14-133

OCD Hobbs

Revised 11/26/14

Form 3160-3
(March 2012)

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

(D)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Split Estate

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

5. Lease Serial No.
LC 031621B

6. If Indian, Allotee or Tribe Name
N/A

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.
N/A

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☑ Multiple Zone

8. Lease Name and Well No. (31365)
Britt B 53

2. Name of Operator ConocoPhillips Company (217817) HC

9. API Well No.
30-025- 43155

3a. Address 600 N. Dairy Ashford Rd.; P10-3096
Houston, TX 77079-1175

3b. Phone No. *(include area code)*
281-206-5281

MAR 2 8 2016

10. Field and Pool, or Exploratory
~~Blinebry; Tubb~~ WEIR; BLINEBRY (63780)
MONUMENT; TUBB (47090)

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface 330' FNL & 2340' FWL; UL C, Sec. 15, T20S, R37E

RECEIVED

11. Sec., T. R. M. or Blk. and Survey or Area
Sec. 15, T20S, R37E

At proposed prod. zone 660' FNL & 1980' FWL; UL C, Sec. 15, T20S, R37E

Kz

14. Distance in miles and direction from nearest town or post office*
Approximately 5 miles NW of Monument, NM

12. County or Parish
Lea County

13. State
NM

| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) | 16. No. of acres in lease | 17. Spacing Unit dedicated to this well |
|---|---|---|
| 330' | 1757 | 40.00 |

| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. | 19. Proposed Depth | 20. BLM/BIA Bond No. on file |
|---|---|---|
| ~500' | 7170' TVD/7193' MD | ES0085 |

| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) | 22. Approximate date work will start* | 23. Estimated duration |
|---|---|---|
| 3566' GL | 03/01/2015 | 7 days |

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No.1, must be attached to this form:

1. Well plat certified by a registered surveyor.
2. A Drilling Plan.
3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO must be filed with the appropriate Forest Service Office).
4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification
6. Such other site specific information and/or plans as may be required by the BLM.

| 25. Signature | Name *(Printed/Typed)* | Date |
|---|---|---|
| Susan B. Maunder | Susan B. Maunder | 11/26/14 |

Title
Senior Regulatory Specialist

| Approved by *(Signature)* | Name *(Printed/Typed)* | Date |
|---|---|---|
| Steve Caffey | | MAR 2 3 2016 |

| Title | Office |
|---|---|
| FIELD MANAGER | CARLSBAD FIELD OFFICE |

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

Kz 04/06/16

Lea County Controlled Water Basin

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

APR 14 2016

# Drilling Plan
# ConocoPhillips Company
# Britt B; Blinebry –Tubb - Drinkard

## Britt B#53

Lea County, New Mexico

**1. Estimated tops of geological markers and estimated depths to water, oil, or gas formations:.**

The datum for these depths is RKB (which is 13' above Ground Level).

| Formations | Top Depth FT MD | Top Depths FT TVD | Contents |
|---|---|---|---|
| Quaternary | Surface | Surface | Fresh Water |
| Rustler | 1307 | 1307 | Anhydrite |
| Salado (top of salt) | 1398 | 1398 | Salt |
| Tansill (base of salt) | 2549 | 2548 | Gas, Oil and Water |
| Yates | 2695 | 2693 | Gas, Oil and Water |
| Seven Rivers | 2954 | 2951 | Gas, Oil and Water |
| Queen | 3492 | 3486 | Gas, Oil and Water |
| Penrose | 3603 | 3597 | Gas, Oil and Water |
| Grayburg | 3773 | 3766 | Gas, Oil and Water |
| San Andres | 4019 | 4011 | Gas, Oil and Water |
| Glorieta | 5222 | 5208 | Gas, Oil and Water |
| Paddock | 5355 | 5341 | Gas, Oil and Water |
| Blinebry | 5678 | 5662 | Gas, Oil and Water |
| Tubb | 6391 | 6372 | Gas, Oil and Water |
| Drinkard | 6699 | 6678 | Gas, Oil and Water |
| Abo | 6992 | 6970 | Gas, Oil and Water |
| Deepest estimated perforation | 6992 | 6970 | Deepest estimated perf. is Top of Abo |
| Total Depth (maximum) | 7193 | 7170 | 200' below deepest estimated perforation |

All of the water bearing formations identified above will be protected by setting of the 8-5/8" surface casing 25' – 70' into the Rustler formation and circulating of cement from casing shoe to surface in accordance with the provisions of Onshore Oil and Gas Order No. 2 and New Mexico Oil Conservation Division Title 19.

The targeted oil and gas bearing formations identified above will be protected by setting of the 5-1/2" production casing 10' off bottom of TD and circulating of cement from casing shoe to surface in accordance with the provisions of Onshore Oil and Gas Order No. 2 and New Mexico Oil Conservation Division Title 19.

## 2. Proposed casing program:

| Type | Hole Size | Interval MD RKB (ft) | | OD | Wt | Gr | Conn | MIY | Col | Jt Str | Safety Factors Calculated per ConocoPhillips Corporate Criteria | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (in) | From | To | (inches) | (lb/ft) | | | (psi) | (psi) | (klbs) | Burst DF | Collapse DF | Jt Str DF (Tension) Dry/Buoyant |
| Cond | 20 | 0 | 40' – 85' (30' – 75' BGL) | 16 | 0.5" wall | B | Line Pipe | N/A | N/A | N/A | NA | NA | NA |
| Alt. Cond | 20 | 0 | 40' – 85' (30' – 75' BGL) | 13-3/8 | 48# | H-40 | PE | 1730 | 740 | N/A | NA | NA | NA |
| Surf | 12-1/4 | 0 | ~~1337'~~ 1350' – ~~1367'~~ | 8-5/8 | 24# | J-55 | STC | 2950 | 1370 | 244 | 1.38 | 2.15 | 3.05 |
| Prod | 7-7/8 | 0 | 7153' – 7183' | 5-1/2 | 17# | L-80 | LTC | 7740 | 6290 | 338 | 3.47 | 4.89 | 2.68 |

See COA

The casing will be suitable for $H_2S$ Service. All casing will be new.

The surface and production casing will be set approximately 10' off bottom and we will drill the hole with a 45' range uncertainty for casing set depth to fit the casing string so that the cementing head is positioned at the floor for the cement job.

