

**MAR 23 2012**UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT**RECEIVED APPLICATION FOR PERMIT TO DRILL OR REENTER**

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. <b>NMLC029405B</b>	
1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6. If Indian, Allottee or Tribe Name	
2. Name of Operator <b>ConocoPhillips Company</b>		7. If Unit or CA Agreement, Name and No.	
3a. Address <b>3300 N "A" St, Bldg 6 Midland, TX 79705</b>		8. Lease Name and Well No. <b>&lt;38653&gt;</b> <b>Ruby Federal 49</b>	
3b. Phone No. (include area code) <b>&lt;217817&gt;</b> <b>(432)688-6913</b>		9. API Well No. <b>30-025-40505</b>	
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface <b>Unit letter O, 17,17S, 32E 330 FSL 2310 FEL</b> At proposed prod. zone		10. Field and Pool, or Exploratory <b>Maljamar, Yeso, West &lt;44500&gt;</b>	
14. Distance in miles and direction from nearest town or post office* <b>4.5 miles south of Maljamar, NM</b>		12. County or Parish <b>Lea</b>	13. State <b>NM</b>
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) <b>330' FSL</b>	16. No. of acres in lease <b>1601.9</b>	17. Spacing Unit dedicated to this well <b>40</b>	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. <b>334' west of Mitchell B #10</b>	19. Proposed Depth <b>6884'</b>	20. BLM/BIA Bond No. on file <b>ES0085</b>	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>4007' Gr</b>	22. Approximate date work will start* <b>03/31/2011</b>	23. Estimated duration <b>10 days</b>	
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.   | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan.  | 5. Operator certification   |
| 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). | 6. Such other site specific information and/or plans as may be required by the BLM.             |

25. Signature <b>B. D. Maiorino</b>	Name (Printed/Typed) <b>Brian D Maiorino</b>	Date <b>10/24/2011</b>
Title <b>Regulatory Specialist</b>		
Approved by (Signature) <b>James A. Ames</b>	Name (Printed/Typed)	Date <b>MAR 21 2012</b>
Title <b>FIELD MANAGER</b>		
Office <b>CARLSBAD FIELD OFFICE</b>		

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.

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

**Ka 03/26/12**Approval Subject to General Requirements  
& Special Stipulations AttachedSEE ATTACHED FOR  
CONDITIONS OF APPROVAL**MAR 27 2012**

Drilling Plan  
ConocoPhillips Company  
Maljamar; Yeso, west

Ruby Federal #49

Lea County, New Mexico

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

The ranges of depths for the formation tops, thicknesses, and planned Total Depths for all the wells to be drilled under this Master Drilling Plan are presented in the table below.

The datum for these depths is RKB (which is 14' above Ground Level).

Formations	Top Depths FT MD	Contents
Quaternary	Surface	Fresh Water
Rustler	753	Anhydrite
Salado (top of salt)	935	Salt
Tansil (Base of Salt)	1857	Gas, Oil and Water
Yates	2039	Gas, Oil and Water
Seven Rivers	2372	Gas, Oil and Water
Queen	2986	Gas, Oil and Water
Grayburg	3437	Gas, Oil and Water
San Andres	3808	Gas, Oil and Water
Glorieta	5303	Gas, Oil and Water
Paddock	5369	Gas, Oil and Water
Lwr Paddock	5741	Gas, Oil and Water
Blinbry	6157	Gas, Oil and Water
Tubb	6783	Gas, Oil and Water
Deepest estimated perforation	6684	
Total Depth (maximum)	6684	

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 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 BLM Criteria		
		From	To								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	<del>8-1/2</del> 7-7/8	8-5/8	24#	J-55	STC	2950	1370	244	8.93	4.15	13.6 / 15.6
Prod	7-7/8	0	6900' - 6945'	5-1/2	17#	L-80	LTC	7740	6290	338	2.14	1.74	2.86 / 3.38

The casing will be suitable for H<sub>2</sub>S Service.

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.

