

HOBBS OCD

MAY 16 2013

RECEIVED

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTOCD Hobbs
HOBBS OCD

APPLICATION FOR PERMIT TO DRILL OR REENTER IN 12 2013

FORM APPROVED
OMB No. 1004-013
Expires July 31, 2010

5. Lease Serial No.

SHL: NMNM124664

6. If Indian, Allottee or Tribe Name

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

8. Lease Name and Well No. **<38863>**
Gunner 8 Federal #7H

9. API Well No.

30-025-412110. Field and Pool, or Exploratory **<97892>**
Wildcat; Bone Spring, Upper Shale

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

Sec. 8 - T26S - R34E

12. County or Parish

Lea County

13. State

NM

1a. Type of Work:



DRILL



REENTER

1b. Type of Well:



Oil Well



Gas Well



Other



Single Zone



Multiple Zone

2. Name of Operator

COG Operating LLC.

3a. Address

2208 West Main Street
Artesia, NM 88210

3b. Phone No. (include area code)

575-748-6940

4. Location of Well (Report location clearly and in accordance with any State requirements. *)

At surface

190' FSL & ¹³⁵⁰ ~~1490~~ FWL Unit Letter N (SESW) Sec. 8 - T26S - R34E SHL

At proposed prod. Zone

1650' FNL & 1490' FWL Unit Letter F (SENW) Sec. 5-T26S-R34E BHL

14. Distance in miles and direction from nearest town or post office*

About 17 miles from Jal

15. Distance from proposed*

location to nearest
property or lease line, ft.

(Also to nearest drig. Unit line, if any)

190'

16. No. of acres in lease

1120

17. Spacing Unit dedicated to this well

280

18. Distance from location*

to nearest well, drilling, completed,
applied for, on this lease, ft.

SHL: 1135' BHL: 2710'

19. Proposed Depth

TVD: 9755' MD: 18328'

20. BLM/BIA Bond No. on file

NMB000740 & NMB00215

21. Elevations (Show whether DF, KDB, RT, GL, etc.)

3354'

22. Approximate date work will start*

5/1/2013

23. Estimated duration

30 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall 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 shall 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
authorized officer.

25. Signature

Name (Printed/Typed)

Mayte Reyes

Date

1/7/2013

Title

Regulatory Analyst

Approved by (Signature)

/s/George MacDonell

Name (Printed/Typed)

Date

MAY 13 2013

Title

FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

Application approval does not warrant or certify that the applicant holds legan 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)

Carlsbad Controlled Water Basin ^(Instructions on page 2)Approval Subject to General Requirements
& Special Stipulations AttachedSEE ATTACHED FOR
CONDITIONS OF APPROVAL

JUN 18 2013

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM
Gunner 8 Federal 7H
SHL: 190' FSL & 1490' FWL of Section 8
BHL: 1650' FNL & 1490' FWL of Section 5
T26S R34E
Lea County, New Mexico

In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Operating LLC submits the following eleven items of pertinent information in accordance with BLM requirements.

1. Geological surface formation: Permian
2. The estimated tops of geologic markers & estimated depths at which anticipated water, oil or gas formations are expected to be encountered are as follows:

Fresh Water	~ 150'	
Rustler	691'	
Top of Salt	1050'	
Base of Salt	5046'	
Delaware	5297'	Oil
Bone Spring	9543'	Oil
TD TVD	9755'	
TD MD	18,328'	

No other formations are expected to give up oil, gas or fresh water in measurable quantities. The surface fresh water sands will be protected by setting 13-3/8" casing at 725' and circulating cement back to surface. All intervals will be isolated by setting 5 1/2" casing to total depth and tying back cement to a minimum of 500' into 9-5/8" csg.

3. Proposed Casing Program: All casing is new and API approved

Hole Size	Depths <i>all csg 720'</i>	Section	OD Casing	New/Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - 725'	Surface	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 1/4"	0' - 5200'	Intrmd	9 5/8"	New	40#	BTC	J-55	1.125	1.125	1.6
7 7/8"	0' - 18,328'	Production Curve & Lateral	5 1/2"	New	17#	LTC	P-110	1.125	1.125	1.6

- While running all casing strings, the pipe will be kept a minimum of 1/3 full at all times to avoid approaching the collapse pressure of casing.

4. Proposed Cement Program

- | | |
|-------------------------|--|
| a. 13-3/8" Surface | <p>Lead: 250 sx Class C + 4% Gel + 2% CaCl₂
(13.5 ppg / 1.75 cuft/sx)</p> <p>Tail: 250 sx Class C + 2% CaCl₂
(14.8 ppg / 1.35 cuft/sx)</p> <p>**Calculated w/50% excess on OH volumes</p> |
| b. 9 5/8" Intermediate: | <p>Lead: 850 sx 35:65:6 C + Salt+Gilsonite+CFR-3+ HR601
(12.7 ppg / 1.89 cuft/sx)</p> <p>Tail: 250 sx Class C
(14.8 ppg / 1.35 cuft/sx)</p> <p>**Calculated w/35% excess on OH volumes</p> |
| d. 5 1/2" Production | <p>Lead: 950 sx 50:50:10 H +Salt+Gilsonite+CFR-3+ HR601
(11.8 ppg / 2.5 cuft/sx)</p> <p>Tail: 1700 sx 50:50:2 H +Salt+GasStop +HR601 +CFR-3
(14.4 ppg / 1.25 cuft/sx)</p> <p>**Calculated w/35% excess on OH volumes</p> |

- The above cement volumes could be revised pending the caliper measurements.
- The 9-5/8" intermediate string is designed to circulate to surface.
- The production string will tie back a minimum of 500' into 9-5/8" shoe

5. Minimum Specifications for Pressure Control:

Nipple up on 13 3/8 with annular preventer tested to 50% of rated working pressure by independent tester and the rest of the 2M system tested to 2000 psi.

