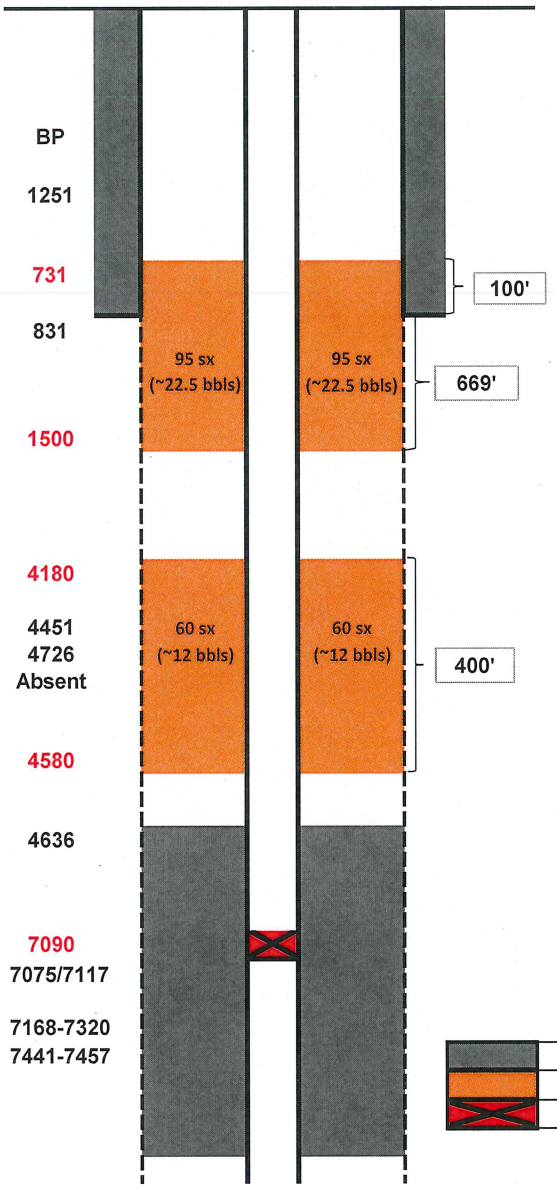
Anadarko Petroleum Corporation

Brown 25-35 Bradenhead Procedure

1 GYRO ran on 7/4/2007.
2 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.
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 7648'. RDMO slickline.
4 Prepare location for base beam rig.
5 Spot 25 jts of 2-3/8" 4.7# J-55 8RD EUE tbg for cleanout and replacement.
6 MIRU WO rig and auxiliary equipment. Check pressures. Rig up one 3" 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.
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 CIBP at 7620'.
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 MIRU wireline, NU lubricator and RIH with Gauge Ring to 7100', POOH.
10 RIH on wireline with 4.5" 11.6# RBP. Set RBP at +/- 7090' (Collars at 7075' and 7117'). POOH and Pressure test RBP to 1,000 psi for 15 minutes. ND lubricator.
11 ND BOP, ND tubing head. Install 4-1/2" 7.5K frac valve on 4-1/2" csg.
12 Dump bail 2 sx of sand on top of RBP and POOH.
13 NU lubricator, PU one 3-1/8" 1ft perf gun (3 SPF 0.58" 120° phasing) and CCL and RIH to +/- 4580' (avoid collars), fire gun and perforate 1ft.
14 POOH with wireline. RDMO wireline.
15 Establish circulation down csg up annulus with rig pump and make certain well is dead. Circulate until clean returns are seen.
16 Shut in well for 30 minutes to ensure no gas is present. If gas is detected, contact engineering to discuss plan moving forward.
17 Contact Imperial mud (min of 24hrs. in advance) to bring out 40bbls of 10.0ppg mud.
18 NU cement head (with configuration to run wiper plug) and RU cement services (**Sanjel**). Prepare to cement. Pump 40bbls 10ppg mud, 10bbls water, 20bbls mud flush, 10bbls water, 20bbls SMS and 5bbls water.
19 Mix and pump **~12bbls (60sx)** of 14.6 ppg (1.12 ft^3/sk) neat Class G cement with ¼ #/sk cello-flake. The cement is to be retarded for 120 °F and 6 hour pump time.
20 Shut down, Drop wiper plug and displace 1bbl of cement on top of wiper plug followed by 69 bbls of fresh water, break lines and clean. **Note: Under displace to within no more than 100ft of perfs,** catch final displacement pressure, shut in 4-1/2" frac valve.
21 ND cementing head and RDMO cementing company.
22 Leave well shut in overnight with final displacement pressure on the wiper plug.
23 Rig up wireline truck and run a CCL-GR-CBL-VDL from the wiper plug at +/- 4480' to 3700'. Notify the Engineer of the top of cement. 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.