### Joint Strength Design (Safety) Factors – BLM Criteria

Joint Strength Design (Safety) Factor: SFT

$SFT = F_j / Wt$

Where

- $F_j$  is the rated pipe Joint Strength in pounds (lbs)
- $Wt$  is the weight of the casing string in pounds (lbs)

The Minimum Acceptable Joint Strength Design (Safety) Factor SFT = 1.6 dry or 1.8 buoyant

Surface Casing:

$SF_j \text{ Dry} = 244,000 \text{ lbs} / (747 \text{ ft} \times 24 \text{ lb/ft}) = 244,000 \text{ lbs} / 17,928 \text{ lbs} = 13.6 \text{ Dry}$

$SF_j \text{ Bouyant} = 244,000 \text{ lbs} / [(747 \text{ ft} \times 24 \text{ lb/ft}) (1 - 8.5/65.5)] = 244,000 \text{ lbs} / [17,928 \text{ lbs} \times 0.870] = 15.6 \text{ Bouyant}$

Production Casing:

$SF_j \text{ Dry} = 338,000 \text{ lbs} / (6945 \text{ ft} \times 17 \text{ lb/ft}) = 338,000 \text{ lbs} / 118,065 \text{ lbs} = 2.86 \text{ Dry}$

$SF_j \text{ Bouyant} = 338,000 \text{ lbs} / [(6945 \text{ ft} \times 17 \text{ lb/ft}) (1 - 10.0/65.5)] = 338,000 \text{ lbs} / [118,065 \text{ lbs} \times 0.847] = 3.38 \text{ Bouyant}$

### Collapse Design (Safety) Factors – BLM Criteria

Collapse Design (Safety) Factor: SFC

$SFC = P_c / (MW \times .052 \times L_s)$

Where

- $P_c$  is the rated pipe Collapse Pressure in pounds per square inch (psi)
- $MW$  is mud weight in pounds per gallon (ppg)
- $L_s$  is the length of the string in feet (ft)

The Minimum Acceptable Collapse Design (Safety) Factor SFC = 1.125

Surface Casing:

$SFC = 1370 \text{ psi} / (8.5 \text{ ppg} \times .052 \times 747 \text{ ft}) = 1370 \text{ psi} / 330 \text{ psi} = 4.15$

Production Casing:

$SFC = 6290 \text{ psi} / (10 \text{ ppg} \times .052 \times 6945 \text{ ft}) = 6290 \text{ psi} / 3611 \text{ psi} = 1.74$

### Burst Design (Safety) Factors – BLM Criteria

Burst Design (Safety) Factor: SFB

$SFB = P_i / BHP$

Where

- $P_i$  is the rated pipe Burst (Minimum Internal Yield) Pressure in pounds per square inch (psi)
- $BHP$  is bottom hole pressure in pounds per square inch (psi)

The Minimum Acceptable Burst Design (Safety) Factor SFB = 1.0

Surface Casing:

$SFB = 2950 \text{ psi} / (8.5 \text{ ppg} \times .052 \times 747 \text{ ft}) = 2950 \text{ psi} / 330 \text{ psi} = 8.93$

Production Casing:

$SFB = 7740 \text{ psi} / (10 \text{ ppg} \times .052 \times 6945 \text{ ft}) = 7740 \text{ psi} / 3611 \text{ psi} = 2.14$

(Date: 2/8/2012)

*Turn*  
2/12/2012

### 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" dia)  
TOC at surface.

#### 8-5/8" Surface Casing:

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		Excess %	Sx	Vol Cuft	Additives	Yield ft <sup>3</sup> /sx
Lead	Class C	Surface	478' – 523'	170	350	598	4%Bentonite 2%CaCl <sub>2</sub> .125%Polyflake .2% antifoam Excess =130%	1.68
Tail	Class C	478' – 523'	778'-823'	100	200	264	1% CaCl <sub>2</sub> Excess = 100%	1.34

Displacement: Fresh Water with approximately 250 ppm gluteraldehyde biocide.

**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		Excess %	Sx	Vol Cuft	Additives	Yield ft <sup>3</sup> /sx
Lead	50:50 Poz/C	Surface	5169' – 5299'	15	1000	464	10% Bentonite 8 lbs/sx Salt 0.4% Fluid loss additive 0.125% LCM if needed Excess=10% or more if needed	2.64
Tail	Class H	5169' – 5299'	6829'-6874'	10	480	91	0.2% Fluid loss additive 0.3% Dispersant 0.15% Retarder 0.2% Antifoam Excess=10% or more if needed	1.07

#### 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 nipping 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.**

#### **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	8.5 – 9.0	28 – 40	N.C.	N.C.	120 – 160
Surface Casing Point to TD	Brine (Saturated NaCl <sub>2</sub> )	10	29	N.C.	10 – 11	400 – 750
Conversion to Mud at TD	Brine Based Mud (NaCl <sub>2</sub> )	10	34 – 45	5 – 10	10 – 11	0 – 750

Drilling mud containing H<sub>2</sub>S shall be degassed in accordance with API RP-49, item 5.14. The gases shall be piped into the flare system. Gas detection equipment and pit level flow monitoring equipment will be on location. ConocoPhillips Company will maintain sufficient mud and weighting material on location at all times.