Nipple up on 9 5/8 with 3M system tested to 3000 psi by independent tester.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. A 2" kill line and a minimum 3" choke line will be included in the drilling spool located below the ram-type BOP. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold with 3000 psi WP rating.

6. Estimated BHP & BHT:

Lateral TD = 4230 psi

Lateral TD = 148 °F

7. Mud Program: The applicable depths and properties of this system are as follows:

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 725' <i>790'</i>	Fresh Water	8.4	29	N.C.
<i>725'</i> - 5200'	Brine	10	29	N.C.
5200' - 18,328' (Lateral)	Cut Brine	8.9 - 9.2	29	N.C.

- The necessary mud products for weight addition and fluid loss control will be on location at all times.

- A visual and electronic mud monitoring system will be rigged up prior to spud to detect changes in the volume of mud system. The electronic system consists of a pit volume totalizer, stroke counter and flow sensor at flow line.
- If weight and/or viscosity are introduced to the mud system a daily mud check will be performed by mud contractor, along with hourly check by rig personnel.
- After setting intermediate casing, a third party gas unit detection system will be installed at the flow line.

8. Auxiliary Well Control and Monitoring Equipment:

- a. A Kelly cock will be in the drill string at all times.
- b. A full opening drill pipe stabbing valve having the appropriate connections will be on the rig floor at all times.
- c. Hydrogen Sulfide detection equipment will be in operation after drilling out the 13 3/8" casing shoe until the 5 1/2" casing is cemented. Breathing equipment will be on location upon drilling the 13 3/8" shoe until total depth is reached.

9. Testing, Logging and Coring Program:

- a. Drill stem tests will be based on geological sample shows.
- b. If open hole electrical logging is performed, the program will be:
 - i. Total Depth to Intermediate Casing: Dual Laterolog-Micro Laterolog and Gamma Ray. Compensated Neutron – Z Density log with Gamma Ray and Caliper.
 - ii. Total Depth to Surface: Compensated Neutron with Gamma Ray
 - iii. No coring program is planned
 - iv. Additional testing will be initiated subsequent to setting the 5 1/2" production casing. Specific intervals will be targeted based on log evaluation, geological sample shows and drill stem tests.

10. Potential Hazards:

- a. No abnormal pressures or temperatures are expected. There is no known presence of H₂S in this area. If H₂S is encountered the operator will comply with the provisions of Onshore Oil and Gas Order No. 6. All personnel will be familiar with all aspects of safe operation of equipment being used to drill this well. No H₂S is anticipated to be encountered.

11. Anticipated starting date and Duration of Operations:

- a. Road and location construction will begin after the BLM has approved the APD. Anticipated spud date will be as possible after BLM approval and as soon as a rig will be available. Move in operations and drilling is expected to take 30 days.



COG Operating LLC

**Lea County, NM
Gunner 8 Federal
#7H**

OH

Plan: Plan #1

Standard Planning Report

06 November, 2012





Planning Report



Database: Houston R5000 Database
 Company: COG Operating LLC
 Project: Lea County, NM
 Site: Gunner 8 Federal
 Well: #7H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #7H
 TVD Reference: WELL @ 3384.0usft (Precision #77 - 30' KB)
 MD Reference: WELL @ 3384.0usft (Precision #77 - 30' KB)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Project: 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: Gunner 8 Federal
 Site Position: Northing: 383,338.69 usft Latitude: 32° 3' 3.935 N
 From: Map Easting: 761,964.80 usft Longitude: 103° 29' 16.135 W
 Position Uncertainty: 2.0 usft Slot Radius: 13-3/16" Grid Convergence: 0.45°

Well: #7H
 Well Position: +N/-S -17.2 usft Northing: 383,321.50 usft Latitude: 32° 3' 3.941 N
 +E/-W -2,279.1 usft Easting: 759,685.69 usft Longitude: 103° 29' 42.616 W
 Position Uncertainty: 2.0 usft Wellhead Elevation: Ground Level: 3,354.0 usft

Wellbore: OH
 Magnetics: Model Name Sample Date Declination Dip Angle Field Strength
 (°) (°) (nT)
 IGRF2010 11/6/2012 7.37 60.00 48,381

Design: Plan #1
 Audit Notes:
 Version: Phase: PLAN Tie On Depth: 0.0
 Vertical Section: Depth From (TVD) +N/-S +E/-W Direction
 (usft) (usft) (usft) (°)
 0.0 0.0 0.0 359.52

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	
9,332.5	0.00	0.00	9,332.5	0.0	0.0	0.00	0.00	0.00	0.00	
10,085.7	90.38	359.52	9,810.0	480.7	-4.0	12.00	12.00	0.00	359.52	
10,125.9	90.38	359.52	9,809.7	520.8	-4.4	0.01	0.01	0.00	-2.08	
18,328.4	90.38	359.52	9,755.0	8,722.8	-73.1	0.00	0.00	0.00	0.00	PBHL (G8#7H)