The production casing will be set 155' to 200' below the deepest estimated perforation to provide rathole for the pumping completion and for the logs to get deep enough to log the interval of interest.

**Casing Safety Factors - BLM Criteria:**

| Type | Depth | Wt | MIY | Col | Jt Str | Drill Fluid | Burst | Collapse | Tensile-Dry | Tens-Bouy |
|---|---|---|---|---|---|---|---|---|---|---|
| Surface Casing | 1337 | 24 | 2950 | 1370 | 244000 | 8.5 | 4.99 | 2.32 | 7.6 | 8.7 |
| Production Casing | 7183 | 17 | 7740 | 6290 | 338000 | 10 | 2.07 | 1.68 | 2.77 | 3.27 |

**Casing Safety Factors – Additional ConocoPhillips Criteria:**

ConocoPhillips casing design policy establishes Corporate Minimum Design Factors (see table below) and requires that service life load cases be considered and provided for in the casing design.

ConocoPhillips Corporate Criteria for Minimum Design Factors

| | Burst | Collapse | Axial |
|---|---|---|---|
| Casing Design Factors | 1.15 | 1.05 | 1.4 |

| Type | Depth | Wt | MIY | Col | Jt Str | Pipe Yield | MW | Burst | Col | Ten |
|---|---|---|---|---|---|---|---|---|---|---|
| Conductor | 85 | 65 | 35000 | - | - | 432966 | - | - | - | - |
| Surface Casing (8-5/8" 24# J-55 STC) | 1337 | 24 | 2950 | 1370 | 244000 | 381000 | 8.5 | 1.41 | 2.30 | 3.13 |
| Production Casing (5-1/2" 17# L-80 LTC) | 7183 | 17 | 7740 | 6290 | 338000 | 397000 | 10 | 2.07 | 2.48 | 1.95 |

**Burst – ConocoPhillips Required Load Cases**

The maximum internal (burst) load on the Surface Casing occurs when the surface casing is tested to 1500 psi (as per BLM Onshore Order 2 - III. Requirements).
The maximum internal (burst) load on the Production Casing occurs during the fracture stimulation where the maximum allowable working pressure (MAWP) is the pressure that would fit ConocoPhillips Corporate Criteria for Minimum Factors.

Surface Casing Test Pressure = 1500 psi
Surface Rated Working Pressure (BOPE) = 3000 psi
Field SW = 10 ppg
Predicted Pore Pressure at TD (PPTD) = 8.55 ppg
Predicted Frac Gradient at Shoe (CSFG) = 19.23 ppg

Surface Casing Burst Safety Factor = API Burst Rating / Maximum Predicted Surface Pressure (MPSP) 'OR' Maximum Allowable Surface Pressure (MASP)
Production Casing MAWP for the Fracture Stimulation = API Burst Rating / Corporate Minimum Burst Design Factor

**Surface Casing Burst Safety Factor:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case #1. MPSP (MWhyd next section) = | 1337 | x | 0.052 | x | 10 | = | 695 | | | | | |
| Case #2. MPSP (Field SW @ $Bullhead_{CSFG}$ + 200 psi) = | 1337 | x | 0.052 | x | 19.23 | - | 695 | + | 200 | = | 842 | |
| Case #3. MPSP (Kick Vol @ next section TD) = | 7183 | x | 0.052 | x | 8.55 | - | 584.6 | - | 591 | = | *2018* | |
| Case #4. MPSP (PPTD - GG) = | 7183 | x | 0.052 | x | 8.55 | - | 718.3 | = | *2475* | | | |
| Case #3 & #4 Limited to MPSP (CSFG + 0.2 ppg) = | 1337 | x | 0.052 | x ( | 19.23 | + | 0.2 | ) = | 1351 | | | |
| MASP (MWhyd + Test Pressure) = | 1337 | x | 0.052 | x | 8.5 | + | 1500 | = | 2091 | | | |
| Burst Safety Factor (Max. MPSP or MASP) = | 2950 | / | 2091 | = | 1.41 | | | | | | | |

**Production Casing Burst Safety Factor:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case #1. MPSP (MWhyd TD) = | 7183 | x | 0.052 | x | 10 | = | 3735.16 | | | | | |
| Case #4. MPSP (PPTD - GG) = | 7183 | x | 0.052 | x | 8.55 | - | 718.3 | = | 2475 | | | |
| Burst Safety Factor (Max. MPSP) = | 7740 | / | 3735 | = | 2.07 | | | | | | | |
| MAWP for the Fracture Stimulation (Corporate Criteria) = | 7740 | / | 1.15 | = | 6730 | | | | | | | |

**Collapse – ConocoPhillips Required Load Cases**

The maximum collapse load on the Surface Casing occurs when cementing to surface, 1/3 evacuation to the next casing setting depth, or deepest depth of exposure (full evacuation).
The maximum collapse load on the Production Casing occurs when cementing to surface, or 1/3 evacuation to the deepest depth of exposure; and
therefore, the external pressure profile for the evacuation cases should be equal to the pore pressure of the horizons on the outside of the casing which we assumed to be PPTD.

Surface Casing Collapse Safety Factor = API Collapse Rating / Full Evacuation 'OR' Cement Displacement during Cementing to Surface
Production Casing Collapse Safety Factor = API Collapse Rating / Maximum Predicted Surface Pressure 'OR' Cement Displacement during Cementing to Surface

Cement Displacement Fluid (FW) = 8.34 ppg
Surface Cement Lead = 13.6 ppg
Surface Cement Tail = 14.8 ppg
Top of Surface Tail Cement = 300 ft
Top of Cement = Cement to Surface
Prod Cement Lead = 11.8 ppg
Prod Cement Tail = 16.4 ppg
Top of Prod Tail Cement = 5200 ft

**Surface Casing Collapse Safety Factor:**

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Full Evacuation Diff Pressure = | 1337 | x | 0.052 | x | 8.55 | = | 594 | | | | | | | | | | | | |
| Cementing Diff Lift Pressure = | [( | 1037 | x | 0.052 | x | 13.6 | ) + ( | 300 | x | 0.052 | x | 14.8 | ) - | 580 | ] = | 384 | | | |
| Collapse Safety Factor = | 1370 | / | 594 | = | 2.30 | | | | | | | | | | | | | | |

**Production Casing Collapse Safety Factor:**

| | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 Evacuation Diff Pressure = | [( | 7183 | x | 0.052 | x | 8.55 | ) - ( | 7183 | / | 3 | x | 0.052 | x | 8.34 | )] = | 2155 | | | |
| Cementing Diff Lift Pressure = | [( | 1983 | x | 0.052 | x | 11.8 | ) + ( | 5200 | x | 0.052 | x | 16.4 | ) - | 3115 | ] = | 2536 | | | |
| Collapse Safety Factor = | 6290 | / | 2536 | = | 2.48 | | | | | | | | | | | | | | |

**Tensial Strength – ConocoPhillips Required Load Cases**

The maximum axial (tension) load occurs if casing were to get stuck and pulled on to try to get it unstuck.