24 PU one 3-1/8" 1ft perf gun (3 SPF 0.58" 120° phasing) and CCL and RIH to +/- 1500' (avoid collars), fire gun and perforate 1ft.
25 POOH with wireline. RDMO wireline.
26 Establish circulation down csg up annulus with rig pump and make certain well is dead. Circulate until clean returns are seen.
27 Shut in well for 30 minutes to ensure no gas is present. If gas is detected, contact engineering to discuss plan moving forward.
28 NU cement head (with configuration to run wiper plug) and RU cement services (**Sanjel**). Prepare to cement. Circulate a 20bbl (5bbl water, 10bbl mud flush, 5bbl water) spacer.
29 Mix and pump **~22.5bbls (95sx)** of 14.8 ppg (1.33 ft^3/sk) Type III with ¼ #/sk cello-flake. The cement is to be retarded for 80 °F and 3 hour pump time.
30 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 100ft of perfs,** catch final displacement pressure, shut in 4-1/2" frac valve.
31 ND cementing head and RDMO cementing company.
32 Leave well shut in overnight with final displacement pressure on the wiper plug.
33 ND 4-1/2" frac valve. NU 4-1/2" 5000 psi tubing head with 2-5000 psi valves (use new flanged style wellhead equipment if available). NU BOP's to tubing head.
34 PU 3-7/8" bit and TIH with 2-3/8" tbg, rig up power swivel, tag cement and mill until past squeeze holes at +/- 1500'.
35 Close the blind rams and pressure test squeeze holes to 1000 psi for 15 min. If pressure holds, continue to next step.
36 Tag cement with 3-7/8" bit and mill until past squeeze holes at +/- 4580' and TOOH.
37 Close the blind rams and pressure test squeeze holes to 1000 psi for 15 min. If pressure holds, continue to next step.
38 Rig up wireline truck and run a CCL-GR-CBL-VDL from the RBP (and 2 sx of sand) at +/- 7090' to surface. Notify the Engineer of the top of cement. 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.
39 RDMO wireline.
40 PU and TIH with 2-3/8" tbg and retrieving head. Circulate sand off RBP at @ +/- 7090'. TOOH with RBP and SB tbg.
41 MIRU hydrotester. PU 2-3/8" NC, 2-3/8" XN nipple (be sure nipple is correctly input into OpenWells) and 2-3/8" 4.7# J-55 EUE tbg to surface. Hydrotest tubing to 6,000 psi while TIH. Land EOT at +/- 7410' (1 joint above top Codell perf).
42 ND BOP's, NU master valve and tubing head adaptor.
43 RU rig lubricator. Broach tubing to seating nipple. RD rig lubricator.
44 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 using hydrotester. RDMO hydrotester.
45 RDMO WO rig.
46 Clean location and swab well back to production. Notify Field Foreman/Field Coordinator of finished work and turn well back over to production team.

Brown 25-35 05-123-25930 Proposed WBD (Bradenhead)
9-7/8 Surface Hole
6-1/4" Prod Hole



Fox Hills	BP
Fox Hills Marker	1251
Proposed Zone 2 TOC	731
Surface Casing Shoe	831
Proposed Zone 2 Squeeze Holes	1500
Proposed Zone 1 TOC	4180
SX Top	4451
SX Base	4726
SH Base	Absent
Proposed Zone 1 Squeeze Holes	4580
Current TOC	4636
RBP	7090
Collars	7075/7117
NI perfs	7168-7320
CD perfs	7441-7457

Between 7" 20# casing and 4.5" 11.6# casing	0.1169	ft^3/ft
Between 7" 20# casing and 4.5" 11.6# casing	0.0208	bbl/ft
6-1/4" open hole and 4.5" casing	0.1026	ft^3/ft
6-1/4" open hole and 4.5" casing	0.0183	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

0.5 excess

Zone 2 (Fox Hills)

(0.1026*(1500-831))/1.33 * 1.5	=	77.4 sx	
(0.1169*(831-731))/1.33	=	8.8 sx	
Total 86.2 sx	~	95 sx	
(0.0183*(1500-831)) * 1.5	=	18.4 bbls	
(0.0208*(831-731))	=	2.1 bbls	
Total 20.4 bbls	~	22.5 bbls	

Zone 1 (SX/SH)

(0.1026*(4580-4180))/1.12 * 1.5	=	55 sx	~	60 sx
(0.0183*(4580-4180)) * 1.5	=	10.1 bbls	~	12 bbls

Existing Cement
Proposed Cement
RBP