Planning Report



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Wellbore: OH
Design: Plan #1

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TVD Reference: WELL @ 3384.0usft (Precision #77 - 30' KB)
MD Reference: WELL @ 3384.0usft (Precision #77 - 30' KB)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
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
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
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
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
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
5,000.0	0.00	0.00	5,000.0	0.0	0.0	0.0	0.00	0.00	0.00
5,100.0	0.00	0.00	5,100.0	0.0	0.0	0.0	0.00	0.00	0.00
5,200.0	0.00	0.00	5,200.0	0.0	0.0	0.0	0.00	0.00	0.00
5,300.0	0.00	0.00	5,300.0	0.0	0.0	0.0	0.00	0.00	0.00



Planning Report



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Wellbore: OH
Design: Plan #1

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5,400.0	0.00	0.00	5,400.0	0.0	0.0	0.0	0.00	0.00	0.00
5,500.0	0.00	0.00	5,500.0	0.0	0.0	0.0	0.00	0.00	0.00
5,600.0	0.00	0.00	5,600.0	0.0	0.0	0.0	0.00	0.00	0.00
5,700.0	0.00	0.00	5,700.0	0.0	0.0	0.0	0.00	0.00	0.00
5,800.0	0.00	0.00	5,800.0	0.0	0.0	0.0	0.00	0.00	0.00
5,900.0	0.00	0.00	5,900.0	0.0	0.0	0.0	0.00	0.00	0.00
6,000.0	0.00	0.00	6,000.0	0.0	0.0	0.0	0.00	0.00	0.00
6,100.0	0.00	0.00	6,100.0	0.0	0.0	0.0	0.00	0.00	0.00
6,200.0	0.00	0.00	6,200.0	0.0	0.0	0.0	0.00	0.00	0.00
6,300.0	0.00	0.00	6,300.0	0.0	0.0	0.0	0.00	0.00	0.00
6,400.0	0.00	0.00	6,400.0	0.0	0.0	0.0	0.00	0.00	0.00
6,500.0	0.00	0.00	6,500.0	0.0	0.0	0.0	0.00	0.00	0.00
6,600.0	0.00	0.00	6,600.0	0.0	0.0	0.0	0.00	0.00	0.00
6,700.0	0.00	0.00	6,700.0	0.0	0.0	0.0	0.00	0.00	0.00
6,800.0	0.00	0.00	6,800.0	0.0	0.0	0.0	0.00	0.00	0.00
6,900.0	0.00	0.00	6,900.0	0.0	0.0	0.0	0.00	0.00	0.00
7,000.0	0.00	0.00	7,000.0	0.0	0.0	0.0	0.00	0.00	0.00
7,100.0	0.00	0.00	7,100.0	0.0	0.0	0.0	0.00	0.00	0.00
7,200.0	0.00	0.00	7,200.0	0.0	0.0	0.0	0.00	0.00	0.00
7,300.0	0.00	0.00	7,300.0	0.0	0.0	0.0	0.00	0.00	0.00
7,400.0	0.00	0.00	7,400.0	0.0	0.0	0.0	0.00	0.00	0.00
7,500.0	0.00	0.00	7,500.0	0.0	0.0	0.0	0.00	0.00	0.00
7,600.0	0.00	0.00	7,600.0	0.0	0.0	0.0	0.00	0.00	0.00
7,700.0	0.00	0.00	7,700.0	0.0	0.0	0.0	0.00	0.00	0.00
7,800.0	0.00	0.00	7,800.0	0.0	0.0	0.0	0.00	0.00	0.00
7,900.0	0.00	0.00	7,900.0	0.0	0.0	0.0	0.00	0.00	0.00
8,000.0	0.00	0.00	8,000.0	0.0	0.0	0.0	0.00	0.00	0.00
8,100.0	0.00	0.00	8,100.0	0.0	0.0	0.0	0.00	0.00	0.00
8,200.0	0.00	0.00	8,200.0	0.0	0.0	0.0	0.00	0.00	0.00
8,300.0	0.00	0.00	8,300.0	0.0	0.0	0.0	0.00	0.00	0.00
8,400.0	0.00	0.00	8,400.0	0.0	0.0	0.0	0.00	0.00	0.00
8,500.0	0.00	0.00	8,500.0	0.0	0.0	0.0	0.00	0.00	0.00
8,600.0	0.00	0.00	8,600.0	0.0	0.0	0.0	0.00	0.00	0.00
8,700.0	0.00	0.00	8,700.0	0.0	0.0	0.0	0.00	0.00	0.00
8,800.0	0.00	0.00	8,800.0	0.0	0.0	0.0	0.00	0.00	0.00
8,900.0	0.00	0.00	8,900.0	0.0	0.0	0.0	0.00	0.00	0.00
9,000.0	0.00	0.00	9,000.0	0.0	0.0	0.0	0.00	0.00	0.00
9,100.0	0.00	0.00	9,100.0	0.0	0.0	0.0	0.00	0.00	0.00
9,200.0	0.00	0.00	9,200.0	0.0	0.0	0.0	0.00	0.00	0.00
9,300.0	0.00	0.00	9,300.0	0.0	0.0	0.0	0.00	0.00	0.00
9,332.5	0.00	0.00	9,332.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 9332.5' MD, 9332.5' TVD, 0.00° INC, 0.00° AZI, 0.0' VS									
9,350.0	2.10	359.52	9,350.0	0.3	0.0	0.3	12.00	12.00	0.00
9,375.0	5.10	359.52	9,374.9	1.9	0.0	1.9	12.00	12.00	0.00
9,400.0	8.10	359.52	9,399.8	4.8	0.0	4.8	12.00	12.00	0.00
9,425.0	11.10	359.52	9,424.4	8.9	-0.1	8.9	12.00	12.00	0.00
9,450.0	14.10	359.52	9,448.8	14.4	-0.1	14.4	12.00	12.00	0.00
9,475.0	17.10	359.52	9,472.9	21.1	-0.2	21.1	12.00	12.00	0.00
9,500.0	20.10	359.52	9,496.6	29.1	-0.2	29.1	12.00	12.00	0.00
9,525.0	23.10	359.52	9,519.8	38.3	-0.3	38.3	12.00	12.00	0.00
9,550.0	26.10	359.52	9,542.6	48.7	-0.4	48.7	12.00	12.00	0.00
9,575.0	29.10	359.52	9,564.7	60.3	-0.5	60.3	12.00	12.00	0.00
9,600.0	32.10	359.52	9,586.2	73.0	-0.6	73.0	12.00	12.00	0.00



