 \text{ sx}$$




$$(0.24715 * (787 - 687)) / 1.33 = 18.6 \text{ sx}$$

$$\text{Total } 149.9 \text{ sx} \sim 150 \text{ sx}$$

$$(0.05051 * (1300 - 787)) * 1.2 = 31.1 \text{ bbls}$$

$$(0.04402 * (787 - 687)) = 4.4 \text{ bbls}$$

$$\text{Total } 35.5 \text{ bbls} \sim 35.5 \text{ bbls}$$

	Existing Cement
	Proposed Cement
	RBP