#### 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. Also, we propose an option to not mud up leaving only brine in the hole.

*TMM*  
*2/13/2012*  
*EP*

6. **Logging, Coring, and Testing Program:** *See cor*

- a. No drill stem tests will be done
- b. No mud logging is planned, but might possibly be done if it is determined that this data is needed;
- 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 estimated H<sub>2</sub>S 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	H <sub>2</sub> S (PPM)	Gas Rate (MCFD)	ROE 100 PPM	ROE 500 PPM
Grayburg / San Andres (from MCA)	14000	38	59	27
Yeso Group	400	433	34	15

ConocoPhillips will comply with the provisions of Oil and Gas Order # 6

*Tuan  
2/12/2012*

**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 these wells begin from early 2012 through the end after receiving approval of the APD.

**Attachments:**

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

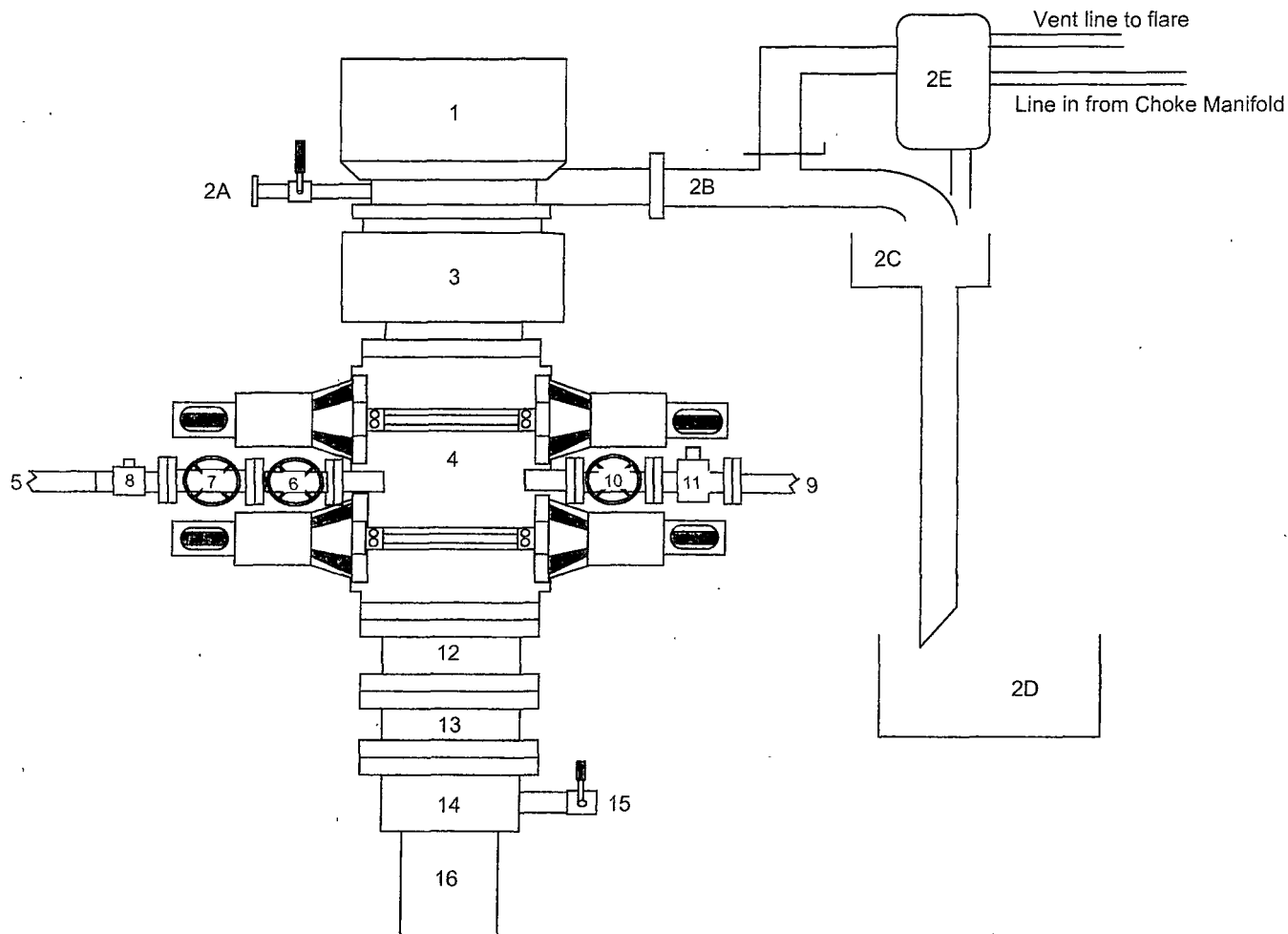
**Contact Information:**

Program prepared by:  
James Chen  