Planning Report



Database: Houston R5000 Database
Company: COG Operating LLC
Project: Lea County, NM
Site: Gunner 8 Federal
Well: #7H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #7H
TVD Reference: WELL @ 3384.0usft (Precision #77 - 30' KB)
MD Reference: WELL @ 3384.0usft (Precision #77 - 30' KB)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
9,625.0	35.10	359.52	9,607.0	86.8	-0.7	86.8	12.00	12.00	0.00
9,650.0	38.10	359.52	9,627.1	101.7	-0.9	101.7	12.00	12.00	0.00
9,675.0	41.10	359.52	9,646.4	117.7	-1.0	117.7	12.00	12.00	0.00
9,700.0	44.10	359.52	9,664.8	134.6	-1.1	134.6	12.00	12.00	0.00
9,725.0	47.10	359.52	9,682.3	152.4	-1.3	152.4	12.00	12.00	0.00
9,750.0	50.10	359.52	9,698.8	171.2	-1.4	171.2	12.00	12.00	0.00
9,775.0	53.09	359.52	9,714.3	190.8	-1.6	190.8	12.00	12.00	0.00
9,800.0	56.09	359.52	9,728.8	211.1	-1.8	211.1	12.00	12.00	0.00
9,825.0	59.09	359.52	9,742.2	232.2	-1.9	232.2	12.00	12.00	0.00
9,850.0	62.09	359.52	9,754.5	254.0	-2.1	254.0	12.00	12.00	0.00
9,875.0	65.09	359.52	9,765.6	276.4	-2.3	276.4	12.00	12.00	0.00
9,900.0	68.09	359.52	9,775.5	299.3	-2.5	299.4	12.00	12.00	0.00
9,925.0	71.09	359.52	9,784.2	322.8	-2.7	322.8	12.00	12.00	0.00
9,950.0	74.09	359.52	9,791.7	346.6	-2.9	346.6	12.00	12.00	0.00
9,975.0	77.09	359.52	9,797.9	370.8	-3.1	370.8	12.00	12.00	0.00
10,000.0	80.09	359.52	9,802.9	395.3	-3.3	395.3	12.00	12.00	0.00
10,025.0	83.09	359.52	9,806.5	420.1	-3.5	420.1	12.00	12.00	0.00
10,050.0	86.09	359.52	9,808.9	444.9	-3.7	445.0	12.00	12.00	0.00
10,075.0	89.09	359.52	9,810.0	469.9	-3.9	469.9	12.00	12.00	0.00
10,085.7	90.38	359.52	9,810.0	480.6	-4.0	480.6	12.00	12.00	0.00
EOC - 10085.7' MD, 9810.0' TVD, 90.38° INC, 359.52° AZI, 480.6' VS									
10,100.0	90.38	359.52	9,809.9	494.9	-4.1	494.9	0.04	0.04	0.00
10,125.9	90.38	359.52	9,809.7	520.8	-4.4	520.8	0.01	0.01	0.00
10,200.0	90.38	359.52	9,809.2	594.9	-5.0	594.9	0.00	0.00	0.00
10,300.0	90.38	359.52	9,808.6	694.9	-5.8	694.9	0.00	0.00	0.00
10,400.0	90.38	359.52	9,807.9	794.9	-6.7	794.9	0.00	0.00	0.00
10,500.0	90.38	359.52	9,807.2	894.9	-7.5	894.9	0.00	0.00	0.00
10,600.0	90.38	359.52	9,806.6	994.9	-8.3	994.9	0.00	0.00	0.00
10,700.0	90.38	359.52	9,805.9	1,094.9	-9.2	1,094.9	0.00	0.00	0.00
10,800.0	90.38	359.52	9,805.2	1,194.9	-10.0	1,194.9	0.00	0.00	0.00
10,900.0	90.38	359.52	9,804.6	1,294.9	-10.8	1,294.9	0.00	0.00	0.00
11,000.0	90.38	359.52	9,803.9	1,394.9	-11.7	1,394.9	0.00	0.00	0.00
11,100.0	90.38	359.52	9,803.2	1,494.9	-12.5	1,494.9	0.00	0.00	0.00
11,200.0	90.38	359.52	9,802.6	1,594.9	-13.4	1,594.9	0.00	0.00	0.00
11,300.0	90.38	359.52	9,801.9	1,694.9	-14.2	1,694.9	0.00	0.00	0.00
11,400.0	90.38	359.52	9,801.2	1,794.8	-15.0	1,794.9	0.00	0.00	0.00
11,500.0	90.38	359.52	9,800.6	1,894.8	-15.9	1,894.9	0.00	0.00	0.00
11,600.0	90.38	359.52	9,799.9	1,994.8	-16.7	1,994.9	0.00	0.00	0.00
11,700.0	90.38	359.52	9,799.2	2,094.8	-17.6	2,094.9	0.00	0.00	0.00
11,800.0	90.38	359.52	9,798.6	2,194.8	-18.4	2,194.9	0.00	0.00	0.00
11,900.0	90.38	359.52	9,797.9	2,294.8	-19.2	2,294.9	0.00	0.00	0.00
12,000.0	90.38	359.52	9,797.2	2,394.8	-20.1	2,394.9	0.00	0.00	0.00
12,100.0	90.38	359.52	9,796.6	2,494.8	-20.9	2,494.9	0.00	0.00	0.00
12,200.0	90.38	359.52	9,795.9	2,594.8	-21.7	2,594.9	0.00	0.00	0.00
12,300.0	90.38	359.52	9,795.2	2,694.8	-22.6	2,694.9	0.00	0.00	0.00
12,400.0	90.38	359.52	9,794.6	2,794.8	-23.4	2,794.9	0.00	0.00	0.00
12,500.0	90.38	359.52	9,793.9	2,894.8	-24.3	2,894.9	0.00	0.00	0.00
12,600.0	90.38	359.52	9,793.2	2,994.8	-25.1	2,994.9	0.00	0.00	0.00
12,700.0	90.38	359.52	9,792.6	3,094.8	-25.9	3,094.9	0.00	0.00	0.00
12,800.0	90.38	359.52	9,791.9	3,194.8	-26.8	3,194.9	0.00	0.00	0.00
12,900.0	90.38	359.52	9,791.2	3,294.8	-27.6	3,294.9	0.00	0.00	0.00
13,000.0	90.38	359.52	9,790.6	3,394.8	-28.4	3,394.9	0.00	0.00	0.00
13,100.0	90.38	359.52	9,789.9	3,494.7	-29.3	3,494.9	0.00	0.00	0.00
13,200.0	90.38	359.52	9,789.2	3,594.7	-30.1	3,594.9	0.00	0.00	0.00



