AT5-12-530

Form 3160-3
(August 2007)

NM HOBBS HOBBS OCD JUN 28 2012 RECEIVED

FORM APPROVED
OMB No. 1004-0137
Expires July 31, 2010

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.
NMLC060329

6. If Indian, Allotee or Tribe Name

1a. Type of work: [X] DRILL [ ] REENTER

7. If Unit or CA Agreement, Name and No.

1b. Type of Well: [X] Oil Well [ ] Gas Well [ ] Other [ ] Single Zone [ ] Multiple Zone

8. Lease Name and Well No. <38742>
Emerald Federal #1

2. Name of Operator
ConocoPhillips Company <217817>

9. API Well No.
30-025-40656

3a. Address 3300 N "A" St, Bldg 6 Midland, TX 79705

3b. Phone No. *(include area code)*
(432)688-6913

10. Field and Pool, or Exploratory
Maljamar; Yeso, West <44500>

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface UL P, Sec 17, T 17S, R 32E, 730 FSL 140 FEL
At proposed prod. zone UL P, Sec 17, T 17S, R 32E, 413 FSL 359 FEL

NSL ORTHODOX LOCATION

11. Sec., T. R. M. or Blk. and Survey or Area
Sec 17, T 17S, R 32E

14. Distance in miles and direction from nearest town or post office*
4.5 miles south of Maljamar, NM

12. County or Parish
Lea

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
359' FEL	323.76	40

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
260' South east of Emerald #10	7290 TVD 7315 MD	ES0085

21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
4042' GR	06/01/2012	10 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
	Brian D Maiorino	03/20/2012

Title
Regulatory Specialist

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
/s/ Don Peterson		JUN 26 2012

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)

Roswell Controlled Water Basin

KZ 06/29/12

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

JUL 02 2012

Drilling Plan
ConocoPhillips Company
Maljamar; Yeso, west

Emerald Federal 1

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 Depth FT TVD	Top Depths FT MD	Contents
Quaternary	Surface	Surface	Fresh Water
Rustler	795	795	Anhydrite
Salado (top of salt)	976	976	Salt
Tansill (base of salt)	1990	1990	Gas, Oil and Water
Yates	2126	2126	Gas, Oil and Water
Seven Rivers	2476	2476	Gas, Oil and Water
Queen	3105	3111	Gas, Oil and Water
Grayburg	3502	3512	Gas, Oil and Water
San Andres	3898	3911	Gas, Oil and Water
Glorieta	5374	5399	Gas, Oil and Water
Paddock	5449	5474	Gas, Oil and Water
Blinebry	5793	5818	Gas, Oil and Water
Tubb	6828	6853	Gas, Oil and Water
Drinkard	7098	7123	Gas, Oil and Water
Deepest estimated perforation	7098	7123	Deepest estimated perf. is ~ 0' – 10' above Top of Drinkard
Total Depth (maximum)	7290	7315	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	Axial (Tension) DF
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	820' – 865'	8-5/8	24#	J-55	STC	2950	1370	244	2.68	5.52	1.4
Prod	7-7/8	0	7,260' – 7,305'	5-1/2	17#	L-80	LTC	7740	6290	338	1.15	1.94	1.4

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 Design (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

Burst Design (Safety) Factors – ConocoPhillips Criteria

The maximum internal (burst) load on the Surface Casing occurs when the surface casing is tested to 1000 psi (pressured up to 1100 psi). 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 Design Factors.

Surface Casing Burst Design Factor = Burst Rating / Maximum Pressure during Casing Pressure Test

Production Casing MAWP for the Fracture Stimulation = Minimum Internal Yeild / Production Casing Burst Design Factor

Surface Casing Burst Design Factor:

Bust Design Factor = 2950 psi / 1100 psi = 2.68

Production Casing MAWP:

MAWP for the Fracture Stimulation = 7740 psi / 1 15 = 6730 psi

Collapse Design (Safety) Factors – ConocoPhillips Criteria

The maximum collapse load on the Surface Casing occurs when the pressure is released after bumping the plug on the surface casing cement job. The maximum collapse load on the production casing occurs with the well is pumped off on production. We plan to cement the production casing to surface, and therefore the external pressure profile on the production casing should be equal to the pore pressure of the horizons on the outside of the casing which we estimate to be 8.55 ppg gradient.

Surface Casing Collapse Design Factor = Collapse Rating / (Cement Column Hydrostatic Pressure – Displacement Fluid Hydrostatic Pressure)

Production Casing Collapse Design Factor = Collapse Rating / Maximum Possible Pore Pressure

Surface Casing Collapse Design Factor:

Collapse Design Factor = 1370 psi / {[(300 ft x .052 x 14.8 ppg) + (565 ft x .052 x 13.6 ppg)] – (865 ft x .052 x 8.5 ppg)}

Collapse Design Factor = 1370 psi / 248 psi = 5.52

Production Casing Collapse Design Factor:

Collapse Design Factor = 6290 / (8.55 ppg x .052 x 7,305 ft) = 6290 psi / 3,248 psi = 1.94

Axial Design (Safety) Factors – ConocoPhillips Criteria

The maximum axial (tension) load occurs if casing were to get stuck and pulled on to try to get it unstuck.
Maximum Allowable Hookload = Joint Strength Rating / Axial Design Factor
Overpull Margin = Maximum Allowable Hook Load - Air Wt of the String