Maximum Allowable Axial Load for Pipe Yield = API Pipe Yield Strength Rating / Corporate Minimum Axial Design Factor
Maximum Allowable Axial Load for Joint = API Joint Strength Rating / Corporate Minimum Axial Design Factor
Maximum Allowable Hook Load (Limited to 75% of Rig Max Load) = Maximum Allowable Axial Load
Maximum Allowable Overpull Margin = Maximum Allowable Hook Load - Bouyant Wt of the String
Tensial Safety Factor = API Pipe Yield 'OR' API Joint Strength 'OR' Rig Max Load Rating / ( Bouyant Wt of String + Minimum Overpull Required )

Rig Max Load (300,000 lbs) x 75% = 225000 lbs
Minimum Overpull Required = 50000 lbs

**Surface Casing Tensial Strength Safety Factor:**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Air Wt = | 32088 | | | | | | | | | | |
| Bouyant Wt = | 32088 | x | 0.870 | = | 27924 | | | | | | |
| Max. Allowable Axial Load (Pipe Yield) = | 381000 | / | 1.40 | = | 272143 | | | | | | |
| Max. Allowable Axial Load (Joint) = | 244000 | / | 1.40 | = | 174286 | | | | | | |
| Max. Allowable Hook Load (Limited to 75% of Rig Max Load) = | 174286 | | | | | | | | | | |
| Max. Allowable Overpull Margin = | 174286 | - ( | 32088 | x | 0.870 | ) = | 146362 | | | | |
| Tensial Safety Factor = | 244000 | / ( | 27924 | + | 50000 | ) = | 3.13 | | | | |

**Production Casing Tensial Strength Safety Factor:**

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Air Wt = | 122111 | | | | | | | | | | |
| Bouyant Wt = | 122111 | x | 0.847 | = | 103468 | | | | | | |
| Max. Allowable Axial Load (Pipe Yield) = | 397000 | / | 1.40 | = | 283571 | | | | | | |
| Max. Allowable Axial Load (Joint) = | 338000 | / | 1.40 | = | 241429 | | | | | | |
| Max. Allowable Hook Load (Limited to 75% of Rig Max Load) = | 225000 | | | | | | | | | | |
| Max. Allowable Overpull Margin = | 225000 | - ( | 122111 | x | 0.847 | ) = | 121532 | | | | |
| Tensial Safety Factor = | 300000 | / ( | 103468 | + | 50000 | ) = | 1.95 | | | | |

**Compression Strength – ConocoPhillips Required Load Cases**

The maximum axial (compression) load for the well is where the surface casing is landed on the conductor with a support of a plate or landing ring. The surface casing is also calculated to bear 60% of the load but not limited. Any other axial loads such as a snubbing unit or other would need to be added to the load.

Compression Safety Factor = API Axial Joint Strength Rating 'OR' API Axial Pipe Yield Rating / Maximum Predicted Load

Wellhead Load = 3000 lbs

**Conductor & Surface Compression Safety Factor**

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Surf Casing Wt (Bouyant) = | ( | 32088 | x | 0.870 | ) = | 27924 | | | | | | | | | |
| Prod Casing Wt (Bouyant) = | ( | 122111 | x | 0.847 | ) = | 103468 | | | | | | | | | |
| Tubing Wt (Air Wt) = | 7183 | x | 6.5 | = | 46689 | | | | | | | | | | |
| Tubing Fluid Wt = | 7183 | x | 0.052 | x | 6.55 | x | 0.7854 | x | 2.441 | ^2 = | 11449 | | | | |
| Load on Conductor = | 3000 | + | 27924 | + | 103468 | + | 46689.5 | + | 11449 | = | 192531 | | | | |
| Conductor Compression Safety Factor = | 432966 | / | 192531 | = | 2.25 | | | | | | | | | | |
| Load on Surface Casing = | 192531 | x | 60% | = | 115518 | | | | | | | | | | |
| Surface Casing Compression Safety Factor = | 244000 | / | 115518 | = | 2.11 | | | | | | | | | | |

3. **Proposed cementing program:**

**16" or 13-3/8" Conductor:**

Cement to surface with rathole mix, ready mix or Class C Neat cement.
(Note: The gravel used in the cement is not to exceed 3/8" diameter)
TOC at surface.

**8-5/8" Surface Casing Cementing Program:**

The intention for the cementing program for the Surface Casing is to:

- Place the Tail Slurry from the casing shoe to 350' above the casing shoe,
- Bring the Lead Slurry to surface.

Spacer: 20 bbls Fresh Water

| Slurry | | Intervals Ft MD | | Weight ppg | Sx | Vol Cuft | Additives | Yield $ft^3/sx$ |
|---|---|---|---|---|---|---|---|---|
| Lead | Class C | Surface | 1037' – 1067' | 13.6 | 450 | 765 | + 2% Extender<br>+ 2% $CaCl_2$<br>+ 0.125 lb/sx Lost Circulation Control Agent<br>+ 0.2% Defoamer<br>Excess =200% based on gauge hole volume | 1.70 |
| Tail | Class C | 1037' – 1067' | 1337' – 1367' | 14.8 | 300 | 402 | 1% CaCl2<br>Excess = 100% based on gauge hole volume | 1.34 |

Displacement: Fresh Water.