Planning Report



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 Site: Gunner 8 Federal
 Well: #7H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #7H
 TVD Reference: WELL @ 3384.0usft (Precision #77 - 30' KB)
 MD Reference: WELL @ 3384.0usft (Precision #77 - 30' KB)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
13,300.0	90.38	359.52	9,788.6	3,694.7	-31.0	3,694.9	0.00	0.00	0.00
13,400.0	90.38	359.52	9,787.9	3,794.7	-31.8	3,794.9	0.00	0.00	0.00
13,500.0	90.38	359.52	9,787.2	3,894.7	-32.6	3,894.9	0.00	0.00	0.00
13,600.0	90.38	359.52	9,786.6	3,994.7	-33.5	3,994.9	0.00	0.00	0.00
13,700.0	90.38	359.52	9,785.9	4,094.7	-34.3	4,094.9	0.00	0.00	0.00
13,800.0	90.38	359.52	9,785.2	4,194.7	-35.1	4,194.9	0.00	0.00	0.00
13,900.0	90.38	359.52	9,784.5	4,294.7	-36.0	4,294.9	0.00	0.00	0.00
14,000.0	90.38	359.52	9,783.9	4,394.7	-36.8	4,394.9	0.00	0.00	0.00
14,100.0	90.38	359.52	9,783.2	4,494.7	-37.7	4,494.8	0.00	0.00	0.00
14,200.0	90.38	359.52	9,782.5	4,594.7	-38.5	4,594.8	0.00	0.00	0.00
14,300.0	90.38	359.52	9,781.9	4,694.7	-39.3	4,694.8	0.00	0.00	0.00
14,400.0	90.38	359.52	9,781.2	4,794.7	-40.2	4,794.8	0.00	0.00	0.00
14,500.0	90.38	359.52	9,780.5	4,894.7	-41.0	4,894.8	0.00	0.00	0.00
14,600.0	90.38	359.52	9,779.9	4,994.7	-41.9	4,994.8	0.00	0.00	0.00
14,700.0	90.38	359.52	9,779.2	5,094.7	-42.7	5,094.8	0.00	0.00	0.00
14,800.0	90.38	359.52	9,778.5	5,194.7	-43.5	5,194.8	0.00	0.00	0.00
14,900.0	90.38	359.52	9,777.9	5,294.6	-44.4	5,294.8	0.00	0.00	0.00
15,000.0	90.38	359.52	9,777.2	5,394.6	-45.2	5,394.8	0.00	0.00	0.00
15,100.0	90.38	359.52	9,776.5	5,494.6	-46.0	5,494.8	0.00	0.00	0.00
15,200.0	90.38	359.52	9,775.9	5,594.6	-46.9	5,594.8	0.00	0.00	0.00
15,300.0	90.38	359.52	9,775.2	5,694.6	-47.7	5,694.8	0.00	0.00	0.00
15,400.0	90.38	359.52	9,774.5	5,794.6	-48.6	5,794.8	0.00	0.00	0.00
15,500.0	90.38	359.52	9,773.9	5,894.6	-49.4	5,894.8	0.00	0.00	0.00
15,600.0	90.38	359.52	9,773.2	5,994.6	-50.2	5,994.8	0.00	0.00	0.00
15,700.0	90.38	359.52	9,772.5	6,094.6	-51.1	6,094.8	0.00	0.00	0.00
15,800.0	90.38	359.52	9,771.9	6,194.6	-51.9	6,194.8	0.00	0.00	0.00
15,900.0	90.38	359.52	9,771.2	6,294.6	-52.7	6,294.8	0.00	0.00	0.00
16,000.0	90.38	359.52	9,770.5	6,394.6	-53.6	6,394.8	0.00	0.00	0.00
16,100.0	90.38	359.52	9,769.9	6,494.6	-54.4	6,494.8	0.00	0.00	0.00
16,200.0	90.38	359.52	9,769.2	6,594.6	-55.3	6,594.8	0.00	0.00	0.00
16,300.0	90.38	359.52	9,768.5	6,694.6	-56.1	6,694.8	0.00	0.00	0.00