Drilling Engineer, ConocoPhillips Company  
Phone (832) 486-2184  
Cell (832) 768-1647  
Date: October 7, 2011

*Tam  
2/12/2012*

# BLOWOUT PREVENTER ARRANGEMENT

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



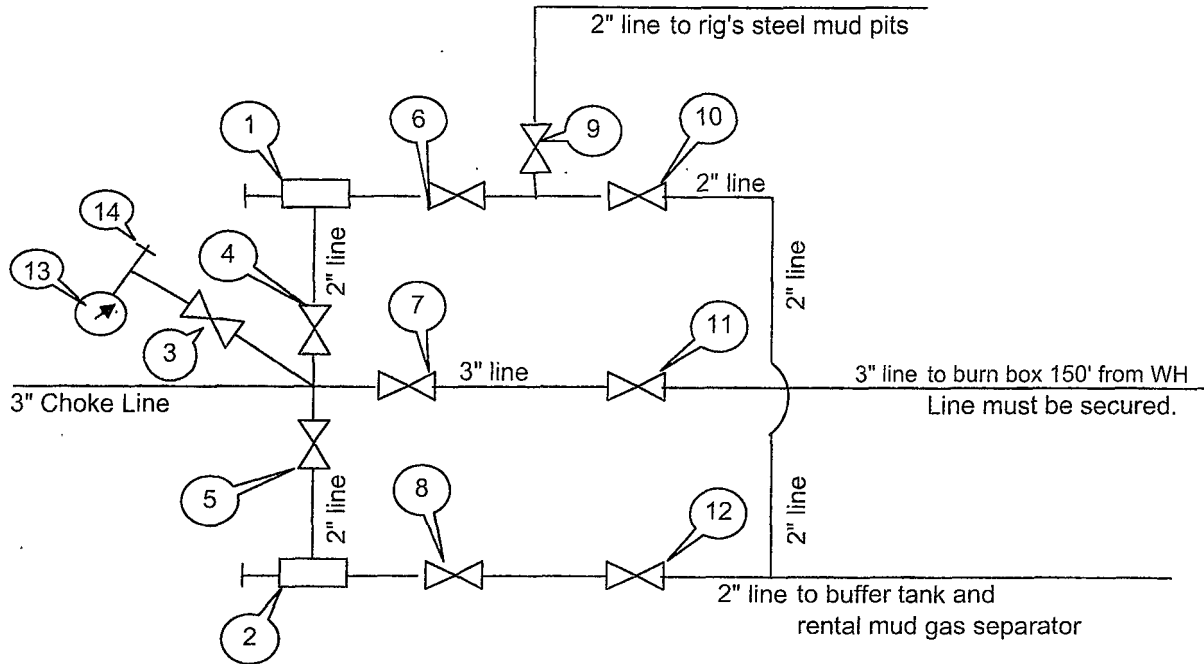
Item	Description
1	Rotating Head (11")
2A	Fill up Line and Valve
2B	Flow Line (8")
2C	Shale Shakers and Solids Settling Tank
2D	Cuttings Bins for Zero Discharge
2E	Rental Mud Gas Separator with vent line to flare and return line to mud system
3	Annular BOP (11", 3000 psi)
4	Double Ram BOP (11", 3000 psi, with Blind Rams in Upper Set and Pipe Rams in Lower Set)
5	Kill Line (2" Flexible Hose, 3000 psi WP)
6	Kill Line Valve, Inner (2-1/6" 3000 psi WP)
7	Kill Line Valve, Outer (2-1/16", 3000 psi WP)
8	Kill Line Check Valve (2-1/16", 3000 psi WP)
9	Choke Line (3" Steel Line, 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	Spacer Spool (11" 3M x 3M)
13	Spacer Spool (11" 3M x 5M)
14	Casing Head (11" 5M)
15	Ball Valve and Threaded Nipple on Casing Head Outlet, 2" 5M
16	Surface Casing

