ATS-14-290

Form 3160-3
(March 2012)

OMB No. 1004-0137
Expires October 31, 2014

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

OCD Hobbs
HOBBS OCD

# APPLICATION FOR PERMIT TO DRILL OR REENTER

JUN 16 2014

RECEIVED

| | |
|---|---|
| 1a. Type of work: [X] DRILL [ ] REENTER | 5. Lease Serial No. NMLC 080258 |
| 1b. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other [X] Single Zone [ ] Multiple Zone | 6. If Indian, Allotee or Tribe Name N/A |
| 2. Name of Operator ConocoPhillips Company (217817) | 7. If Unit or CA Agreement, Name and No. N/A |
| 3a. Address 600 N. Dairy Ashford Rd, Office P10-4-4054 Houston, TX 77079 | 8. Lease Name and Well No. Garnet Federal 6 (313362) |
| 3b. Phone No. (include area code) (281)206-5281 | 9. API Well No. 30-025- 41925 |
| 4. Location of Well (Report location clearly and in accordance with any State requirements.*) At surface 685' FSL and 270' FEL; UL P, Sec. 15, 17S, 32E At proposed prod. zone 964' FSL and 343' FEL; UL P, Sec. 15, 17S, 32E | 10. Field and Pool, or Exploratory Maljamar; Yeso West (44500) |
| | 11. Sec., T. R. M. or Blk. and Survey or Area Sec. 15, 17S, 32E |
| 14. Distance in miles and direction from nearest town or post office* Approximately 3 miles south east of Maljamar, New Mexico | 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) 270' surface 343' bottom | 16. No. of acres in lease 80 / 17. Spacing Unit dedicated to this well 40 |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 130 | 19. Proposed Depth 7091' TVD/7099' MD / 20. BLM/BIA Bond No. on file ES 0085 |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.) 4031' | 22. Approximate date work will start* 10/01/2014 / 23. Estimated duration 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 Susan B. Maunder | Name (Printed/Typed) Susan B. Maunder | Date 12/11/13 |
| Title Senior Regulatory Specialist | | |
| Approved by (Signature) Steve Caffey | Name (Printed/Typed) | Date JUN 13 2014 |
| Title FIELD MANAGER | Office 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)

ROSWELL CONTROLLED WATER BASIN

KZ 06/16/14

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

JUN 17 2014

# Operator Certification



**CONOCOPHILLIPS COMPANY**

**CERTIFICATION:**

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route proposed herein; that I am familiar with the conditions which currently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or the company I represent, am responsible for the operations conducted under this application with bond coverage provided by Nationwide Bond ES0085. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements.

Susan B. Maunder Date: 12/11/13

Susan B. Maunder
Senior Regulatory Specialist

# Drilling Plan
# ConocoPhillips Company
# Maljamar; Grayburg-San Andres, Yeso (west)

## Garnet Federal #6

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 TVD | Top Depths FT MD | Contents |
|---|---|---|---|
| Quaternary | Surface | Surface | Fresh Water |
| Rustler | 885 | 885 | Anhydrite |
| Salado (top of salt) | 1043 | 1043 | Salt |
| Tansill (base of salt) | 2066 | 2066 | Gas, Oil and Water |
| Yates | 2210 | 2210 | Gas, Oil and Water |
| Seven Rivers | 2573 | 2574 | Gas, Oil and Water |
| Queen | 3189 | 3191 | Gas, Oil and Water |
| Grayburg | 3603 | 3605 | Gas, Oil and Water |
| San Andres | 3956 | 3959 | Gas, Oil and Water |
| Glorieta | 5452 | 5458 | Gas, Oil and Water |
| Paddock | 5538 | 5544 | Gas, Oil and Water |
| Blinebry | 5819 | 5825 | Gas, Oil and Water |
| Tubb | 6891 | 6899 | Gas, Oil and Water |
| Deepest estimated perforation | 6891 | 6899 | Deepest estimated perf. is ~ Top of Tubb |
| Total Depth (maximum) | 7091 | 7099 | 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 | ~~910'~~ – 955' | 8-5/8 | 24# | J-55 | STC | 2950 | 1370 | 244 | 1.53 | 3.23 | 3.49 |
| Prod | 7-7/8 | 0 | 7044' – 7089' | 5-1/2 | 17# | L-80 | LTC | 7740 | 6290 | 338 | 2.10 | 2.49 | 1.97 |

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 | 955 | 24 | 2950 | 1370 | 244000 | 8.5 | 6.99 | 3.25 | 10.6 | 12.2 |
| Production Casing | 7089 | 17 | 7740 | 6290 | 338000 | 10 | 2.10 | 1.70 | 2.80 | 3.31 |

### 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) | 955 | 24 | 2950 | 1370 | 244000 | 381000 | 8.5 | 1.53 | 3.23 | 3.49 |
| Production Casing (5-1/2" 17# L-80 LTC) | 7099 | 17 | 7740 | 6290 | 338000 | 397000 | 10 | 2.10 | 2.49 | 1.97 |

**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 - IL 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 (MW$_{hyd}$ next section) = | 955 | x | 0.052 | x | 10 | = | 497 | | | | | |
| Case #2. MPSP (Field SW @ Bullhead$_{CSFG}$ + 200 psi) = | 955 | x | 0.052 | x | 19.23 | - | 497 | + | 200 | = | 658 | |
| Case #3. MPSP (Kick Vol @ next section TD) = | 7099 | x | 0.052 | x | 8.55 | - | 614.4 | - | 422 | = | *2120* | |
| Case #4. MPSP (PPTD - GG) = | 7099 | x | 0.052 | x | 8.55 | - | 709.9 | = | *2446* | | | |
| Case #3 & #4 Limited to MPSP (CSFG + 0.2 ppg) = | 955 | x | 0.052 | x ( | 19.23 | + | 0.2 | ) = | 965 | | | |
| MASP (MW$_{hyd}$ + Test Pressure) = | 955 | x | 0.052 | x | 8.5 | + | 1500 | = | 1922 | | | |
| Burst Safety Factor (Max. MPSP or MASP) = | 2950 | / | 1922 | = | 1.53 | | | | | | | |

**Production Casing Burst Safety Factor:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Case #1. MPSP (MW$_{hyd\ TD}$) = | 7099 | x | 0.052 | x | 10 | = | 3691.48 | | | | | |
| Case #4. MPSP (PPTD - GG) = | 7099 | x | 0.052 | x | 8.55 | - | 709.9 | = | 2446 | | | |
| Burst Safety Factor (Max. MPSP) = | 7740 | / | 3691 | = | 2.10 | | | | | | | |
| 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 = | 955 | x | 0.052 | x | 8.55 | = | 425 | | | | | | | | | | | |
| Cementing Diff Lift Pressure = | [( | 655 | x | 0.052 | x | 13.6 | ) + ( | 300 | x | 0.052 | x | 14.8 | ) - | 414 | ] = | 280 | | |
| Collapse Safety Factor = | 1370 | / | 425 | = | 3.23 | | | | | | | | | | | | | |

**Production Casing Collapse Safety Factor:**

| | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1/3 Evacuation Diff Pressure = | [( | 7099 | x | 0.052 | x | 8.55 | ) - ( | 7099 | / | 3 | x | 0.052 | x | 8.34 | )] = | 2130 | | |
| Cementing Diff Lift Pressure = | [( | 1899 | x | 0.052 | x | 11.8 | ) + ( | 5200 | x | 0.052 | x | 16.4 | ) - | 3079 | ] = | 2521 | | |
| Collapse Safety Factor = | 6290 | / | 2521 | = | 2.49 | | | | | | | | | | | | | |

**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 = | 22920 | | | | | | | | | | | |
| Bouyant Wt = | 22920 | x | 0.870 | = | 19946 | | | | | | | |
| 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 | - ( | 22920 | x | 0.870 | ) = | 154340 | | | | | |
| Tensial Safety Factor = | 244000 | / ( | 19946 | + | 50000 | ) = | 3.49 | | | | | |