Surface Casing Overpull Margin:
Maximum Allowable Hookload = 244,000 lbs / 1.4
Maximum Allowable Hookload = 174,286 lbs
Overpull Margin = 174,286 lbs – (865 ft x 24 lb/ft)
Overpull Margin = 174,286 lbs – 20,760 lbs = 153,526 lbs
Production Casing Overpull Margin:
Maximum Allowable Hookload = 338,000 lbs / 1.4
Maximum Allowable Hookload = 241,429 lbs
Overpull Margin = 241,428 lbs – (7,305 ft x 17 lb/ft)
Overpull Margin = 241,428 lbs – 124,185 lbs = 117,244 lbs

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: 8-5/8" 24# J-55 STC

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	520' – 565'	13.6	350	595	4%Bentonite 2%CaCl2 .125%Polyflake 0.2% antifoam Excess =230% based on gauge hole volume	1.70
Tail	Class C	520' – 565'	820' – 865'	14.8	200	268	1% CaCl2 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: 5-1/2" 17# L-80 LTC

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	1000	2640	10% Bentonite 8 lbs/sx Salt 0.4% Fluid loss additive 0.125% LCM if needed Excess = 220% or more if needed based on gauge hole volume	2.64
Tail	Class H	5200'	7,260' – 7,305'	16.4	650	696	0.2% Fluid loss additive 0.3% Dispersant 0.15% Retarder 0 2% Antifoam Excess = 100% or more if needed based on gauge hole volume	1.07

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:

- Rotating Head
- Annular BOP, 11" 3M
- Blind Ram, 11" 3M
- 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.**

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 $NaCl_2$)	10	29	N.C.	10 – 11	400 – 750
Conversion to Mud at TD	Brine Based Mud ($NaCl_2$)	10	34 – 45	5 – 10	10 – 11	0 – 750

Drilling mud containing H2S 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.

6. Logging, Coring, and Testing Program:

a. No drill stem tests will be done
b. No mud logging is planned
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	400	433	34	15

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

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

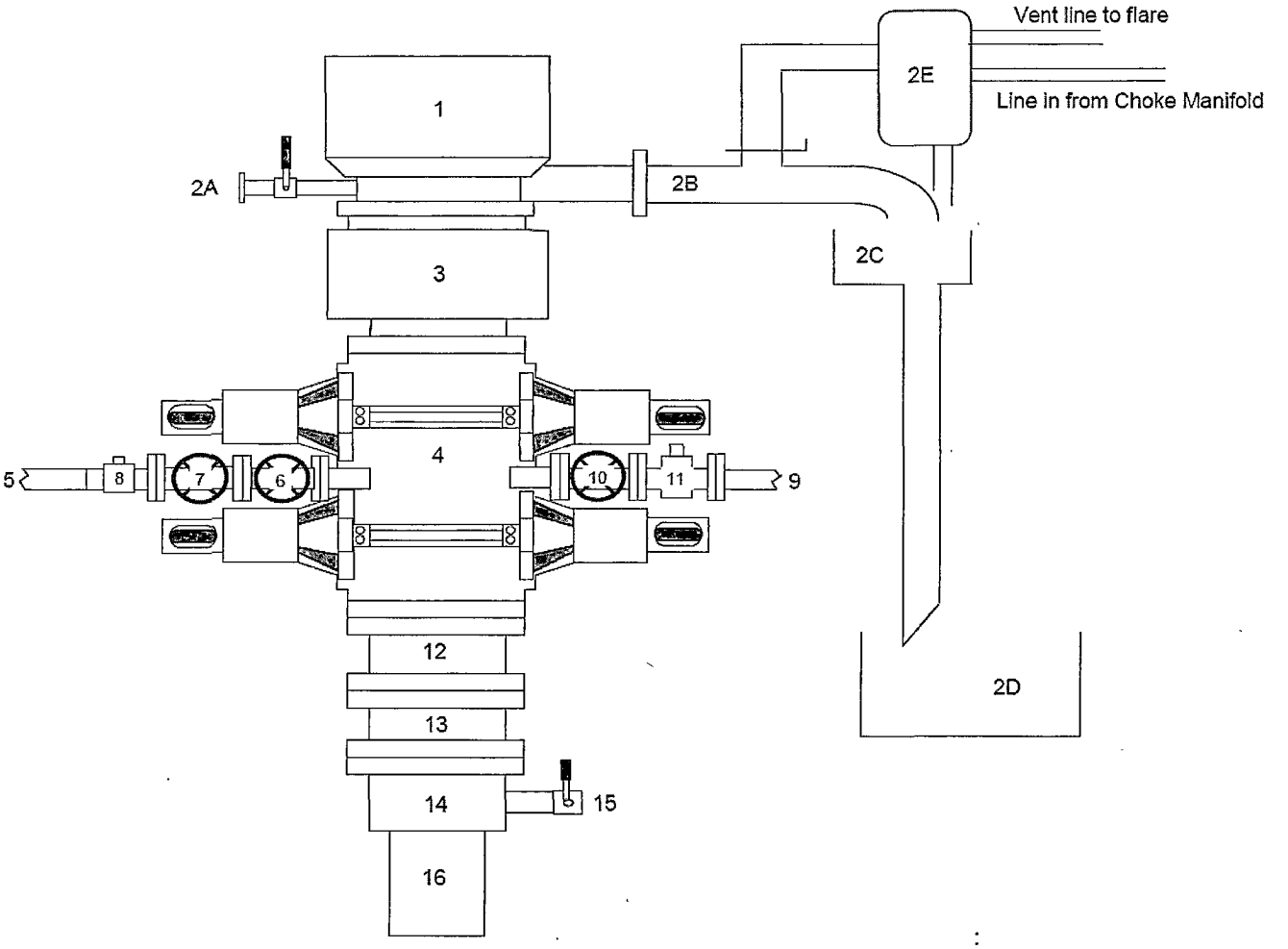
Contact Information:

Program prepared by:
James Chen
Drilling Engineer, ConocoPhillips Company
Phone (832) 486-2184
Cell (832) 768-1647
Date: 23 February 2012

Attachment # 1

BLOWOUT PREVENTER ARRANGEMENT

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



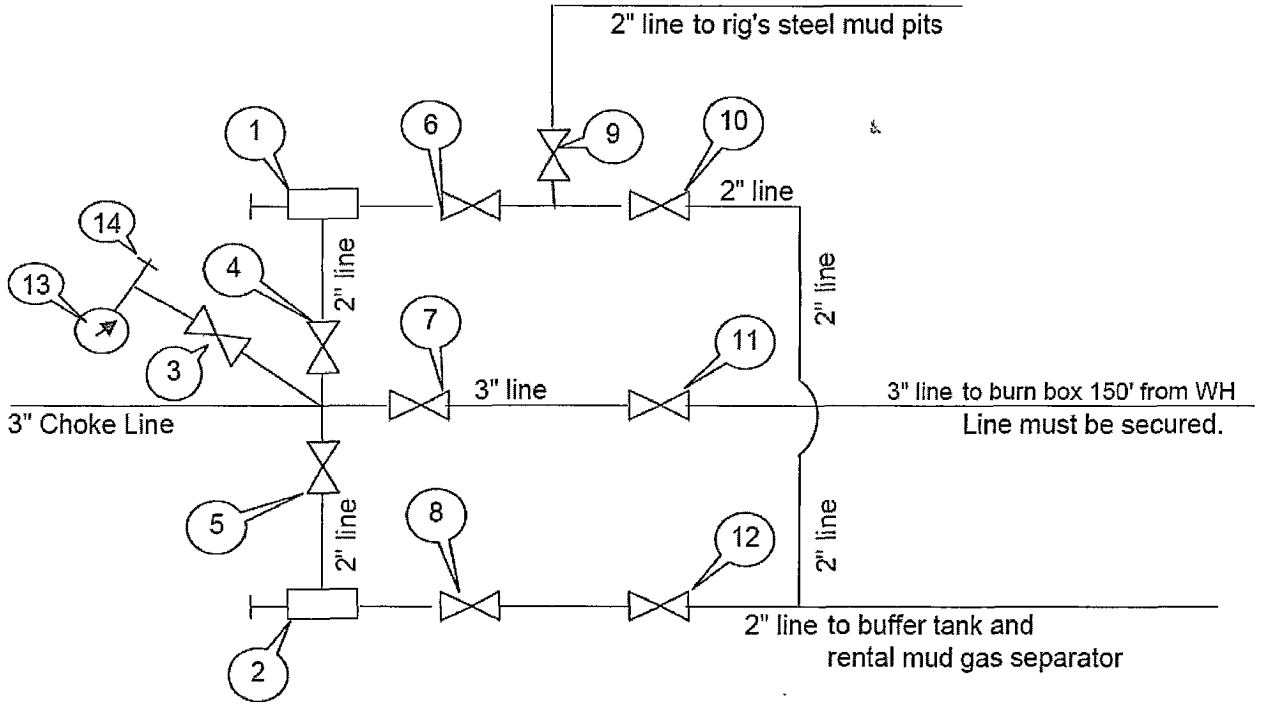
Item	Description
1	Rotating Head (11")
2A	Fill up Line and Valve
2B	Flow Line (8")
2C	Shale Shakers and Solids Settling Tank
2D	Cuttings Bins for Zero Discharge
2E	Rental Mud Gas Separator with vent line to flare and return line to mud system
3	Annular BOP (11", 3000 psi)
4	Double Ram BOP (11", 3000 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

Drawn by: Steven O. Moore, Chief Drilling Engineer, Mid-Continent Business Unit, ConocoPhillips Company, 07-Feb-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	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

ConocoPhillips Company
Closed Loop System Design, Operating and Maintenance, and Closure Plan

Well: Emerald Federal #1

Date: March 22, 2012

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's 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 frac 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:

   Controlled Recovery 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 CRI is R9166

   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 Controlled Recovery 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)

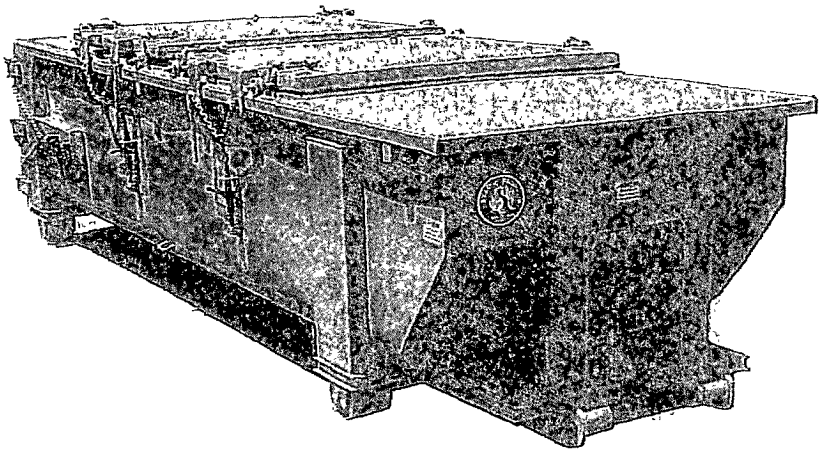
   - Basic Energy Services, PO Box 1869 Eunice, NM 88231 Phone Number 575 394 2545, Facility located at Hwy 18, Mile Marker 19, Eunice, NM.