16,400.0	90.38	359.52	9,767.9	6,794.6	-56.9	6,794.8	0.00	0.00	0.00
16,500.0	90.38	359.52	9,767.2	6,894.6	-57.8	6,894.8	0.00	0.00	0.00
16,600.0	90.38	359.52	9,766.5	6,994.5	-58.6	6,994.8	0.00	0.00	0.00
16,700.0	90.38	359.52	9,765.9	7,094.5	-59.4	7,094.8	0.00	0.00	0.00
16,800.0	90.38	359.52	9,765.2	7,194.5	-60.3	7,194.8	0.00	0.00	0.00
16,900.0	90.38	359.52	9,764.5	7,294.5	-61.1	7,294.8	0.00	0.00	0.00
17,000.0	90.38	359.52	9,763.9	7,394.5	-62.0	7,394.8	0.00	0.00	0.00
17,100.0	90.38	359.52	9,763.2	7,494.5	-62.8	7,494.8	0.00	0.00	0.00
17,200.0	90.38	359.52	9,762.5	7,594.5	-63.6	7,594.8	0.00	0.00	0.00
17,300.0	90.38	359.52	9,761.9	7,694.5	-64.5	7,694.8	0.00	0.00	0.00
17,400.0	90.38	359.52	9,761.2	7,794.5	-65.3	7,794.8	0.00	0.00	0.00
17,500.0	90.38	359.52	9,760.5	7,894.5	-66.1	7,894.8	0.00	0.00	0.00
17,600.0	90.38	359.52	9,759.9	7,994.5	-67.0	7,994.8	0.00	0.00	0.00
17,700.0	90.38	359.52	9,759.2	8,094.5	-67.8	8,094.8	0.00	0.00	0.00
17,800.0	90.38	359.52	9,758.5	8,194.5	-68.7	8,194.8	0.00	0.00	0.00
17,900.0	90.38	359.52	9,757.9	8,294.5	-69.5	8,294.8	0.00	0.00	0.00
18,000.0	90.38	359.52	9,757.2	8,394.5	-70.3	8,394.8	0.00	0.00	0.00
18,100.0	90.38	359.52	9,756.5	8,494.5	-71.2	8,494.8	0.00	0.00	0.00
18,200.0	90.38	359.52	9,755.9	8,594.5	-72.0	8,594.8	0.00	0.00	0.00
18,300.0	90.38	359.52	9,755.2	8,694.5	-72.9	8,694.8	0.00	0.00	0.00
18,328.4	90.38	359.52	9,755.0	8,722.8	-73.1	8,723.1	0.00	0.00	0.00

TD @ 18328.4' MD, 9755.0' TVD



Planning Report



Database: Houston R5000 Database
Company: COG Operating LLC
Project: Lea County, NM
Site: Gunner 8 Federal
Well: #7H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #7H
TVD Reference: WELL @ 3384.0usft (Precision #77 - 30' KB)
MD Reference: WELL @ 3384.0usft (Precision #77 - 30' KB)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

Design Targets

Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
PBHL (G8#7H)	0.00	0.00	9,755.0	8,722.8	-73.1	392,044.33	759,612.60	32° 4' 30.264 N	103° 29' 42.679 W
- plan hits target center									
- Point									

Plan Annotations

Measured Depth	Vertical Depth	Local Coordinates		Comment
(usft)	(usft)	+N/-S (usft)	+E/-W (usft)	
9,332.5	9,332.5	0.0	0.0	KOP - 9332.5' MD, 9332.5' TVD, 0.00° INC, 0.00° AZI, 0.0' VS
10,085.7	9,810.0	480.6	-4.0	EOC - 10085.7' MD, 9810.0' TVD, 90.38° INC, 359.52° AZI, 480.6' VS
18,328.4	9,755.0	8,722.8	-73.1	TD @ 18328.4' MD, 9755.0' TVD