**Production Casing Tensial Strength Safety Factor:**

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Air Wt = | 120683 | | | | | | | | | | | |
| Bouyant Wt = | 120683 | x | 0.847 | = | 102258 | | | | | | | |
| 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 | - ( | 120683 | x | 0.847 | ) = | 122742 | | | | | |
| Tensial Safety Factor = | 300000 | / ( | 102258 | + | 50000 | ) = | 1.97 | | | | | |

**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) = | ( | 22920 | x | 0.870 | ) = | 19946 | | | | | | | | | | |
| Prod Casing Wt (Bouyant) = | ( | 120683 | x | 0.847 | ) = | 102258 | | | | | | | | | | |
| Tubing Wt (Air Wt) = | 7099 | x | 6.5 | = | 46144 | | | | | | | | | | | |
| Tubing Fluid Wt = | 7099 | x | 0.052 | x | 6.55 | x | 0.7854 | x | 2.441 | ^2 = | 11315 | | | | | |
| Load on Conductor = | 3000 | + | 19946 | + | 102258 | + | 46143.5 | + | 11315 | = | 182663 | | | | | |
| Conductor Compression Safety Factor = | 432966 | / | 182663 | = | 2.37 | | | | | | | | | | | |
| Load on Surface Casing = | 182663 | x | 60% | = | 109598 | | | | | | | | | | | |
| Surface Casing Compression Safety Factor = | 244000 | / | 109598 | = | 2.23 | | | | | | | | | | | |

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 300' 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 | 610' – 655' | 13.6 | 300 | 510 | 2% Extender<br>2% $CaCl_2$<br>0.125 lb/sx LCM if needed<br>0.2% Defoamer<br>Excess =75% based on gauge hole volume | 1.70 |
| Tail | Class C | 610' – 655' | 910' – 955' | 14.8 | 200 | 268 | 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:**

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

- Place the Tail Slurry from the casing shoe to a point approximately 200' above the top of the Paddock,
- 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 | 50:50 Poz/C | Surface | 5200' | 11.8 | 700 | 1820 | 10% Bentonite<br>5% Salt<br>0.2%-0.4% Fluid loss additive<br>0.125 lb/sx LCM if needed<br>Excess = 220% or more if needed based on gauge hole volume | 2.6 |
| Tail | Class H | 5200' | 7044' – 7089' | 16.4 | 400 | 428 | 0.2% Fluid loss additive<br>0.3% Dispersant<br>0.15% Retarder<br>0.2% Antifoam<br>Excess = 100% or more if needed based on gauge hole volume | 1.07 |

Displacement: Fresh Water with approximately 250 ppm gluteraldehyde biocide.

## 5-1/2" Production Casing & Cementing Program – TXI/LW Cementing Option for Grayburg-San Andres:

ConocoPhillips Company respectfully requests the options to our cementing program. This option will only be implemented in the cementing operation of wells requesting for co-mingling after approval and authorization by all agencies have been obtained. The intention for the alternative option to the cementing program for the Production Casing is to:

- Accommodate the additional frac'ing and stimulation of the Grayburg-San Andres by placement of the Tail Slurry from the casing shoe to the top of the Grayburg-San Andres formation,
- 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 | 50:50 Poz/C | Surface | 3000' | 11.8 | 500 | 1300 | 10% Bentonite<br>8 lbs/sx Salt<br>0.2%-0.4% Fluid loss additive<br>0.125 lb/sx LCM if needed<br>Excess = 200% or more if needed based on gauge hole volume | 2.6 |
| Tail | TXI/LW | 3000' | 7044' – 7089' | 13.2 | 800 | 1120 | 0.5% Fluid loss additive<br>0.10% Retarder<br>0.2% Antifoam<br>0.125 lb/sx LCM if needed<br>Excess = 150% or more if needed based on gauge hole volume | 1.40 |

Displacement: Fresh Water with approximately 250 ppm gluteraldehyde biocide.

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

The production casing cement volume presented above are estimates based on gauge 7-7/8" 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. | 120 – 160 |
| Surface Casing Point to TD | Brine (Saturated $NaCl_2$) in Steel Pits | 10 | 29 | N.C. | 10 – 11 | 500 – 1000 |
| Conversion to Mud at TD | Brine Based Mud ($NaCl_2$) in Steel Pits | 10 | 33 – 40 | 5 – 10 | 10 – 11 | 0 – 750 |

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 2500': Resistivity, Density, and Gamma Ray
      - Total Depth to surface Casing Shoe: Caliper
      - Total Depth to surface, Gamma Ray and Neutron
      - Formation pressure data (XPT) on electric line if needed (optional)
      - Rotary Sidewall Cores on electric line if needed (optional)
      - BHC or Dipole Sonic if needed (optional)
      - Spectral Gamma Ray if needed (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 8.55 ppg gradient.
     - The expected Bottom Hole Temperature is 115 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 |
|---|---|---|---|---|
| Grayburg / San Andres (from MCA) | 14000 | 38 | 59 | 27 |
| Yeso Group | 860 | 160 | 29 | 13 |

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:**

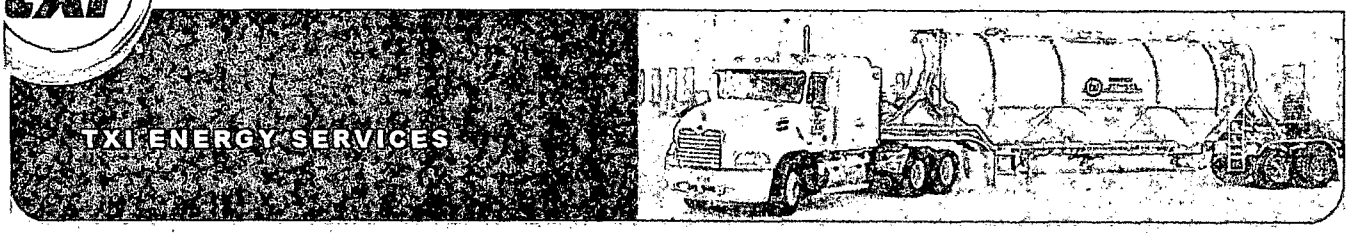
Well pad and road constructions will begin as soon as all agency approvals are obtained. Anticipated date to drill this well as early as 2014 after receiving approval of the APD.

## Attachments:

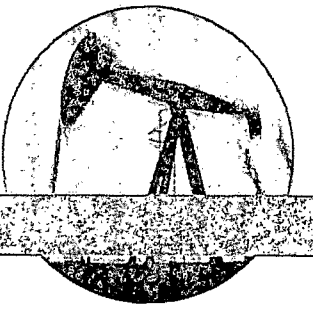
- Attachment # 1 ..... BOP and Choke Manifold Schematic – 3M System
- Attachment # 2 ..... Diagram of Choke Manifold Equipment

## Contact Information:

Proposed 9 December 2013 by:
James Chen
Drilling Engineer, ConocoPhillips Company
Phone (281) 206-5244
Cell (832) 768-1647




TXI Energy Services provides specialized drilling products and petrochemical support services to the energy industry. Whether we're supplying well cement and additives for the next deep water project in the Gulf of Mexico or implementing new environmental procedures, our group shares a commitment to improved performance.



## Petrochemical Support Services

TXI is dedicated to providing environmental services that benefit people and the planet. Our Energy Services division removes and recycles a variety of non-hazardous by-products from petrochemical refineries and provides solidification materials to remediation sites.

## Drilling Products

TXI Lightweight OilWell Cement is a low-density cement that can be mixed in a range of 12.0 to 14.2 pounds per gallon. In addition to being the world's only manufacturer of lightweight oil well cement, TXI also manufactures and distributes two classifications of well cements that meet the American Petroleum Institute specifications:

- Class A: a "general purpose" cement for use at low to moderate temperatures
- Class C: a moderate sulfate-resistant (MSR) cement for depths to 6000 feet.
- Other Special Cements

## Cement Additives

TXI Energy Services, in partnership with a worldwide chemical manufacturer, can supply a wide verity of cement additives.