James Chen, Staff Drilling Engineer
ConocoPhillips Company, 600 North Dairy Ashford, Room #2WL-13018, Houston, TX 77079-1175
Office: 832-486-2184
Cell: 832-768-1647

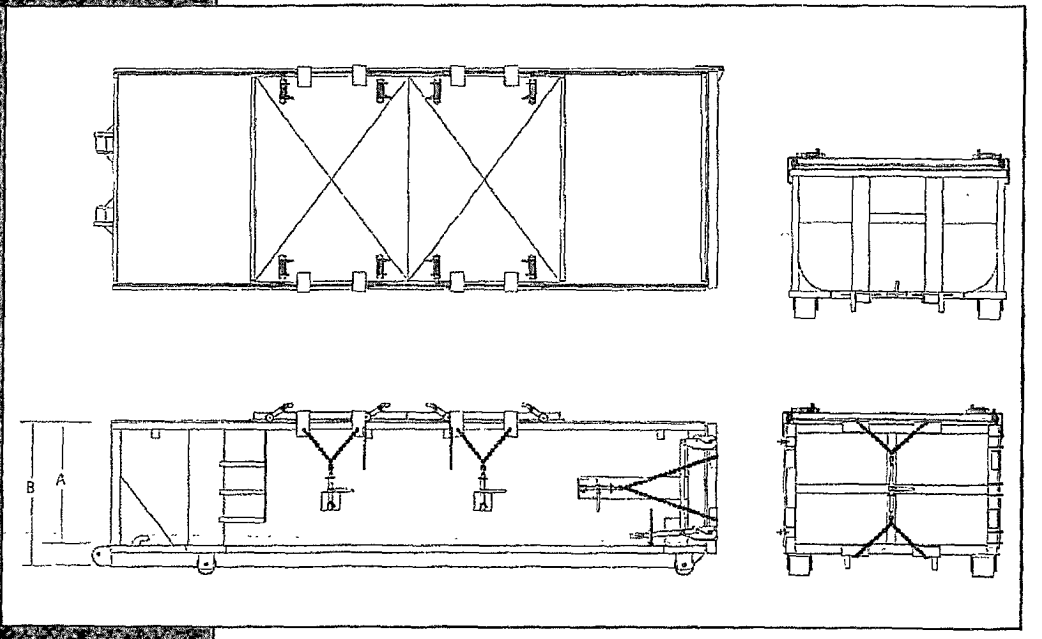
SPECIFICATIONS

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, Ampliroll, 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