**Note: In accordance with the Pecos District Conditions of Approval, we will Wait on Cement (WOC) for a period of not less than 18 hrs after placement or until at least 500 psi compressive strength has been reached in both the Lead Slurry and Tail Slurry cements on the Surface Casing, whichever is greater.**

**5-1/2" Production Casing Cementing Program – Single Stage Cementing Option:**

The intention for the cementing program for the Production Casing – Single Stage Cementing Option is to:

- Place the Tail Slurry from the casing shoe to above the top of the Grayburg,
- Bring the Lead Slurry to surface.

Spacer: 20 bbls Fresh Water

| Slurry | | Intervals Ft MD | | Weight ppg | Sx | Vol Cuft | Additives | Yield $ft^3/sx$ |
|---|---|---|---|---|---|---|---|---|
| Lead | C<br>Gas Tight Slurry | Surface | 3000' | 11.5 | 500 | 1300 | Class C<br>94 lb/sx<br>6% Extender<br>10% Gas Migration Control<br>2% Sodium Metasilicate (dry)<br>1% Cement Bonding Agent<br>3% Aluminum Silicate<br>0.125 lb/sx Cello Flake<br>3 lb/sx LCM-1 | 2.6 |
| Tail | Poz/C<br>Gas Tight Slurry | 3000' | 7153' – 7183' | 14.0 | 800 | 1120 | (35:65) Poz:C<br>33 lb/sx<br>1% Sodium Metasilicate (dry)<br>1.5% Fluid Loss Control, | 1.40 |

Displacement: Fresh Water with approximately 250 ppm gluteraldehyde biocide.

## 5-1/2" Production Casing Cementing Program – Two-Stage Cementing Option (Shallow Flow):

ConocoPhillips Company respectfully requests the options to our cementing program. The intention for the cementing program for the Production Casing – Two-Stage Cementing Option is to:

- Provide a contingency plan for using a Stage Tool and Annulus Casing Packer(s) to isolate shallow saltwater or gas flow if either of these events occurs while drilling the well.
- Place the Stage 1 Cement from the casing shoe to surface.
- Proceed with Stage 2 Cement only if cement returns are contaminated or flow was observed after pumping 1st stage.

Spacer: 20 bbls Fresh Water

| Stage 1 - Slurry | | Intervals Ft MD | | Weight ppg | Sx | Vol Cuft | Additives | Yield $ft^3/sx$ |
|---|---|---|---|---|---|---|---|---|
| Lead | C Gas Tight Slurry | Surface | 3000' | 11.5 | 500 | 1300 | Class C<br>94 lb/sx<br>6% Extender<br>10% Gas Migration Control<br>2% Sodium Metasilicate (dry)<br>1% Cement Bonding Agent<br>3% Aluminum Silicate<br>0.125 lb/sx Cello Flake<br>3 lb/sx LCM-1 | 2.6 |
| Tail | Poz/C Gas Tight Slurry | 3000' | 7153' – 7183' | 14.0 | 800 | 1120 | (35:65) Poz:C<br>33 lb/sx<br>1% Sodium Metasilicate (dry)<br>1.5% Fluid Loss Control, | 1.40 |

1st stage displacement: FW followed by Weighted Spacer

Spacer: Remaining Weighted Spacer in cementing lines from the 1st stage displacement

| Stage 2 - Slurry | | Intervals Ft MD | | Weight ppg | Sx | Vol Cuft | Additives | Yield $ft^3/sx$ |
|---|---|---|---|---|---|---|---|---|
| Lead | Class C | Surface | Stage Tool ~1450' | 11.5 | 250 | 620 | 1% CaCl2<br>Excess = 100% based on gauge hole volume | 2.6 |

2nd stage displacement: Fresh Water

## 5-1/2" Production Casing Cementing Program – Two-Stage Cementing Option (Lower Zone Losses or Waterflow):

ConocoPhillips Company respectfully requests the options to our cementing program. The intention for the cementing program for the Production Casing – Two-Stage Cementing Option is to:

- Provide a contingency plan for using a Stage Tool and Annulus Casing Packer(s) to isolate losses or waterflow if either of these events occurs while drilling the well.
- Place the Stage 1 Cement from the casing shoe to the stage tool,
- Bring Stage 2 Cement from the stage tool to surface.

Spacer: 20 bbls Fresh Water

| Stage 1 – Slurry | | Intervals Ft MD | | Weight ppg | Sx | Vol Cuft | Additives | Yield $ft^3/sx$ |
|---|---|---|---|---|---|---|---|---|
| Tail | Poz/C Gas Tight Slurry | Stage Tool ~2900' | 7153' – 7183' | 14.0 | 800 | 1120 | (35:65) Poz:C<br>33 lb/sx<br>1% Sodium Metasilicate (dry)<br>1.5% Fluid Loss Control, | 2.6 |

1st stage displacement: FW followed by Brine

Spacer: 20 bbls Fresh Water

| Stage 2 - Slurry | | Intervals Ft MD | | Weight ppg | Sx | Vol Cuft | Additives | Yield $ft^3/sx$ |
|---|---|---|---|---|---|---|---|---|
| Lead | C<br>Gas Tight Slurry | Surface | Stage Tool ~2900' | 11.5 | 500 | 1300 | Class C<br>94 lb/sx<br>6% Extender<br>10% Gas Migration Control<br>2% Sodium Metasilicate (dry)<br>1% Cement Bonding Agent<br>3% Aluminum Silicate<br>0.125 lb/sx Cello Flake<br>3 lb/sx LCM-1 | 2.6 |

Displacement: Fresh Water

**Proposal for Option to Adjust Production Casing Cement Volumes:**

The production casing cement volumes for the proposed single stage and two-stage option presented above are estimates based on gauge hole. We will adjust these volumes based on the caliper log data for each well and our trends for amount of cement returns to surface. Also, if no caliper log is available for any particular well, we would propose an option to possibly increase the production casing cement volume to account for any uncertainty in regard to the hole volume.

**4. Pressure Control Equipment:**

A 11" 3M system will be installed, used, maintained, and tested accordingly as described in Onshore Oil and Gas Order No. 2.