## TXI Energy Services

11111 Wilcrest Green, Suite 108, Houston, Texas 77042, Phone 713.329.2611 **www.txi.com**

# ConocoPhillips MCBU

Buckeye
Garnet Federal
Garnet Federal 6

Original Hole

Plan: Plan Design

# Standard Planning Report - Geographic

31 October, 2013

| | | | |
|---|---|---|---|
| **Database:** | EDM Central Planning | **Local Co-ordinate Reference:** | Well Garnet Federal 6 |
| **Company:** | ConocoPhillips MCBU | **TVD Reference:** | RKB @ 4044.0usft (PD822) |
| **Project:** | Buckeye | **MD Reference:** | RKB @ 4044.0usft (PD822) |
| **Site:** | Garnet Federal | **North Reference:** | Grid |
| **Well:** | Garnet Federal 6 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Original Hole | | |
| **Design:** | Plan Design | | |

| **Project** | Buckeye, Lea County, NM | | |
|---|---|---|---|
| **Map System:** | US State Plane 1927 (Exact solution) | **System Datum:** | Mean Sea Level |
| **Geo Datum:** | NAD 1927 (NADCON CONUS) | | |
| **Map Zone:** | New Mexico East 3001 | | Using geodetic scale factor |

| **Site** | Garnet Federal, New Mexico, Southeast | | | | |
|---|---|---|---|---|---|
| **Site Position:** | | **Northing:** | 665,838.65 usft | **Latitude:** | 32° 49' 44.750 N |
| **From:** | Lat/Long | **Easting:** | 680,526.85 usft | **Longitude:** | 103° 44' 44.280 W |
| **Position Uncertainty:** | 3.5 usft | **Slot Radius:** | 8 " | **Grid Convergence:** | 0.32 ° |

| **Well** | Garnet Federal 6, Deviated Well | | | | | |
|---|---|---|---|---|---|---|
| **Well Position** | **+N/-S** | 0.0 usft | **Northing:** | 665,838.94 usft | **Latitude:** | 32° 49' 44.760 N |
| | **+E/-W** | 0.0 usft | **Easting:** | 680,397.15 usft | **Longitude:** | 103° 44' 45.800 W |
| **Position Uncertainty** | | 0.0 usft | **Wellhead Elevation:** | | **Ground Level:** | 4,031.0 usft |

| **Wellbore** | Original Hole | | | | |
|---|---|---|---|---|---|
| **Magnetics** | **Model Name** | **Sample Date** | **Declination (°)** | **Dip Angle (°)** | **Field Strength (nT)** |
| | BGGM2012 | 10/31/2013 | 7.53 | 60.59 | 48,686 |

| **Design** | Plan Design | | | | |
|---|---|---|---|---|---|
| **Audit Notes:** | | | | | |
| **Version:** | 1 | **Phase:** | PROTOTYPE | **Tie On Depth:** | 0.0 |
| **Vertical Section:** | **Depth From (TVD) (usft)** | **+N/-S (usft)** | **+E/-W (usft)** | **Direction (°)** | |
| | 0.0 | 0.0 | 0.0 | 344.94 | |

**Plan Sections**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Dogleg Rate (°/100usft) | Build Rate (°/100usft) | Turn Rate (°/100usft) | TFO (°) | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2,066.0 | 0.00 | 0.00 | 2,066.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.00 | 0.00 | |
| 2,290.0 | 3.36 | 344.94 | 2,289.9 | 6.3 | -1.7 | 1.50 | 1.50 | 0.00 | 344.94 | |
| 7,099.4 | 3.36 | 344.94 | 7,091.0 | 278.5 | -74.9 | 0.00 | 0.00 | 0.00 | 0.00 | Garnet Federal 6 (Tar |

| | | | |
|---|---|---|---|
| **Database:** | EDM Central Planning | **Local Co-ordinate Reference:** | Well Garnet Federal 6 |
| **Company:** | ConocoPhillips MCBU | **TVD Reference:** | RKB @ 4044.0usft (PD822) |
| **Project:** | Buckeye | **MD Reference:** | RKB @ 4044.0usft (PD822) |
| **Site:** | Garnet Federal | **North Reference:** | Grid |
| **Well:** | Garnet Federal 6 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Original Hole | | |
| **Design:** | Plan Design | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 85.0 | 0.00 | 0.00 | 85.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| **Conductor** | | | | | | | | | |
| 100.0 | 0.00 | 0.00 | 100.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 200.0 | 0.00 | 0.00 | 200.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 300.0 | 0.00 | 0.00 | 300.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 400.0 | 0.00 | 0.00 | 400.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 500.0 | 0.00 | 0.00 | 500.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 600.0 | 0.00 | 0.00 | 600.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 700.0 | 0.00 | 0.00 | 700.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 800.0 | 0.00 | 0.00 | 800.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 885.0 | 0.00 | 0.00 | 885.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| **Rustler** | | | | | | | | | |
| 900.0 | 0.00 | 0.00 | 900.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 955.0 | 0.00 | 0.00 | 955.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| **Surface** | | | | | | | | | |
| 1,000.0 | 0.00 | 0.00 | 1,000.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 1,043.0 | 0.00 | 0.00 | 1,043.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| **Salado** | | | | | | | | | |
| 1,100.0 | 0.00 | 0.00 | 1,100.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 1,200.0 | 0.00 | 0.00 | 1,200.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 1,300.0 | 0.00 | 0.00 | 1,300.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 1,400.0 | 0.00 | 0.00 | 1,400.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 1,500.0 | 0.00 | 0.00 | 1,500.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 1,600.0 | 0.00 | 0.00 | 1,600.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 1,700.0 | 0.00 | 0.00 | 1,700.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 1,800.0 | 0.00 | 0.00 | 1,800.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 1,900.0 | 0.00 | 0.00 | 1,900.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 2,000.0 | 0.00 | 0.00 | 2,000.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| 2,066.0 | 0.00 | 0.00 | 2,066.0 | 0.0 | 0.0 | 665,838.94 | 680,397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |
| **Tansill** | | | | | | | | | |
| 2,100.0 | 0.51 | 344.94 | 2,100.0 | 0.1 | 0.0 | 665,839.09 | 680,397.11 | 32° 49' 44.761 N | 103° 44' 45.800 W |
| 2,200.0 | 2.01 | 344.94 | 2,200.0 | 2.3 | -0.6 | 665,841.21 | 680,396.54 | 32° 49' 44.782 N | 103° 44' 45.807 W |
| 2,210.0 | 2.16 | 344.94 | 2,210.0 | 2.6 | -0.7 | 665,841.56 | 680,396.44 | 32° 49' 44.786 N | 103° 44' 45.808 W |
| **Yates** | | | | | | | | | |
| 2,290.0 | 3.36 | 344.94 | 2,289.9 | 6.3 | -1.7 | 665,845.28 | 680,395.44 | 32° 49' 44.823 N | 103° 44' 45.820 W |
| 2,300.0 | 3.36 | 344.94 | 2,299.9 | 6.9 | -1.9 | 665,845.85 | 680,395.29 | 32° 49' 44.828 N | 103° 44' 45.821 W |
| 2,400.0 | 3.36 | 344.94 | 2,399.7 | 12.6 | -3.4 | 665,851.50 | 680,393.77 | 32° 49' 44.885 N | 103° 44' 45.839 W |
| 2,500.0 | 3.36 | 344.94 | 2,499.5 | 18.2 | -4.9 | 665,857.16 | 680,392.24 | 32° 49' 44.941 N | 103° 44' 45.856 W |
| 2,573.6 | 3.36 | 344.94 | 2,573.0 | 22.4 | -6.0 | 665,861.33 | 680,391.12 | 32° 49' 44.982 N | 103° 44' 45.869 W |
| **Seven Rivers** | | | | | | | | | |
| 2,600.0 | 3.36 | 344.94 | 2,599.3 | 23.9 | -6.4 | 665,862.82 | 680,390.72 | 32° 49' 44.997 N | 103° 44' 45.874 W |
| 2,700.0 | 3.36 | 344.94 | 2,699.2 | 29.5 | -7.9 | 665,868.48 | 680,389.20 | 32° 49' 45.053 N | 103° 44' 45.891 W |
| 2,800.0 | 3.36 | 344.94 | 2,799.0 | 35.2 | -9.5 | 665,874.14 | 680,387.68 | 32° 49' 45.109 N | 103° 44' 45.909 W |
| 2,900.0 | 3.36 | 344.94 | 2,898.8 | 40.9 | -11.0 | 665,879.80 | 680,386.15 | 32° 49' 45.165 N | 103° 44' 45.926 W |
| 3,000.0 | 3.36 | 344.94 | 2,998.7 | 46.5 | -12.5 | 665,885.46 | 680,384.63 | 32° 49' 45.221 N | 103° 44' 45.944 W |
| 3,100.0 | 3.36 | 344.94 | 3,098.5 | 52.2 | -14.0 | 665,891.12 | 680,383.11 | 32° 49' 45.277 N | 103° 44' 45.961 W |
| 3,190.7 | 3.36 | 344.94 | 3,189.0 | 57.3 | -15.4 | 665,896.25 | 680,381.73 | 32° 49' 45.328 N | 103° 44' 45.977 W |
| **Queen** | | | | | | | | | |
| 3,200.0 | 3.36 | 344.94 | 3,198.3 | 57.8 | -15.6 | 665,896.78 | 680,381.59 | 32° 49' 45.333 N | 103° 44' 45.979 W |
| 3,300.0 | 3.36 | 344.94 | 3,298.1 | 63.5 | -17.1 | 665,902.44 | 680,380.06 | 32° 49' 45.389 N | 103° 44' 45.996 W |
| 3,400.0 | 3.36 | 344.94 | 3,398.0 | 69.2 | -18.6 | 665,908.10 | 680,378.54 | 32° 49' 45.445 N | 103° 44' 46.014 W |
| 3,500.0 | 3.36 | 344.94 | 3,497.8 | 74.8 | -20.1 | 665,913.76 | 680,377.02 | 32° 49' 45.501 N | 103° 44' 46.031 W |
| 3,600.0 | 3.36 | 344.94 | 3,597.6 | 80.5 | -21.7 | 665,919.42 | 680,375.49 | 32° 49' 45.557 N | 103° 44' 46.048 W |