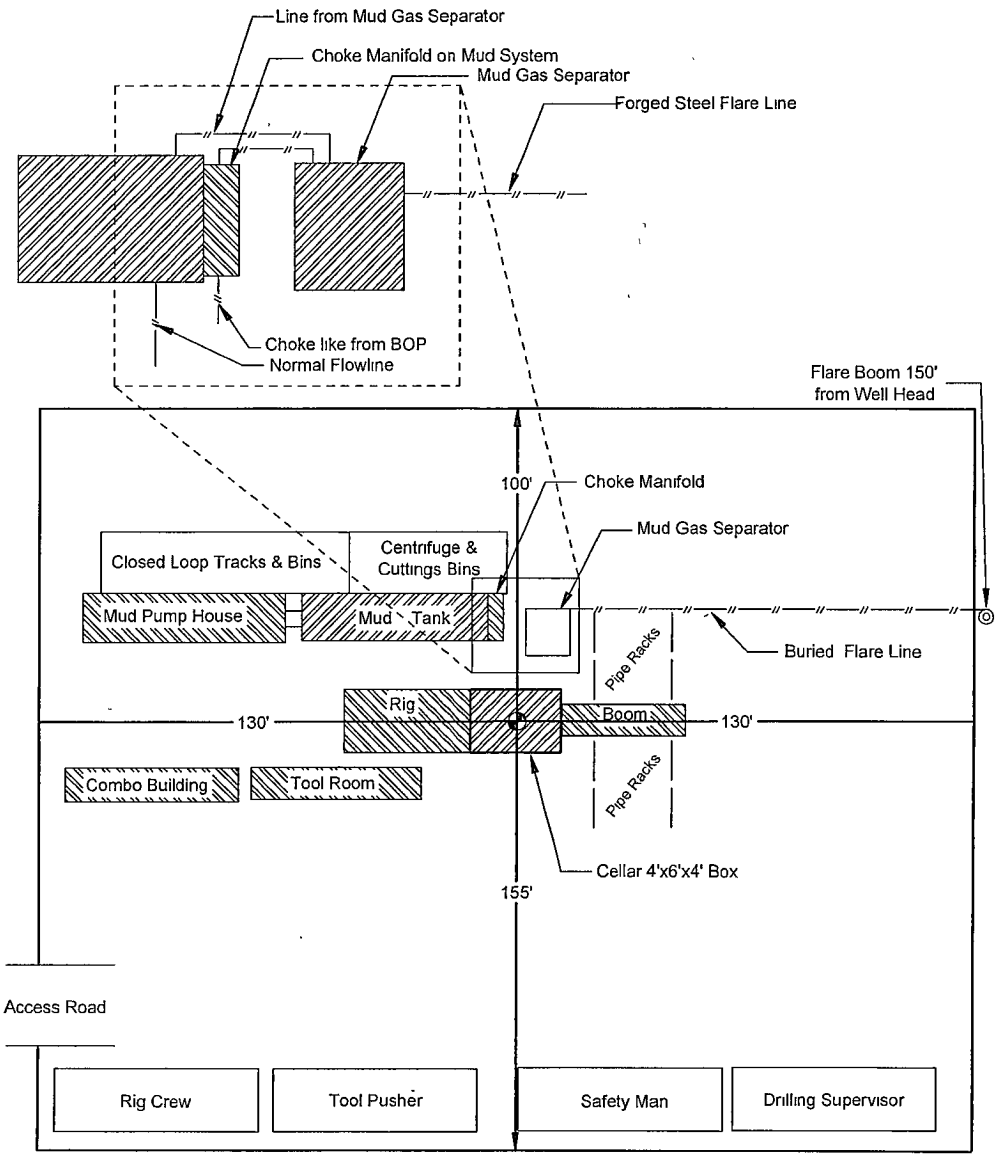


CONT.	A	B
20 YD	41	53
25 YD	53	65
30 YD	65	77



RIG LAYOUT

Locaton Schematic and Rig Layout
for Closed Loop System
Precision #194
(picture note to scale)

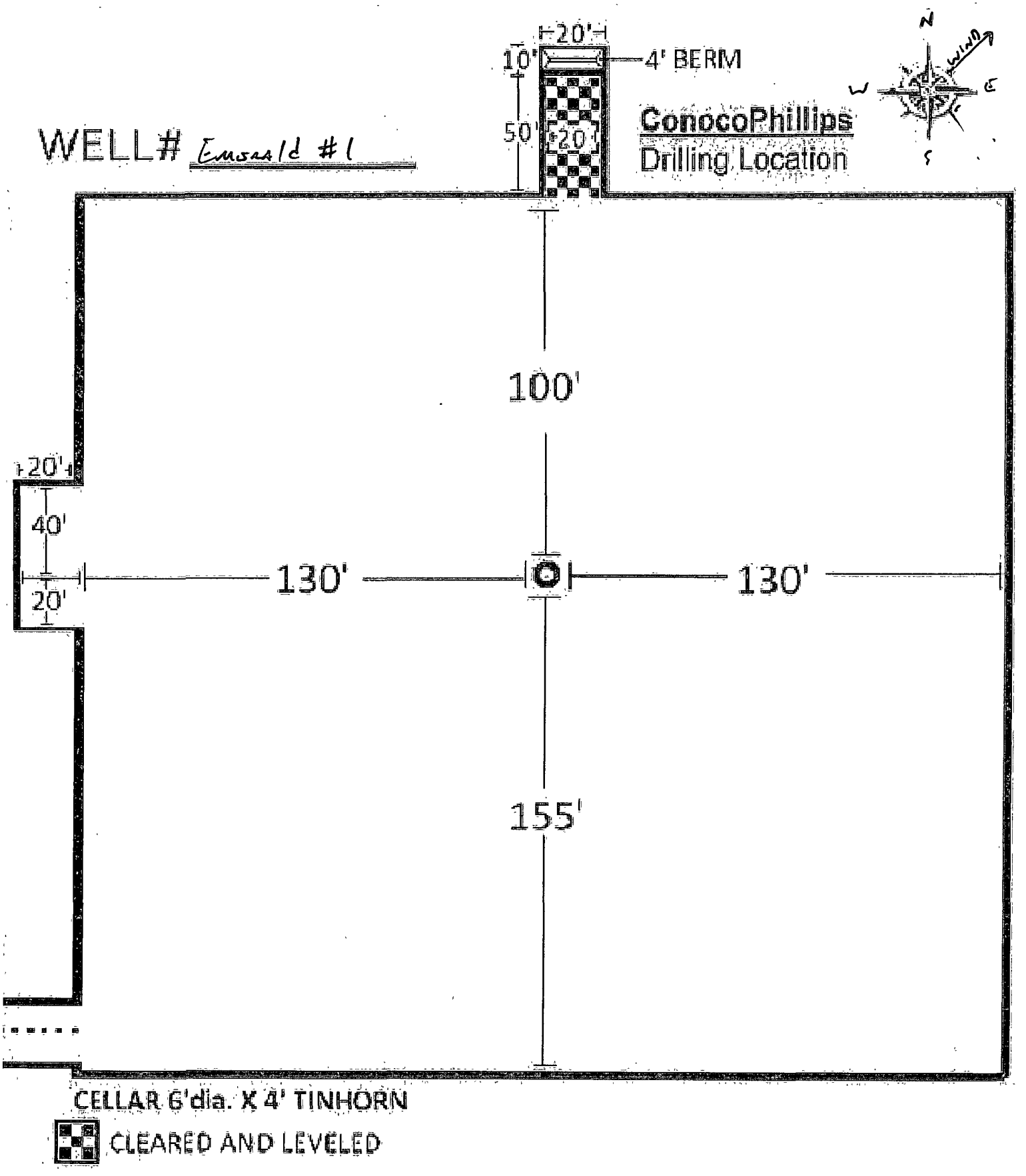


EMERALD FEDERAL #1
Located 730' FSL and 140' FEL
Section 17, Township 17 South, Range 32 East, N.M.P.M., Lea County, New Mexico.