Our BOP equipment will be:
- o Rotating Head
- o Annular BOP, 11" 3M
- o Blind Ram, 11" 3M
- o Pipe Ram, 11" 3M

After nippling up, and every 30 days thereafter or whenever any seal subject to test pressure is broken followed by related repairs, blowout preventors will be pressure tested. BOP will be inspected and operated at least daily to insure good working order. All pressure and operating tests will be done by an independent service company and recorded on the daily drilling reports. BOP will be tested using a test plug to isolate BOP stack from casing. BOP test will include a low pressure test from 250 to 300 psi for a minimum of 10 minutes or until requirements of test are met, whichever is longer. Ram type preventers and associated equipment will be tested to the approved stack working pressure of 3000 psi isolated by test plug. Annular type preventers will be tested to 50 percent of rated working pressure, and therefore will be tested to 1500 psi. Pressure will be held for at least 10 minutes or until provisions of test are met, whichever is longer. Valve on casing head below test plug will be open during testing of BOP stack. BOP will comply with all provisions of Onshore Oil and Gas Order No. 2 as specified. **See Attached BOPE Schematic.** A variance is respectfully requested to allow for the use of flexible hose. The variance request is included as a separate enclosure with attachments.

**5. Proposed Mud System:**

The mud systems that are proposed for use are as follows:

| DEPTH | TYPE | Density ppg | FV sec/qt | API Fluid Loss cc/30 min | pH | Vol bbl |
|---|---|---|---|---|---|---|
| 0 – Surface Casing Point | Fresh Water or Fresh Water Native Mud in Steel Pits | 8.5 – 9.0 | 28 – 40 | N.C. | N.C. | 150 – 300 |
| Surface Casing Point to TD | Brine (Saturated $NaCl_2$) in Steel Pits | 10 | 29 | N.C. | 10 – 11 | 300 – 1000 |
| Conversion to Mud at TD | Brine Based Mud ($NaCl_2$) in Steel Pits | 10 | 33 – 40 | 5 – 10 | 10 – 11 | 0 – 1000 |

Gas detection equipment and pit level flow monitoring equipment will be on location. A flow paddle will be installed in the flow line to monitor relative amount of mud flowing in the non-pressurized return line. Mud probes will be installed in the individual tanks to monitor pit volumes of the drilling fluid with a pit volume totalizer. Gas detecting equipment and H2S monitor alarm will be installed in the mud return system and will be monitored. A mud gas separator will be installed and operable before drilling out from the Surface Casing. The gases shall be piped into the flare system. Drilling mud containing H2S shall be degassed in accordance with API RP-49, item 5.14.

In the event that the well is flowing from a waterflow, then we would discharge excess drilling fluids from the steel mud pits through a fas-line into steel frac tanks at an offset location for containment. Depending on the rate of waterflow, excess fluids will be hauled to an approved disposal facility, or if in suitable condition, may be reused on the next well.

No reserve pit will be built.

**Proposal for Option to Not Mud Up at TD:**
FW, Brine, and Mud volume presented above are estimates based on gauge 12-1/4" or 7-7/8" holes. We will adjust these volume based on hole conditions. We do not plan to keep any weighting material at the wellsite. Also, we propose an option to not mud up leaving only brine in the hole if we have good hole stability.

6. **Logging, Coring, and Testing Program:**
   a. No drill stem tests will be done
   b. Remote gas monitoring planned for the production hole section (optional).
   c. No whole cores are planned
   d. The open hole electrical logging program is planned to be as follows:
      - Total Depth to 1700' MD: Spectral Gamma Ray, PE, Resistivity (laterologs), Bulk Density, and Sonic
      - Total Depth to surface Casing Shoe: Caliper
      - Total Depth to surface, Total Gamma Ray and Neutron
      - Total Depth to 2350' MD ; Mud Log (optional)
      - Total Depth to 2350' MD ; Dielectric Scanner (optional)
      - Formation pressure data (XPT) on electric line if needed (optional)
      - Rotary Sidewall Cores on electric line if needed (optional)
      - FMI (Formation MicroImager) if needed (optional)
      - UBI (Ultrasonic Borehole Imager) if needed (optional)
   e. Cement Bond Log (optional).

7. **Abnormal Pressures and Temperatures:**

   - No abnormal pressures are expected to be encountered.

   - Loss of circulation is a possibility in the horizons below the Top of Grayburg. We expect that normal Loss of Circulation Material will be successful in healing any such loss of circulation events.

     - The bottom hole pressure is expected to be 7.8 ppg gradient.
     - The expected Bottom Hole Temperature is 100 degrees F.

   - The estimated $H_2S$ concentrations and ROE calculations for the gas in the zones to be penetrated are presented in the table below for the various producing horizons in this area:

| FORMATION / ZONE | H2S (PPM) | Gas Rate (MCFD) | ROE 100 PPM | ROE 500 PPM |
|---|---|---|---|---|
| Seven Rivers | 6 | 50 - 100 MCFD | 0 | 0 |
| Grayburg / San Andres | 18360 | 20 - 50 MCFD | 95 | 43 |

ConocoPhillips will comply with the provisions of Oil and Gas Order # 6, Hydrogen Sulfide Operations. Also, ConocoPhillips will provide an H2S Contingency Plan (please see copy attached) and will keep this plan updated and posted at the wellsite during the drilling operation.

8. **Anticipated starting date and duration of operations:**

Well pad and road constructions will begin as soon as all agency approvals are obtained. Anticipated date to drill this well is in March 2015 after receiving approval of the APD.

## Attachments:

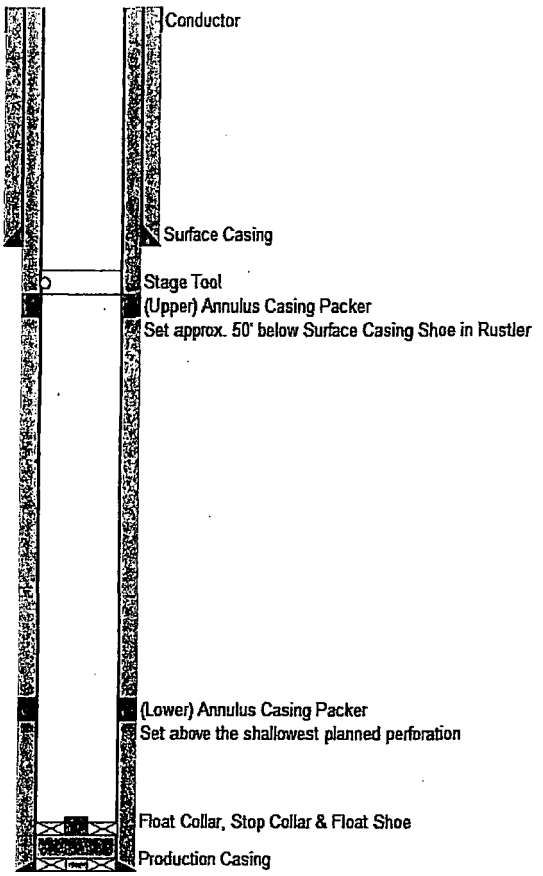
- Attachment # 1 ..... Two-stage Cementing Schematic
- Attachment # 2..... BOP and Choke Manifold Schematic – 3M System
- Attachment # 3..... Diagram of Choke Manifold Equipment