| | | | |
|---|---|---|---|
| **Database:** | EDM Central Planning | **Local Co-ordinate Reference:** | Well Garnet Federal 6 |
| **Company:** | ConocoPhillips MCBU | **TVD Reference:** | RKB @ 4044.0usft (PD822) |
| **Project:** | Buckeye | **MD Reference:** | RKB @ 4044.0usft (PD822) |
| **Site:** | Garnet Federal | **North Reference:** | Grid |
| **Well:** | Garnet Federal 6 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Original Hole | | |
| **Design:** | Plan Design | | |

**Planned Survey**

| Measured Depth (usft) | Inclination (°) | Azimuth (°) | Vertical Depth (usft) | +N/-S (usft) | +E/-W (usft) | Map Northing (usft) | Map Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| 3,605.4 | 3.36 | 344.94 | 3,603.0 | 80.8 | -21.7 | 665,919.72 | 680,375.41 | 32° 49' 45.561 N | 103° 44' 46.049 W |
| **Grayburg** | | | | | | | | | |
| 3,700.0 | 3.36 | 344.94 | 3,697.4 | 86.1 | -23.2 | 665,925.07 | 680,373.97 | 32° 49' 45.614 N | 103° 44' 46.066 W |
| 3,800.0 | 3.36 | 344.94 | 3,797.3 | 91.8 | -24.7 | 665,930.73 | 680,372.45 | 32° 49' 45.670 N | 103° 44' 46.083 W |
| 3,900.0 | 3.36 | 344.94 | 3,897.1 | 97.5 | -26.2 | 665,936.39 | 680,370.93 | 32° 49' 45.726 N | 103° 44' 46.101 W |
| 3,959.0 | 3.36 | 344.94 | 3,956.0 | 100.8 | -27.1 | 665,939.73 | 680,370.03 | 32° 49' 45.759 N | 103° 44' 46.111 W |
| **San Andres** | | | | | | | | | |
| 4,000.0 | 3.36 | 344.94 | 3,996.9 | 103.1 | -27.7 | 665,942.05 | 680,369.40 | 32° 49' 45.782 N | 103° 44' 46.118 W |
| 4,100.0 | 3.36 | 344.94 | 4,096.8 | 108.8 | -29.3 | 665,947.71 | 680,367.88 | 32° 49' 45.838 N | 103° 44' 46.136 W |
| 4,200.0 | 3.36 | 344.94 | 4,196.6 | 114.4 | -30.8 | 665,953.37 | 680,366.36 | 32° 49' 45.894 N | 103° 44' 46.153 W |
| 4,300.0 | 3.36 | 344.94 | 4,296.4 | 120.1 | -32.3 | 665,959.03 | 680,364.84 | 32° 49' 45.950 N | 103° 44' 46.171 W |
| 4,400.0 | 3.36 | 344.94 | 4,396.2 | 125.8 | -33.8 | 665,964.69 | 680,363.31 | 32° 49' 46.006 N | 103° 44' 46.188 W |
| 4,500.0 | 3.36 | 344.94 | 4,496.1 | 131.4 | -35.4 | 665,970.35 | 680,361.79 | 32° 49' 46.062 N | 103° 44' 46.206 W |
| 4,600.0 | 3.36 | 344.94 | 4,595.9 | 137.1 | -36.9 | 665,976.01 | 680,360.27 | 32° 49' 46.118 N | 103° 44' 46.223 W |
| 4,700.0 | 3.36 | 344.94 | 4,695.7 | 142.7 | -38.4 | 665,981.67 | 680,358.75 | 32° 49' 46.174 N | 103° 44' 46.241 W |
| 4,800.0 | 3.36 | 344.94 | 4,795.6 | 148.4 | -39.9 | 665,987.33 | 680,357.22 | 32° 49' 46.230 N | 103° 44' 46.258 W |
| 4,900.0 | 3.36 | 344.94 | 4,895.4 | 154.1 | -41.4 | 665,992.99 | 680,355.70 | 32° 49' 46.287 N | 103° 44' 46.276 W |
| 5,000.0 | 3.36 | 344.94 | 4,995.2 | 159.7 | -43.0 | 665,998.64 | 680,354.18 | 32° 49' 46.343 N | 103° 44' 46.293 W |
| 5,100.0 | 3.36 | 344.94 | 5,095.0 | 165.4 | -44.5 | 666,004.30 | 680,352.66 | 32° 49' 46.399 N | 103° 44' 46.311 W |
| 5,200.0 | 3.36 | 344.94 | 5,194.9 | 171.0 | -46.0 | 666,009.96 | 680,351.13 | 32° 49' 46.455 N | 103° 44' 46.328 W |
| 5,300.0 | 3.36 | 344.94 | 5,294.7 | 176.7 | -47.5 | 666,015.62 | 680,349.61 | 32° 49' 46.511 N | 103° 44' 46.346 W |
| 5,400.0 | 3.36 | 344.94 | 5,394.5 | 182.4 | -49.1 | 666,021.28 | 680,348.09 | 32° 49' 46.567 N | 103° 44' 46.363 W |
| 5,457.6 | 3.36 | 344.94 | 5,452.0 | 185.6 | -49.9 | 666,024.54 | 680,347.21 | 32° 49' 46.599 N | 103° 44' 46.373 W |
| **Glorieta** | | | | | | | | | |
| 5,500.0 | 3.36 | 344.94 | 5,494.4 | 188.0 | -50.6 | 666,026.94 | 680,346.57 | 32° 49' 46.623 N | 103° 44' 46.381 W |
| 5,543.7 | 3.36 | 344.94 | 5,538.0 | 190.5 | -51.2 | 666,029.42 | 680,345.90 | 32° 49' 46.648 N | 103° 44' 46.388 W |
| **Paddock** | | | | | | | | | |