Basin Surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number:	JMS 25583
Survey Date:	02-10-2012
Scale:	1" = NONE
Date:	02-20-2012

ConocoPhillips


WELL# Emerald #1
20'
10'
4' BERM
50'
20'
ConocoPhillips
Drilling Location
N
W
E
S
Wind
100'
20'
40'
20'
130'
130'
155'
CELLAR 6'dia. X 4' TINHORN
CLEARED AND LEVELED

ConocoPhillips MCBU

Buckeye
Emerald Federal
Emerald Federal 1

Original Hole

Plan: Actual Plan

Standard Planning Report

23 February, 2012

Database:	EDM Central Planning	**Local Co-ordinate Reference:**	Well Emerald Federal 1
Company:	ConocoPhillips MCBU	**TVD Reference:**	RKB @ 4054 0ft (PD 194)
Project:	Buckeye	**MD Reference:**	RKB @ 4054.0ft (PD 194)
Site:	Emerald Federal	**North Reference:**	Grid
Well:	Emerald Federal 1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	Actual Plan		

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		

Site Emerald Federal, New Mexico, East

Site Position:		**Northing:**	666,142 94 ft	**Latitude:**	32° 49' 48.382 N
From:	Lat/Long	**Easting:**	668,872.51 ft	**Longitude:**	103° 47' 0.841 W
Position Uncertainty:	3.5 ft	**Slot Radius:**	8"	**Grid Convergence:**	0.30 °

Well Emerald Federal 1, S-Shape Directional Well (Collision Risk)

Well Position	**+N/-S**	0 0 ft	**Northing:**	665,806.80 ft	**Latitude:**	32° 49' 44.998 N
	+E/-W	0.0 ft	**Easting:**	669,984.70 ft	**Longitude:**	103° 46' 47 828 W
Position Uncertainty		3.5 ft	**Wellhead Elevation:**	ft	**Ground Level:**	4,040 0 ft

Wellbore Original Hole

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	BGGM2011	12/19/2011	7.75	60.67	48,913

Design Actual Plan

Audit Notes:

Version:	2	**Phase:**	PROTOTYPE	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0 0	0 0	0 0	213.49

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
0 0	0 00	0 00	0 0	0.0	0.0	0 00	0 00	0 00	0 00	
2,178 6	0 00	0 00	2,178.6	0.0	0 0	0 00	0 00	0 00	0.00	
2,711 9	8.00	213.49	2,710 2	-31 0	-20.5	1.50	1.50	0 00	213.49	
4,940 8	8 00	213.49	4,917 4	-289 7	-191 7	0.00	0.00	0.00	0 00	
5,474 2	0.00	0 00	5,449.0	-320.7	-212 2	1.50	-1 50	0 00	180 00	Emerald Federal 1 (T
7,315 2	0 00	0.00	7,290.0	-320.7	-212.2	0 00	0 00	0.00	0 00	Emerald Federal 1 (Bl