## Contact Information:

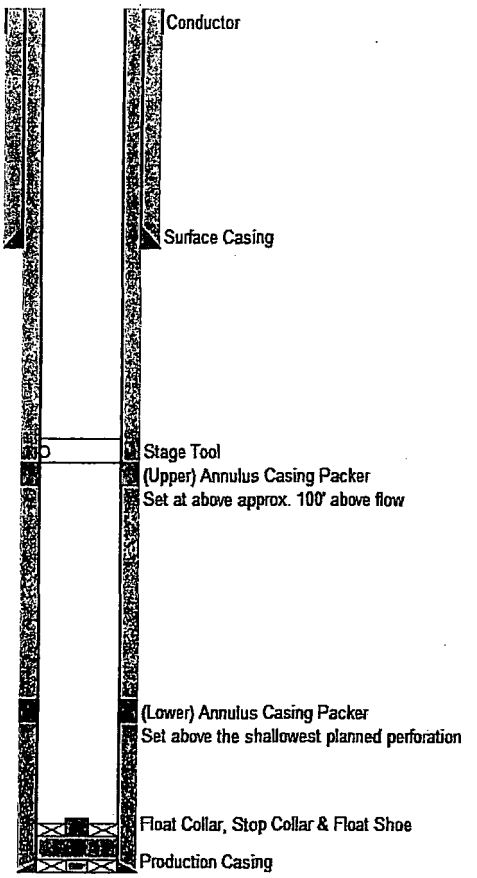
Proposed 26 November 2014 by:
Steven Herrin
Drilling Engineer, ConocoPhillips Company
Phone (281) 206-5115
Cell (432) 209-7558

# Attachment # 1

**Two-Stage Cementing (Alternative for Shallow Gas / Salt Water / Gas & Water Flow)**
Provide contingency plan for using two-stage cementing for the production casing cement job if gas flow occurs during the drilling operations. See APD Drill Plan Section 3. Proposed cementing program.



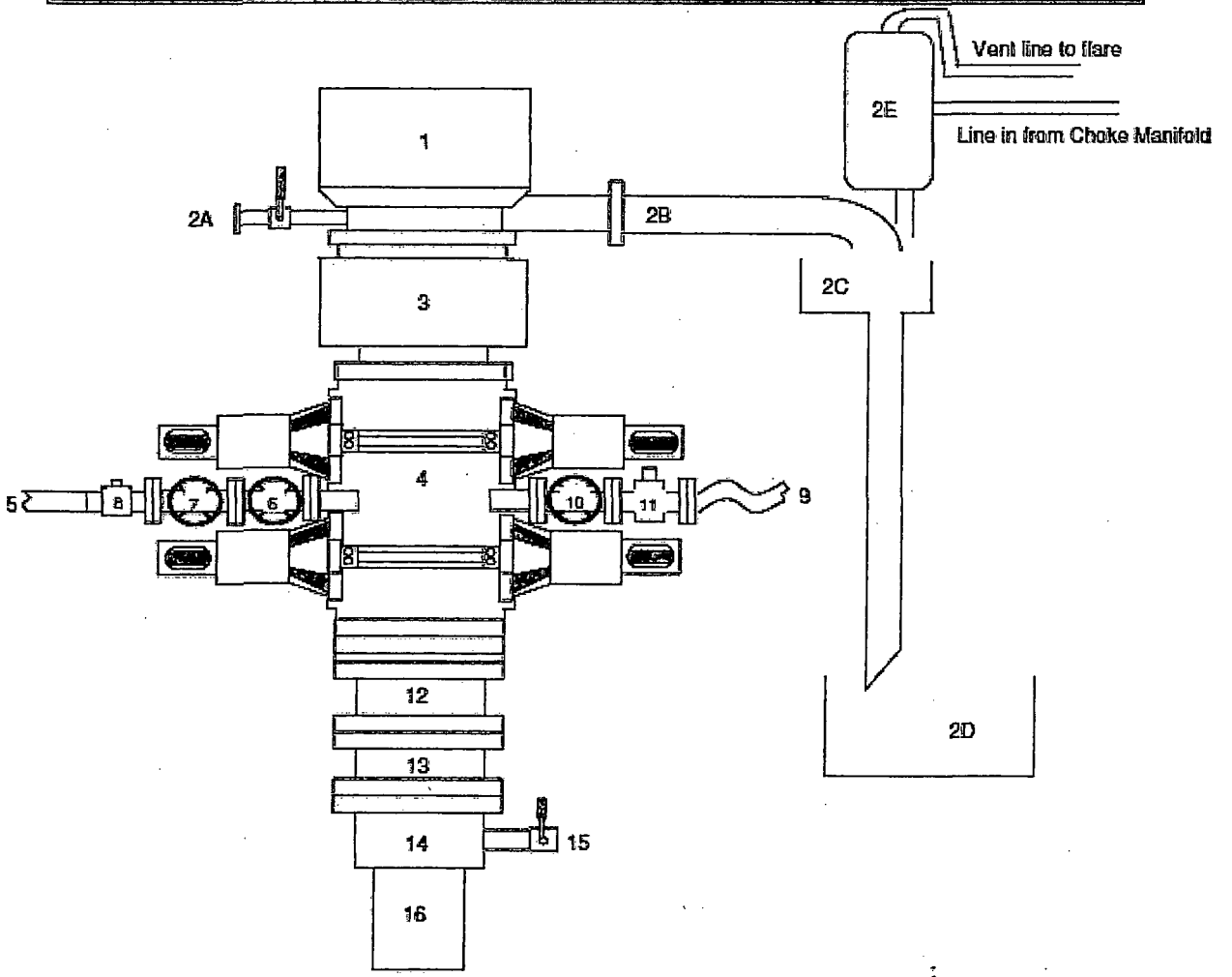

**Two-Stage Cementing (Alternative for Oil / Water / Gas & Water Flow)**
Provide contingency plan for using two-stage cementing for the production casing cement job if oil or water flow occurs during the drilling operations. See APD Drill Plan Section 3. Proposed cementing program.