| 5,600.0 | 3.36 | 344.94 | 5,594.2 | 193.7 | -52.1 | 666,032.60 | 680,345.04 | 32° 49' 46.679 N | 103° 44' 46.398 W |
| 5,700.0 | 3.36 | 344.94 | 5,694.0 | 199.3 | -53.6 | 666,038.26 | 680,343.52 | 32° 49' 46.735 N | 103° 44' 46.415 W |
| 5,800.0 | 3.36 | 344.94 | 5,793.8 | 205.0 | -55.2 | 666,043.92 | 680,342.00 | 32° 49' 46.791 N | 103° 44' 46.433 W |
| 5,825.2 | 3.36 | 344.94 | 5,819.0 | 206.4 | -55.5 | 666,045.35 | 680,341.62 | 32° 49' 46.805 N | 103° 44' 46.437 W |
| **Blinebry** | | | | | | | | | |
| 5,900.0 | 3.36 | 344.94 | 5,893.7 | 210.7 | -56.7 | 666,049.58 | 680,340.48 | 32° 49' 46.847 N | 103° 44' 46.450 W |
| 6,000.0 | 3.36 | 344.94 | 5,993.5 | 216.3 | -58.2 | 666,055.24 | 680,338.95 | 32° 49' 46.903 N | 103° 44' 46.468 W |
| 6,100.0 | 3.36 | 344.94 | 6,093.3 | 222.0 | -59.7 | 666,060.90 | 680,337.43 | 32° 49' 46.960 N | 103° 44' 46.485 W |
| 6,200.0 | 3.36 | 344.94 | 6,193.2 | 227.6 | -61.2 | 666,066.56 | 680,335.91 | 32° 49' 47.016 N | 103° 44' 46.503 W |
| 6,300.0 | 3.36 | 344.94 | 6,293.0 | 233.3 | -62.8 | 666,072.21 | 680,334.39 | 32° 49' 47.072 N | 103° 44' 46.520 W |
| 6,400.0 | 3.36 | 344.94 | 6,392.8 | 238.9 | -64.3 | 666,077.87 | 680,332.86 | 32° 49' 47.128 N | 103° 44' 46.538 W |
| 6,500.0 | 3.36 | 344.94 | 6,492.6 | 244.6 | -65.8 | 666,083.53 | 680,331.34 | 32° 49' 47.184 N | 103° 44' 46.555 W |
| 6,600.0 | 3.36 | 344.94 | 6,592.5 | 250.3 | -67.3 | 666,089.19 | 680,329.82 | 32° 49' 47.240 N | 103° 44' 46.573 W |
| 6,700.0 | 3.36 | 344.94 | 6,692.3 | 255.9 | -68.9 | 666,094.85 | 680,328.30 | 32° 49' 47.296 N | 103° 44' 46.590 W |
| 6,800.0 | 3.36 | 344.94 | 6,792.1 | 261.6 | -70.4 | 666,100.51 | 680,326.77 | 32° 49' 47.352 N | 103° 44' 46.608 W |
| 6,899.1 | 3.36 | 344.94 | 6,891.0 | 267.2 | -71.9 | 666,106.12 | 680,325.27 | 32° 49' 47.408 N | 103° 44' 46.625 W |
| **Tubb** | | | | | | | | | |
| 6,900.0 | 3.36 | 344.94 | 6,891.9 | 267.2 | -71.9 | 666,106.17 | 680,325.25 | 32° 49' 47.408 N | 103° 44' 46.625 W |
| 7,000.0 | 3.36 | 344.94 | 6,991.8 | 272.9 | -73.4 | 666,111.83 | 680,323.73 | 32° 49' 47.464 N | 103° 44' 46.643 W |
| 7,089.0 | 3.36 | 344.94 | 7,080.6 | 277.9 | -74.8 | 666,116.87 | 680,322.37 | 32° 49' 47.514 N | 103° 44' 46.658 W |
| **Production** | | | | | | | | | |
| 7,099.4 | 3.36 | 344.94 | 7,091.0 | 278.5 | -74.9 | 666,117.45 | 680,322.21 | 32° 49' 47.520 N | 103° 44' 46.660 W |

| | | | |
|---|---|---|---|
| **Database:** | EDM Central Planning | **Local Co-ordinate Reference:** | Well Garnet Federal 6 |
| **Company:** | ConocoPhillips MCBU | **TVD Reference:** | RKB @ 4044.0usft (PD822) |
| **Project:** | Buckeye | **MD Reference:** | RKB @ 4044.0usft (PD822) |
| **Site:** | Garnet Federal | **North Reference:** | Grid |
| **Well:** | Garnet Federal 6 | **Survey Calculation Method:** | Minimum Curvature |
| **Wellbore:** | Original Hole | | |
| **Design:** | Plan Design | | |

**Design Targets**

| Target Name - hit/miss target - Shape | Dip Angle (°) | Dip Dir. (°) | TVD (usft) | +N/-S (usft) | +E/-W (usft) | Northing (usft) | Easting (usft) | Latitude | Longitude |
|---|---|---|---|---|---|---|---|---|---|
| Garnet Federal 6 (Targe<br>- plan hits target center<br>- Circle (radius 150.0) | 0.00 | 0.00 | 7,091.0 | 278.5 | -74.9 | 666,117.45 | 680,322.21 | 32° 49' 47.520 N | 103° 44' 46.660 W |

**Casing Points**

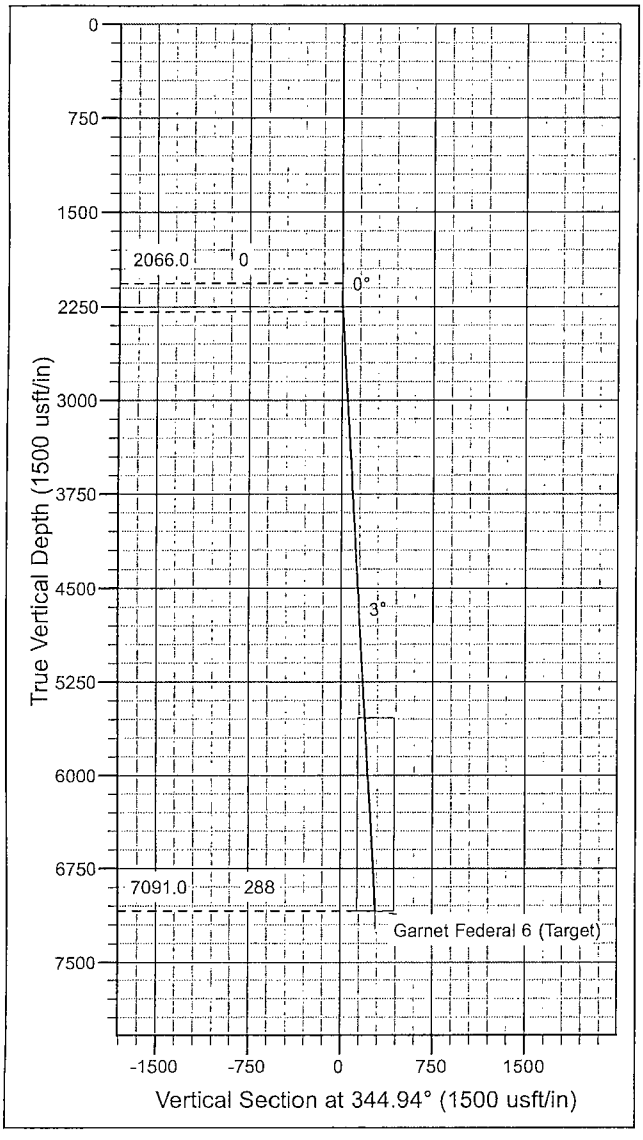
| Measured Depth (usft) | Vertical Depth (usft) | Name | Casing Diameter (") | Hole Diameter (") |
|---|---|---|---|---|
| 85.0 | 85.0 | Conductor | 16 | 20 |
| 955.0 | 955.0 | Surface | 8-5/8 | 12-1/4 |
| 7,089.0 | 7,080.6 | Production | 5-1/2 | 7-7/8 |