Database:	EDM Central Planning	**Local Co-ordinate Reference:**	Well Emerald Federal 1
Company:	ConocoPhillips MCBU	**TVD Reference:**	RKB @ 4054.0ft (PD 194)
Project:	Buckeye	**MD Reference:**	RKB @ 4054.0ft (PD 194)
Site:	Emerald Federal	**North Reference:**	Grid
Well:	Emerald Federal 1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	Actual Plan		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
0 0	0 00	0.00	0 0	0.0	0 0	0 0	0.00	0.00	0 00
100 0	0 00	0.00	100.0	0 0	0.0	0.0	0.00	0.00	0.00
200 0	0.00	0 00	200 0	0.0	0.0	0 0	0 00	0.00	0.00
300 0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0 00	0.00	400.0	0.0	0.0	0.0	0 00	0 00	0 00
500.0	0 00	0 00	500.0	0.0	0 0	0.0	0.00	0 00	0.00
600.0	0 00	0 00	600.0	0 0	0 0	0 0	0.00	0.00	0.00
700.0	0 00	0.00	700 0	0 0	0 0	0.0	0 00	0 00	0 00
795 0	0.00	0 00	795.0	0 0	0 0	0 0	0.00	0 00	0.00
Rustler									
800 0	0 00	0.00	800 0	0 0	0 0	0.0	0.00	0 00	0.00
828.0	0.00	0.00	828 0	0.0	0.0	0 0	0.00	0 00	0.00
Surface									
900.0	0 00	0 00	900.0	0.0	0.0	0.0	0.00	0 00	0 00
976.0	0 00	0.00	976.0	0.0	0 0	0.0	0.00	0 00	0 00
Salado									
1,000 0	0 00	0 00	1,000.0	0.0	0 0	0 0	0 00	0 00	0.00
1,100.0	0 00	0 00	1,100.0	0.0	0 0	0 0	0 00	0.00	0 00
1,200 0	0.00	0 00	1,200.0	0 0	0 0	0 0	0.00	0 00	0 00
1,300.0	0.00	0.00	1,300.0	0.0	0 0	0.0	0 00	0 00	0 00
1,400 0	0 00	0.00	1,400.0	0.0	0.0	0.0	0.00	0 00	0 00
1,500 0	0 00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0 00
1,600 0	0 00	0.00	1,600 0	0 0	0 0	0 0	0.00	0.00	0.00
1,700 0	0 00	0 00	1,700.0	0.0	0.0	0 0	0.00	0.00	0.00
1,800 0	0 00	0 00	1,800 0	0.0	0.0	0 0	0 00	0.00	0.00
1,900 0	0 00	0 00	1,900 0	0 0	0 0	0 0	0.00	0.00	0 00
1,990 0	0.00	0.00	1,990.0	0 0	0.0	0.0	0.00	0 00	0 00
Tansill									
2,000 0	0.00	0.00	2,000 0	0 0	0.0	0 0	0 00	0.00	0 00
2,100.0	0 00	0 00	2,100.0	0.0	0 0	0 0	0 00	0.00	0 00
2,126.0	0 00	0 00	2,126.0	0.0	0.0	0 0	0.00	0 00	0 00
Yates									
2,178 6	0 00	0.00	2,178 6	0 0	0 0	0 0	0.00	0 00	0 00
2,200 0	0 32	213.49	2,200.0	-0.1	0 0	0.1	1.50	1.50	0 00
2,300.0	1.82	213 49	2,300 0	-1.6	-1.1	1 9	1 50	1 50	0.00
2,400 0	3.32	213.49	2,399 9	-5 3	-3 5	6 4	1 50	1.50	0 00
2,476.3	4.47	213 49	2,476.0	-9 7	-6.4	11.6	1 50	1 50	0.00
Seven Rivers									
2,500.0	4.82	213.49	2,499 6	-11.3	-7 5	13.5	1.50	1.50	0.00
2,600 0	6 32	213 49	2,599 1	-19.4	-12 8	23 2	1 50	1.50	0 00
2,700 0	7 82	213 49	2,698 4	-29 6	-19.6	35 5	1 50	1.50	0 00
2,711 9	8.00	213.49	2,710.2	-31 0	-20 5	37.2	1 50	1.50	0 00
2,800.0	8 00	213.49	2,797.4	-41.2	-27 3	49 4	0.00	0 00	0.00
2,900.0	8 00	213.49	2,896.4	-52.8	-35 0	63.3	0 00	0.00	0.00
3,000.0	8 00	213.49	2,995 5	-64.4	-42 6	77.3	0.00	0.00	0 00
3,100.0	8 00	213 49	3,094.5	-76 0	-50.3	91 2	0 00	0 00	0 00
3,110 6	8.00	213.49	3,105.0	-77 3	-51.1	92.7	0 00	0.00	0.00
Queen									
3,200.0	8 00	213.49	3,193 5	-87 6	-58 0	105.1	0 00	0 00	0.00
3,300.0	8 00	213.49	3,292 5	-99 3	-65.7	119 0	0 00	0 00	0.00
3,400 0	8.00	213 49	3,391.6	-110.9	-73 4	132 9	0 00	0.00	0.00
3,500 0	8 00	213 49	3,490.6	-122 5	-81.0	146 9	0.00	0 00	0.00
3,511.5	8 00	213.49	3,502.0	-123.8	-81.9	148.5	0.00	0 00	0 00