Attachment # 2

## BLOWOUT PREVENTER ARRANGEMENT

3M System per Onshore Oil and Gas Order No. 2 utilizing 3M and 5M Rated Equipment



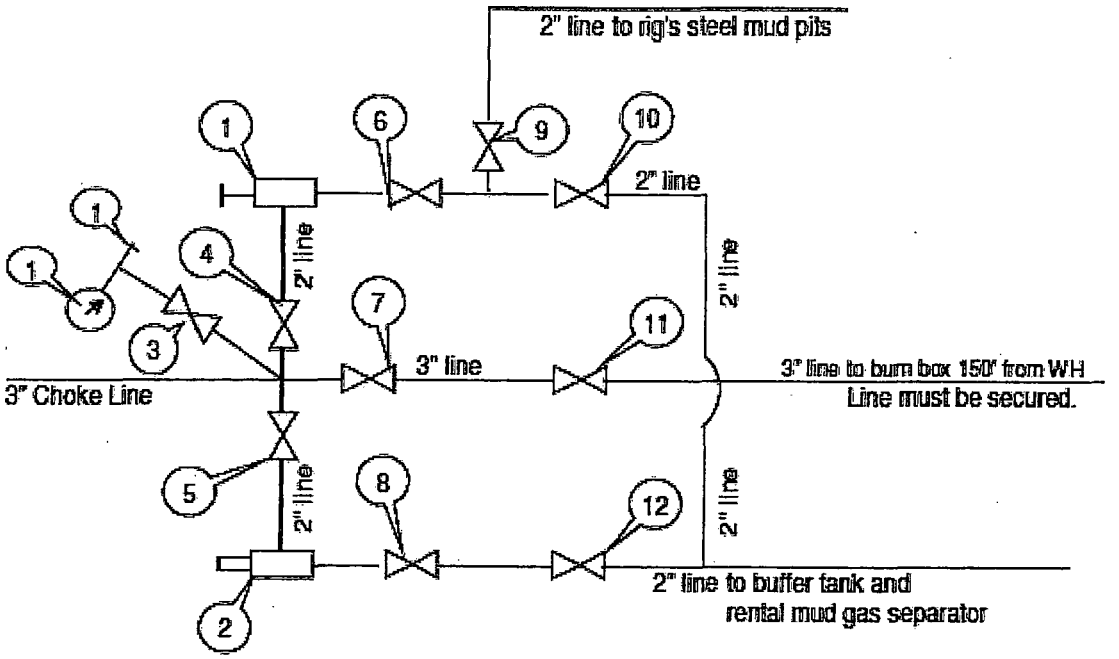

| Item | Description |
|---|---|
| 1 | Rotating Head, 11" |
| 2A | Fill up Line and Valve |
| 2B | Flow Line (10") |
| 2C | Shale Shakers and Solids Settling Tank |
| 2D | Cuttings Bins for Zero Discharge |
| 2E | Rental Mud Gas Separator with vent line to flare and return line to mud system |
| 3 | Annular BOP (11", 3M) |
| 4 | Double Ram (11", 3M, equipped with Blind Rams and Pipe Rams) |
| 5 | Kill Line (2" flexible hose, 3000 psi WP) |
| 6 | Kill Line Valve, Inner (3-1/8", 3000 psi WP) |
| 7 | Kill Line Valve, Outer (3-1/8", 3000 psi WP) |
| 8 | Kill Line Check Valve (2-1/16", 3000 psi WP |
| 9 | Choke Line (5M Stainless Steel Coflex Line, 3-1/8" 3M API Type 6B, 3000 psi WP) |
| 10 | Choke Line Valve, Inner (3-1/8", 3000 psi WP) |
| 11 | Choke Line Valve, Outer, (Hydraulically operated, 3-1/8", 3000 psi WP) |
| 12 | Adapter Flange (11" 5M to 11" 3M) |
| 13 | Spacer Spool (11", 5M) |
| 14 | Casing Head (11" 5M) |
| 15 | Ball Valve and Threaded Nipple on Casing Head Outlet, 2" 5M |
| 16 | Surface Casing |

Submitted by: Steven Herrin, Drilling Engineer, Mid-Continent Business Unit, ConocoPhillips Company, 03-Jan-2014