**Formations**

| Measured Depth (usft) | Vertical Depth (usft) | Name | Lithology | Dip (°) | Dip Direction (°) |
|---|---|---|---|---|---|
| 885.0 | 885.0 | Rustler | | 0.00 | |
| 1,043.0 | 1,043.0 | Salado | | 0.00 | |
| 2,066.0 | 2,066.0 | Tansill | | 0.00 | |
| 2,210.0 | 2,210.0 | Yates | | 0.00 | |
| 2,573.6 | 2,573.0 | Seven Rivers | | 0.00 | |
| 3,190.7 | 3,189.0 | Queen | | 0.00 | |
| 3,605.4 | 3,603.0 | Grayburg | | 0.00 | |
| 3,959.0 | 3,956.0 | San Andres | | 0.00 | |
| 5,457.6 | 5,452.0 | Glorieta | | 0.00 | |
| 5,543.7 | 5,538.0 | Paddock | | 0.00 | |
| 5,825.2 | 5,819.0 | Blinebry | | 0.00 | |
| 6,899.1 | 6,891.0 | Tubb | | 0.00 | |

ConocoPhillips

# Proposed Directional Well Plan




Project: Buckeye
Site: Garnet Federal
Well: Garnet Federal 6
Wellbore: Original Hole
Design: Plan Design

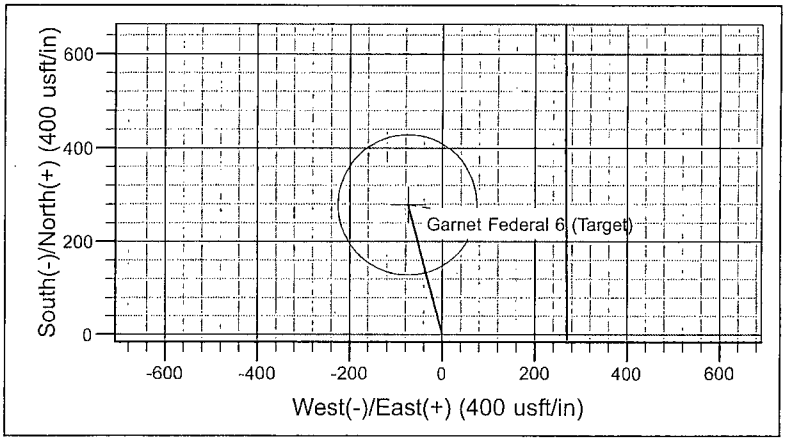
WELL DETAILS: Garnet Federal 6

Ground Level: 4031.0

| +N/-S | +E/-W | Northing | Easting | Latittude | Longitude |
|---|---|---|---|---|---|
| 0.0 | 0.0 | 665838.93 | 680397.15 | 32° 49' 44.760 N | 103° 44' 45.800 W |

SECTION DETAILS

| Sec | MD | Inc | Azi | TVD | +N/-S | +E/-W | Dleg | TFace | VSect | Target |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 0.0 | 0.00 | 0.00 | 0.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 2 | 2066.0 | 0.00 | 0.00 | 2066.0 | 0.0 | 0.0 | 0.00 | 0.00 | 0.0 | |
| 3 | 2290.0 | 3.36 | 344.94 | 2289.9 | 6.3 | -1.7 | 1.50 | 344.94 | 6.6 | |
| 4 | 7099.4 | 3.36 | 344.94 | 7091.0 | 278.5 | -74.9 | 0.00 | 0.00 | 288.4 | Garnet Federal 6 (Target) |

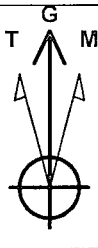



CASING DETAILS

| TVD | MD | Name | Size |
|---|---|---|---|
| 85.0 | 85.0 | Conductor | 16 |
| 955.0 | 955.0 | Surface | 8-5/8 |
| 7080.6 | 7089.0 | Production | 5-1/2 |

FORMATION TOP DETAILS

| TVDPath | MDPath | Formation |
|---|---|---|
| 885.0 | 885.0 | Rustler |
| 1043.0 | 1043.0 | Salado |
| 2066.0 | 2066.0 | Tansill |
| 2210.0 | 2210.0 | Yates |
| 2573.0 | 2573.6 | Seven Rivers |
| 3189.0 | 3190.7 | Queen |
| 3603.0 | 3605.4 | Grayburg |
| 3956.0 | 3959.0 | San Andres |
| 5452.0 | 5457.6 | Glorieta |
| 5538.0 | 5543.7 | Paddock |
| 5819.0 | 5825.2 | Blinebry |
| 6891.0 | 6899.1 | Tubb |