*Inserted per  
COP email.  
Turn  
2/17/2012*



## 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	Manual 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.

Drawn by:

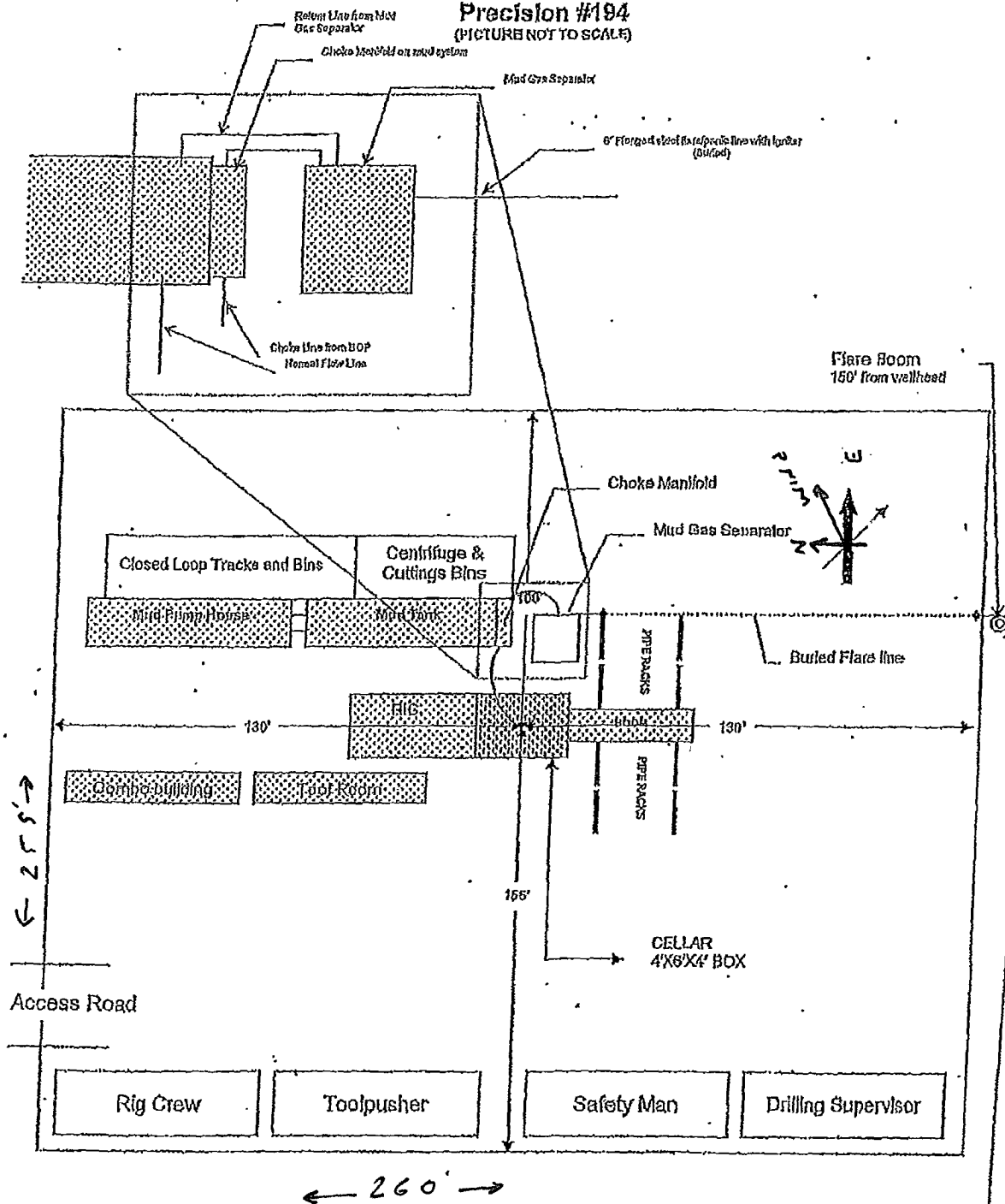
Steven O. Moore

Chief Drilling Engineer, Mid-Continent Business Unit, ConocoPhillips Company

Date: 07-Feb-2012

*Inserted -  
per COP email  
TMM  
2/17/2012*

**ConocoPhillips**  
**Location Schematic and Rig Layout**  
**for Closed Loop System**  
**Precision #194**  
(PICTURE NOT TO SCALE)



*Turn*  
8/15/2011