COG Operating LLC
Project: Lea County, NM
Site: Gunner 8 Federal
Well: #7H
Wellbore: OH
Plan: Plan #1 (#7H/OH)

WELL DETAILS: #7H

Ground Elevation: 3354.0
RKB Elevation: WELL @ 3384.0usft (Precision #77 - 30' KB)
Rig Name: Precision #77 - 30' KB

Surface Hole Location
Northing: 383321.50 Easting: 759685.69 Latitude: 32° 3' 3.941 N Longitude: 103° 29' 42.616 W



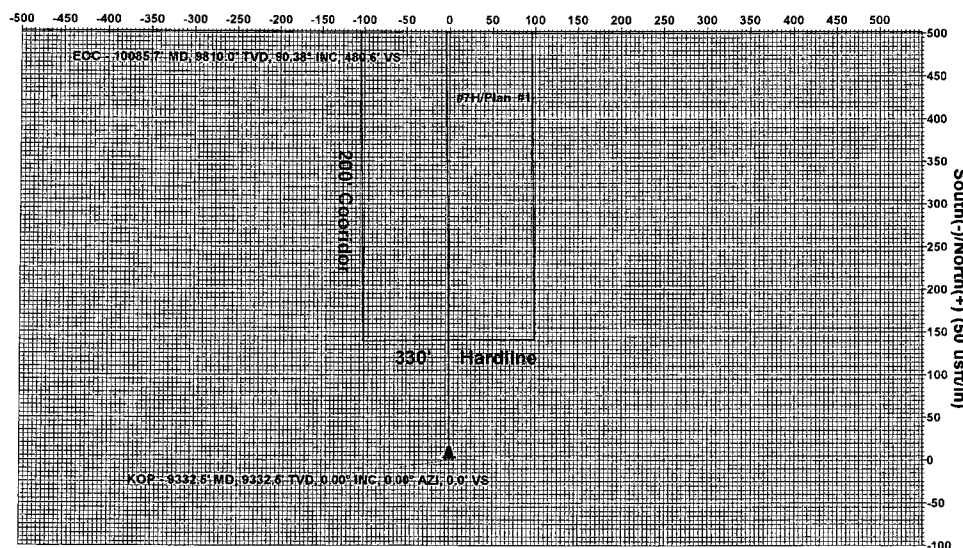
Azimuths to Grid North
True North: -0.44°
Magnetic North: 6.92°

Magnetic Field
Strength: 48381.1nT
Dip Angle: 60.00°
Date: 11/6/2012
Model: IGRF2010

Section Details

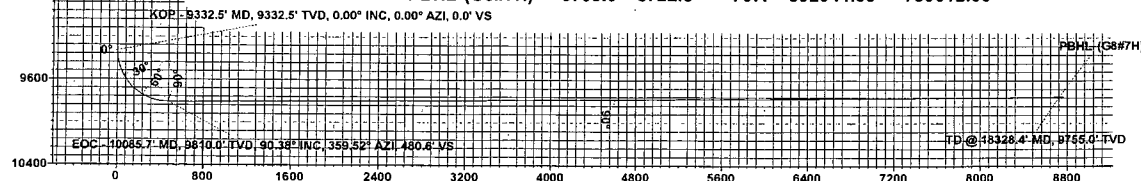
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	9332.5	0.00	0.00	9332.5	0.0	0.0	0.00	0.00	0.0	
3	10085.7	90.38	359.52	9810.0	480.7	-4.0	12.00	359.52	480.7	
4	10125.9	90.38	359.52	9809.7	520.8	-4.4	0.01	-2.08	520.8	
5	18328.4	90.38	359.52	9755.0	8722.8	-73.1	0.00	0.00	8723.1	PBHL (G8#7H)

West(-)/East(+) (50 usft/in)



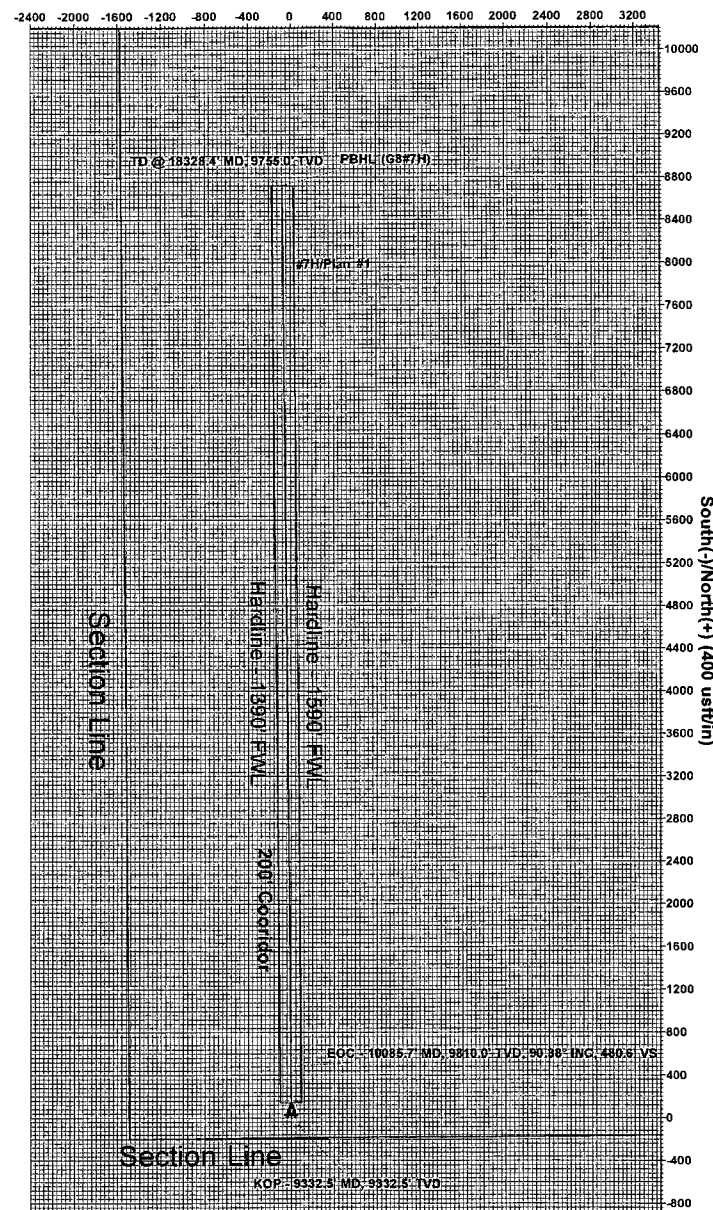
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL (G8#7H)	9755.0	8722.8	-73.1	392044.33	759612.60