Attachment # 3

## CHOKE MANIFOLD ARRANGEMENT

3M System per Onshore Oil and Gas Order No. 2 utilizing 3M and 5M Equipment




All Tees must be targeted

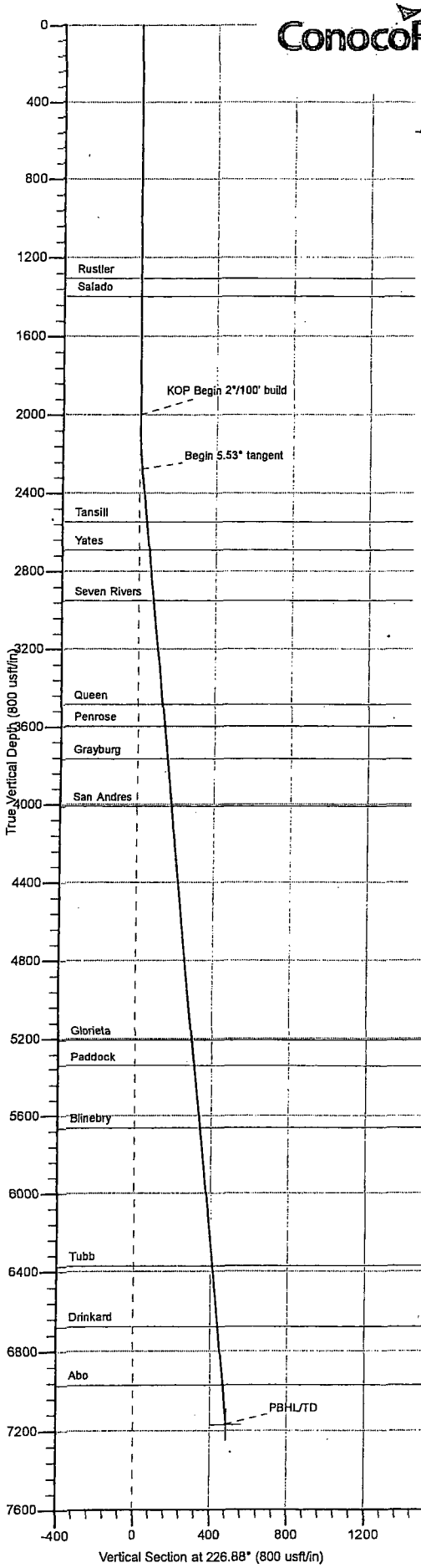
| Item | Description |
|---|---|
| 1 | Manual Adjustable Choke, 2-1/16", 3M |
| 2 | Remote Controlled Hydraulically Operated Adjustable Choke, 2-1/16", 3M |
| 3 | Gate Valve, 2-1/16" 5M |
| 4 | Gate Valve, 2-1/16" 5M |
| 5 | Gate Valve, 2-1/16" 5M |
| 6 | Gate Valve, 2-1/16" 5M |
| 7 | Gate Valve, 3-1/8" 3M |
| 8 | Gate Valve, 2-1/16" 5M |
| 9 | Gate Valve, 2-1/16" 5M |
| 10 | Gate Valve, 2-1/16" 5M |
| 11 | Gate Valve, 3-1/8" 3M |
| 12 | Gate Valve, 2-1/16" 5M |
| 13 | Pressure Gauge |
| 14 | 2" hammer union tie-in point for BOP Tester |

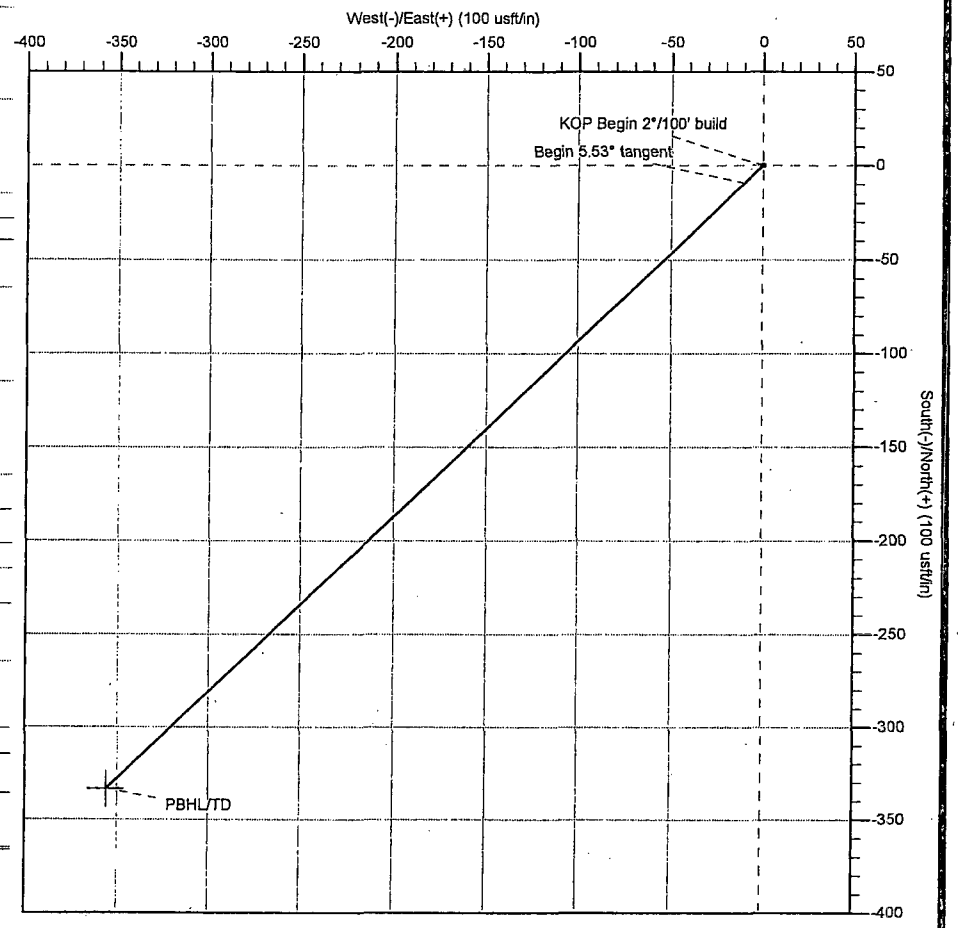
We will test each valve to 3000 psi from the upstream side.

Submitted by:
Steven Herrin
Drilling Engineer, Mid-Continent Business Unit, ConocoPhillips Company
Date: 3-January-2014

ConocoPhillips

**ConocoPhillips**
**Well:** Britt B Well No. 53
**Site:** Britt B
**Project:** Lea County, New Mexico
**Design:** rev0
**Rig:**




Section Details

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Annotation |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2 | 2000.00 | 0.00 | 0.00 | 2000.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | KOP Begin 2°/100' build |
| 3 | 2276.72 | 5.53 | 226.88 | 2276.29 | -9.13 | -9.75 | 2.00 | 226.88 | 13.35 | Begin 5.53° tangent |
| 4 | 7193.35 | 5.53 | 226.88 | 7170.00 | -333.26 | -355.84 | 0.00 | 0.00 | 487.52 | PBHL/TD |

Surf Loc: RKB=3566+13 @ 3579.00usft ( )
US State Plane 1927 (Exact solution)
New Mexico East 3001

| Northing | Easting | Latitude | Longitude |
|---|---|---|---|
| 576203.96 | 836841.94 | 32° 34' 45.597455 N | 103° 14' 23.368414 W |

Total Corr: Magnetic to Grid North (M->G) : To convert a Magnetic Direction to a Grid Direction, Add 6.62°


Azimuths to Grid North
True North: -0.59°
Magnetic North: 6.62°

Magnetic Field
Strength: 48550.0snT
Dip Angle: 60.48°
Date: 10/9/2014
Model: USER DEFINED BGGM

PRODIRECTIONAL

22:13, October 09 2014