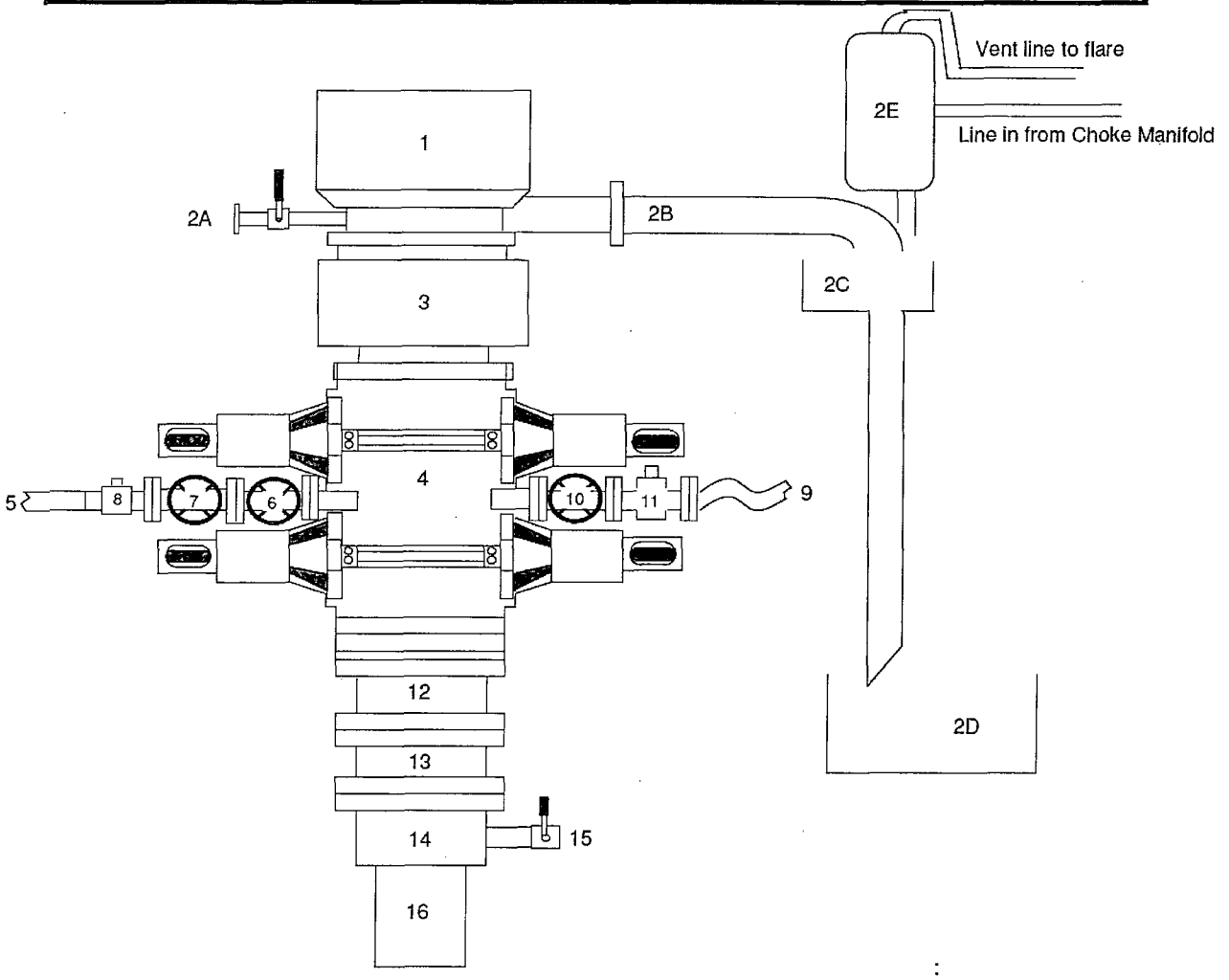

Azimuths to Grid North
True North: -0.32°
Magnetic North: 7.21°

Magnetic Field
Strength: 48685.6snT
Dip Angle: 60.59°
Date: 10/31/2013
Model: BGGM2012

Attachment # 1

BLOWOUT PREVENTER ARRANGEMENT

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



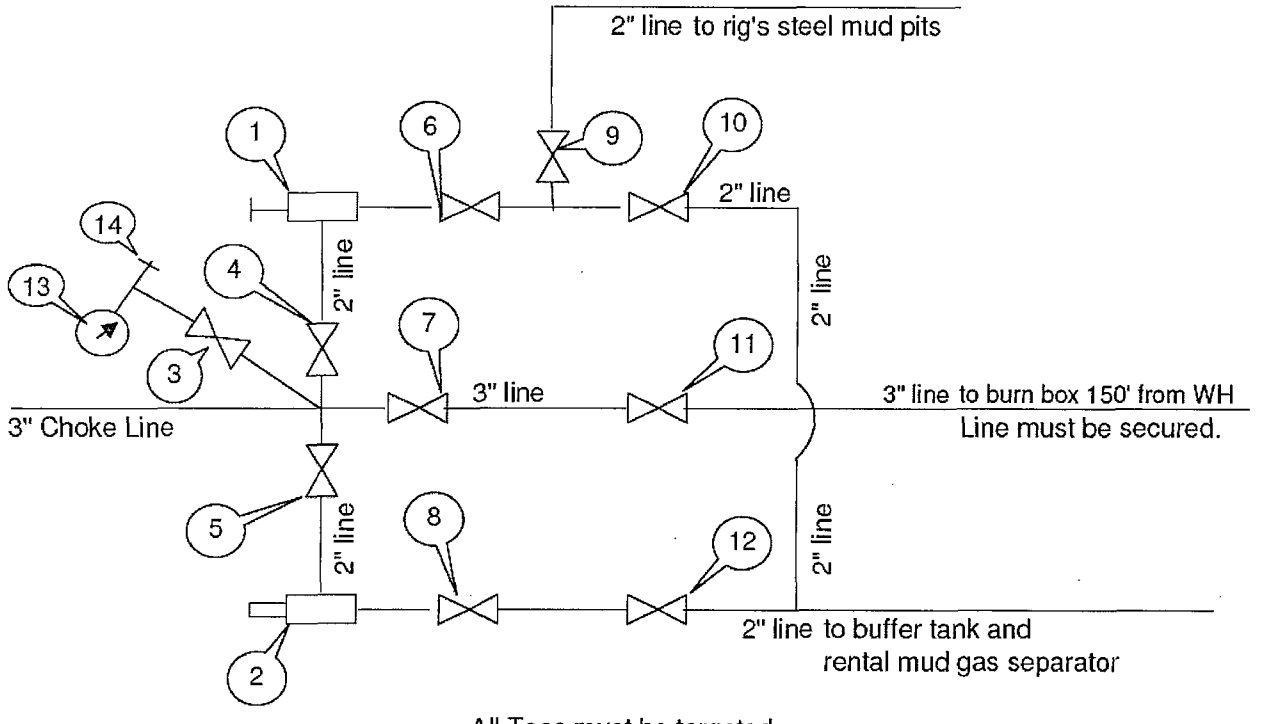

| Item | Description |
|---|---|
| 1 | Rotating Head, 11" |
| 2A | Fill up Line and Valve |
| 2B | Flow Line (10") |
| 2C | Shale Shakers and Solids Settling Tank |
| 2D | Cuttings Bins for Zero Discharge |
| 2E | Rental Mud Gas Separator with vent line to flare and return line to mud system |
| 3 | 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: James Chen, Drilling Engineer, Mid-Continent Business Unit, ConocoPhillips Company, 25-Sep-2012

Attachment # 2

## 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:
James Chen
Drilling Engineer, Mid-Continent Business Unit, ConocoPhillips Company
Date: 21-March-2013

## Request for Variance

**ConocoPhillips Company**
Lease Number: NM LC 080258
Well: Garnet #6
Location: Sec. 15, T17S, R32E
Date: 12/9/2013

## Request:

ConocoPhillips Company respectfully requests a variance to install a flexible choke line instead of a straight choke line prescribed in the Onshore Order No. 2, III.A.2.b Minimum standards and enforcement provisions for choke manifold equipment. This request is made under the provision of Onshore Order No. 2, IV Variances from Minimum Standard. The rig to be used to drill this well is equipped with a flexible choke line if the requested variance is approved and determined that the proposed alternative meets the objectives of the applicable minimum standards.

## Justifications:

The applicability of the flexible choke line will reduce the number of target tees required to make up from the choke valve to the choke manifold. This configuration will facilitate ease of rig up and BOPE Testing.

## Attachments:

- Attachment # 1 Specification from Manufacturer
- Attachment # 2 Mill & Test Certification from Manufacturer

## Contact Information:

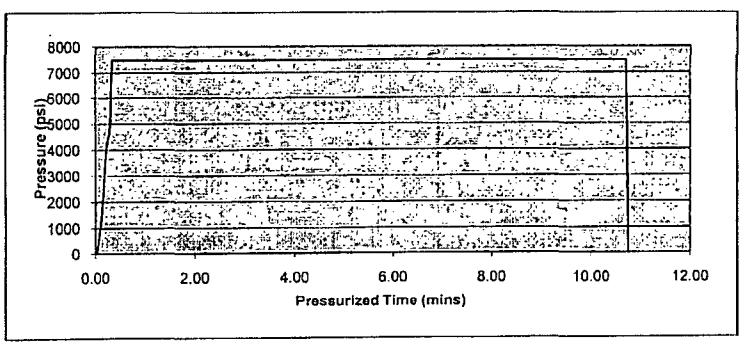
Program prepared by:
James Chen
Drilling Engineer, ConocoPhillips Company
Phone (832) 486-2184
Cell (832) 768-1647
Date: 26 September 2012

Attachment # 2

RELIANCE
Industrial Products USA, Ltd.
2030 E. 8th Street, Suite B • Greeley, CO 80631
Ph: (970) 346-3751 • Fax: (970) 353-3168 • *Toll Free:* (866) 771-9739

# TEST CERTIFICATE

| | | | |
|---|---|---|---|
| Customer: | PRECISION DRILLING | Cert No.: | 27792 |
| P.O. #: | RIG 822 | Date: | 9/21/2012 |
| Invoice #: | 27792 | | |
| Material: | 3 1/2" FIREGUARD | | |
| Description: | 3 1/2" X 10' | | |
| Coupling 1: | 3 1/2" FLANGE R31 | | |
| " Serial: | | | |
| " Quality: | | | |
| Coupling 2: | 3 1/2" FLOATING R31 | | |
| " Serial: | | | |
| " Quality: | | | |
| Working Pressure : | 3000 | | |
| *Test Pressure:* | *7500* | | |
| Duration (mins): | 10 | | |

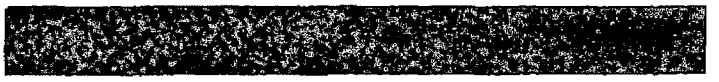



Conducted By: FLORES M,
Test Technician

☑ Acceptable
☐ Not Acceptable

Attachment # 1

RELIANCE
Industrial Products USA, Ltd.