Database:	EDM Central Planning	**Local Co-ordinate Reference:**	Well Emerald Federal 1
Company:	ConocoPhillips MCBU	**TVD Reference:**	RKB @ 4054 0ft (PD 194)
Project:	Buckeye	**MD Reference:**	RKB @ 4054 0ft (PD 194)
Site:	Emerald Federal	**North Reference:**	Grid
Well:	Emerald Federal 1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	Actual Plan		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Grayburg									
3,600 0	8 00	213 49	3,589 6	-134.1	-88 7	160.8	0 00	0.00	0 00
3,700.0	8.00	213 49	3,688.7	-145.7	-96 4	174 7	0 00	0.00	0.00
3,800 0	8 00	213 49	3,787.7	-157 3	-104.1	188 6	0.00	0 00	0.00
3,900.0	8.00	213.49	3,886.7	-168 9	-111 8	202.5	0 00	0 00	0 00
3,911.4	8 00	213.49	3,898 0	-170 2	-112 6	204.1	0 00	0 00	0.00
San Andres									
4,000 0	8.00	213 49	3,985.7	-180.5	-119 4	216.4	0.00	0.00	0 00
4,100 0	8.00	213 49	4,084 8	-192.1	-127.1	230 4	0 00	0.00	0 00
4,200.0	8 00	213 49	4,183.8	-203.7	-134.8	244 3	0 00	0.00	0.00
4,300.0	8 00	213.49	4,282.8	-215 3	-142 5	258 2	0 00	0.00	0.00
4,400.0	8 00	213.49	4,381 8	-226.9	-150 2	272.1	0.00	0 00	0.00
4,500.0	8 00	213 49	4,480.9	-238.5	-157.8	286.0	0.00	0 00	0.00
4,600.0	8 00	213 49	4,579.9	-250 1	-165.5	299 9	0 00	0.00	0.00
4,700.0	8.00	213 49	4,678.9	-261.7	-173.2	313 9	0 00	0.00	0.00
4,800.0	8.00	213 49	4,777.9	-273 4	-180 9	327 8	0 00	0 00	0.00
4,900.0	8 00	213 49	4,877 0	-285 0	-188 6	341.7	0.00	0 00	0 00
4,940.8	8 00	213.49	4,917 4	-289.7	-191 7	347.4	0 00	0 00	0.00
5,000 0	7.11	213.49	4,976 1	-296.2	-196 0	355 2	1.50	-1.50	0.00
5,100 0	5 61	213 49	5,075.4	-305.4	-202.1	366 2	1 50	-1.50	0 00
5,200.0	4.11	213.49	5,175.1	-312 5	-206 8	374.7	1.50	-1.50	0.00
5,300.0	2 61	213.49	5,274 9	-317.4	-210 0	380.6	1.50	-1 50	0.00
5,399.1	1 13	213.49	5,374 0	-320.1	-211 8	383 8	1 50	-1.50	0.00
Glorieta									
5,400 0	1.11	213 49	5,374.9	-320 1	-211 8	383.8	1 50	-1 50	0.00
5,474.2	0.00	0 00	5,449 0	-320.7	-212 2	384 5	1.50	-1 50	197.57
Paddock - Emerald Federal 1 (Top of Target)									
5,500 0	0 00	0.00	5,474.8	-320.7	-212 2	384 5	0.00	0 00	0 00
5,600 0	0.00	0 00	5,574.8	-320 7	-212 2	384 5	0 00	0 00	0.00
5,700.0	0.00	0.00	5,674 8	-320.7	-212 2	384.5	0 00	0 00	0 00
5,800 0	0.00	0.00	5,774 8	-320.7	-212 2	384 5	0.00	0 00	0 00
5,818 2	0 00	0.00	5,793.0	-320.7	-212.2	384.5	0 00	0.00	0 00
Blinebry									
5,900 0	0 00	0.00	5,874 8	-320.7	-212.2	384 5	0 00	0.00	0.00
6,000.0	0.00	0 00	5,974.8	-320 7	-212 2	384.5	0.00	0 00	0 00
6,100 0	0.00	0 00	6,074.8	-320 7	-212 2	384 5	0.00	0.00	0.00
6,200 0	0 00	0.00	6,174 8	-320.7	-212.2	384 5	0 00	0 00	0.00
6,300 0	0.00	0 00	6,274 8	-320.7	-212 2	384 5	0 00	0.00	0.00
6,400.0	0.00	0 00	6,374.8	-320.7	-212 2	384.5	0.00	0.00	0.00
6,500 0	0.00	0 00	6,474 8	-320.7	-212.2	384 5	0 00	0 00	0 00
6,600 0	0 00	0.00	6,574.8	-320.7	-212.2	384 5	0.00	0.00	0.00
6,700 0	0 00	0 00	6,674.8	-320 7	-212 2	384.5	0.00	0.00	0 00
6,800.0	0.00	0 00	6,774.8	-320.7	-212 2	384.5	0 00	0.00	0 00
6,853 2	0 00	0 00	6,828.0	-320.7	-212 2	384.5	0.00	0 00	0 00
Tubb									
6,900 0	0.00	0.00	6,874.8	-320 7	-212.2	384.5	0.00	0.00	0 00
7,000.0	0 00	0 00	6,974.8	-320.7	-212 2	384 5	0 00	0 00	0.00
7,100 0	0.00	0.00	7,074 8	-320.7	-212 2	384 5	0 00	0.00	0.00
7,123 2	0.00	0 00	7,098.0	-320.7	-212.2	384.5	0 00	0.00	0.00
Drinkard									
7,200.0	0.00	0 00	7,174.8	-320.7	-212 2	384 5	0 00	0.00	0.00
7,300 0	0 00	0.00	7,274 8	-320.7	-212.2	384 5	0 00	0 00	0.00
7,305 0	0.00	0 00	7,279 8	-320.7	-212.2	384.5	0 00	0.00	0 00

Database:	EDM Central Planning	**Local Co-ordinate Reference:**	Well Emerald Federal 1
Company:	ConocoPhillips MCBU	**TVD Reference:**	RKB @ 4054.0ft (PD 194)
Project:	Buckeye	**MD Reference:**	RKB @ 4054 0ft (PD 194)
Site:	Emerald Federal	**North Reference:**	Grid
Well:	Emerald Federal 1	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Original Hole		
Design:	Actual Plan		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
Production									
7,315 2	0 00	0 00	7,290 0	-320 7	-212.2	384.5	0 00	0 00	0.00
Emerald Federal 1 (BHL)									

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
Emerald Federal 1 (BHL - plan hits target center - Circle (radius 30 0)	0 00	0 00	7,290 0	-320 7	-212 2	665,486 10	669,772.50	32° 49' 41 836 N	103° 46' 50 334 W
Emerald Federal 1 (Top - plan hits target center - Circle (radius 30 0)	0 00	0 00	5,449 0	-320 7	-212 2	665,486.10	669,772 50	32° 49' 41 836 N	103° 46' 50 334 W

Casing Points

Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
828.0	828.0	Surface	8-5/8	12-1/4
7,305 0	7,279.8	Production	5-1/2	7-7/8

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,818 2	5,793.0	Blinebry		0 00	
976.0	976 0	Salado		0.00	
795 0	795.0	Rustler		0 00	
6,853 2	6,828 0	Tubb		0 00	
7,123 2	7,098 0	Drinkard		0.00	
1,990.0	1,990 0	Tansill		0 00	
2,126 0	2,126 0	Yates		0 00	
3,911 4	3,898.0	San Andres		0 00	
3,511 5	3,502.0	Grayburg		0 00	
5,399.1	5,374 0	Glorieta		0 00	
2,476.3	2,476 0	Seven Rivers		0.00	
5,474 2	5,449 0	Paddock		0 00	
3,110 6	3,105 0	Queen		0 00	