RELIANCE

# Reliance Eliminator Choke & Kill

This hose can be used as a choke hose which connects the BOP stack to the bleed-off manifold or a kill hose which connects the mud stand pipe to the BOP kill valve.

The Reliance Eliminator Choke & Kill hose contains a specially bonded compounded cover that replaces rubber covered Asbestos, Fibreglass and other fire retardant materials which are prone to damage. This high cut and gouge resistant cover overcomes costly repairs and downtime associated with older designs.

The Reliance Eliminator Choke & Kill hose has been verified by an independent engineer to meet and exceed EUB Directive 36 (700°C for 5 minutes).

| Nom. ID | | Nom OD | | Weight | | Min Bend Radius | | Max WP | |
|---|---|---|---|---|---|---|---|---|---|
| in. | mm. | in. | mm | lb/ft | kg/m | in. | mm. | psi | Mpa |
| 3 | 76.2 | 5.11 | 129.79 | 14.5 | 21.46 | 48 | 1219.2 | 5000 | 34.47 |
| 3-1/2 | 88.9 | 5.79 | 147.06 | 20.14 | 29.80 | 54 | 1371.6 | 5000 | 34.47 |

| Fittings | Flanges | Hammer Unions | Other |
|---|---|---|---|
| RC4X5055 | R35 - 3-1/8 5000# API Type 6B | All Union Configurations | LP Threaded Connectio |
| RC3X5055 | R31 - 3-1/8 3000# API Type 6B | | Graylock |
| RC4X5575 | | | Custom Ends |

**Closed Loop System Design, Operating and Maintenance, and Closure Plan**

ConocoPhillips Company
Well: Garnet #6
Location: Sec. 15, T17S, R32E
Date: 12/9/2013

ConocoPhillips proposes the following plan for design, operating and maintenance, and closure of our proposed closed loop system for the above named well:

1. We propose to use a closed loop system with steel pits, haul-off bins, and frac tanks for containing all cuttings, solids, mud, water, brine, and liquids. We will not dig a pit, nor will we use a drying pad, nor will we build an earth pit above ground level, nor will we dispose of or bury any waste on location.

   All drilling waste and all drilling fluids (fresh water, brine, mud, cuttings, drill solids, cement returns, and any other liquid or solid that may be involved) will be contained on location in the rig's steel pits or in haul-off bins or in frac tanks as needed. The intent is as follows:

   - We propose to use the rigs' steel pits for containing and maintaining the drilling fluids.
   - We propose to remove cuttings and drilled solids from the mud by using solids control equipment and to contain such cuttings and drilled solids on location in haul-off bins.
   - We propose that any excess water that may need to be stored on location will be stored in tanks.

**The closed loop system components will be inspected daily by each tour and any needed repairs will be made immediately. Any leak in the system will be repaired immediately, and any spilled liquids and/or solids will be cleaned immediately, and the area where any such spill occurred will be remediated immediately.**

2. Cuttings and solids will be removed from location in haul-off bins by an authorized contractor and disposed of at an authorized facility. For this well, we propose the following disposal facility:

   R-360 Inc.
   4507 West Carlsbad Hwy, Hobbs, NM 88240,
   P.O. Box 388; Hobbs, New Mexico 88241
   Toll Free Phone: 877.505.4274, Local Phone Number: 432.638.4076

   The physical address for the plant where the disposal facility is located is Highway 62/180 at mile marker 66 (33 miles East of Hobbs, NM and 32 miles West of Carlsbad, NM).

   The Permit Number for R-360 is NM-01-0006.

   A photograph showing the type of haul-off bins that will be used is attached.

3. Mud will be transported by vacuum truck and disposed of at R-360 Inc. at the facility described above.

4. Fresh Water and Brine will be hauled off by vacuum truck and disposed of at an authorized salt water disposal well. We propose the following for disposal of fresh water and brine as needed:

   - Nabors Well Services Company, 3221 NW County Rd; Hobbs, NM 88240, PO 5208 Hobbs, NM, 88241, Permit SWD 092. (Well Location: **Section 3, T19S R37E**)

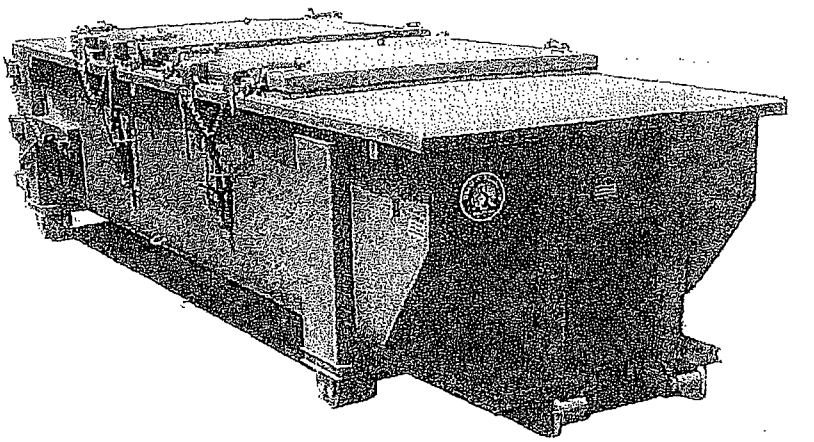
   - Basic Energy Services, P.O. Box 1869; Eunice, NM 88231 Phone Number: 575.394.2545, Facility located at Hwy 18, Mile Marker 19; Eunice, NM.

James Chen
Drilling Engineer
Office: 281-206-5244
Cell: 832.678.1647

# SPECIFICATIONS

FLOOR: 3/16" PL one piece
CROSS MEMBER: 3 x 4.1 channel 16" on center
WALLS: 3/16" PL solid welded with tubing top inside liner hooks
DOOR: 3/16" PL with tubing frame
FRONT: 3/16" PL slant formed
PICK UP: Standard cable with 2" x 6" x 1/4" rails, gusset at each crossmember
WHEELS: 10 DIA x 9 long with rease fittings
DOOR LATCH: 3 independent ratchet binders with chains, vertical second latch
GASKETS: Extruded rubber seal with metal retainers
WELDS: All welds continuous except sub-structure crossmembers
FINISH: Coated inside and out with direct to metal, rust inhibiting acrylic enamel color coat
HYDROTESTING: Full capacity static test
DIMENSIONS: 22'-11" long (21'-8" inside) - 99" wide (88" inside), see drawing for height
OPTIONS: Steel grit blast and special paint, Amplircil, Heil and Dino pickup
ROOF: 3/16" PL roof panels with tubing and channel support frame
LIDS: (2) 68" x 90" metal rolling lids spring loaded, self raising
ROLLERS: 4" V-groove rollers with delrin bearings and grease fittings
OPENING: (2) 60" x 82" openings with 8" divider centered on container
LATCH: (2) independent ratchet binders with chains per lid
GASKETS: Extruded rubber seal with metal retainers

# Heavy Duty Split Metal Rolling Lid



| CONT. | A | B |
|---|---|---|
| 20 YD | 41 | 53 |
| 25 YD | 53 | 65 |
| 30 YD | 65 | 77 |