Vertical Section at 359.52° (400 usft/in)

West(-)/East(+) (400 usft/in)



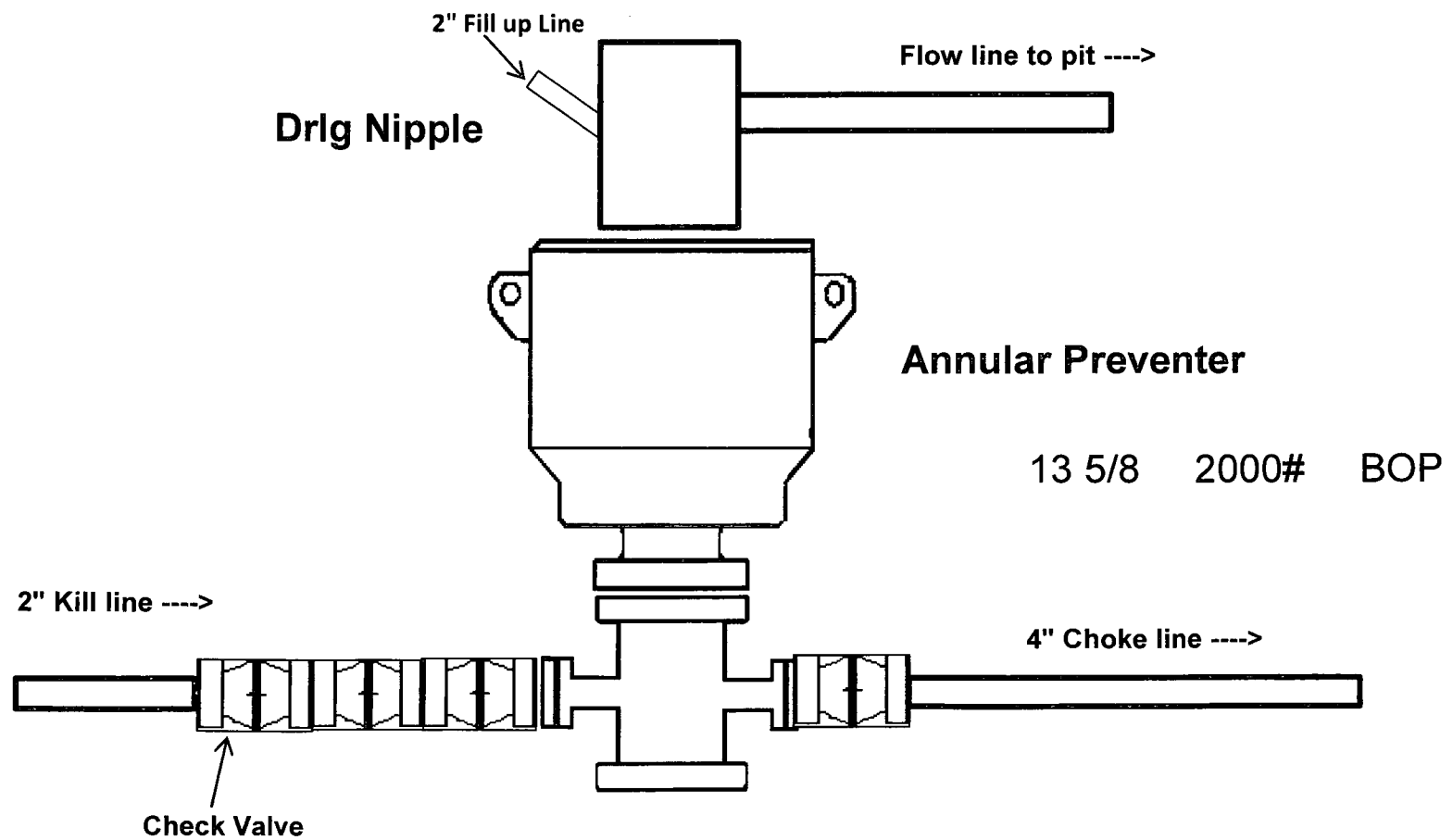
PROJECT DETAILS: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid



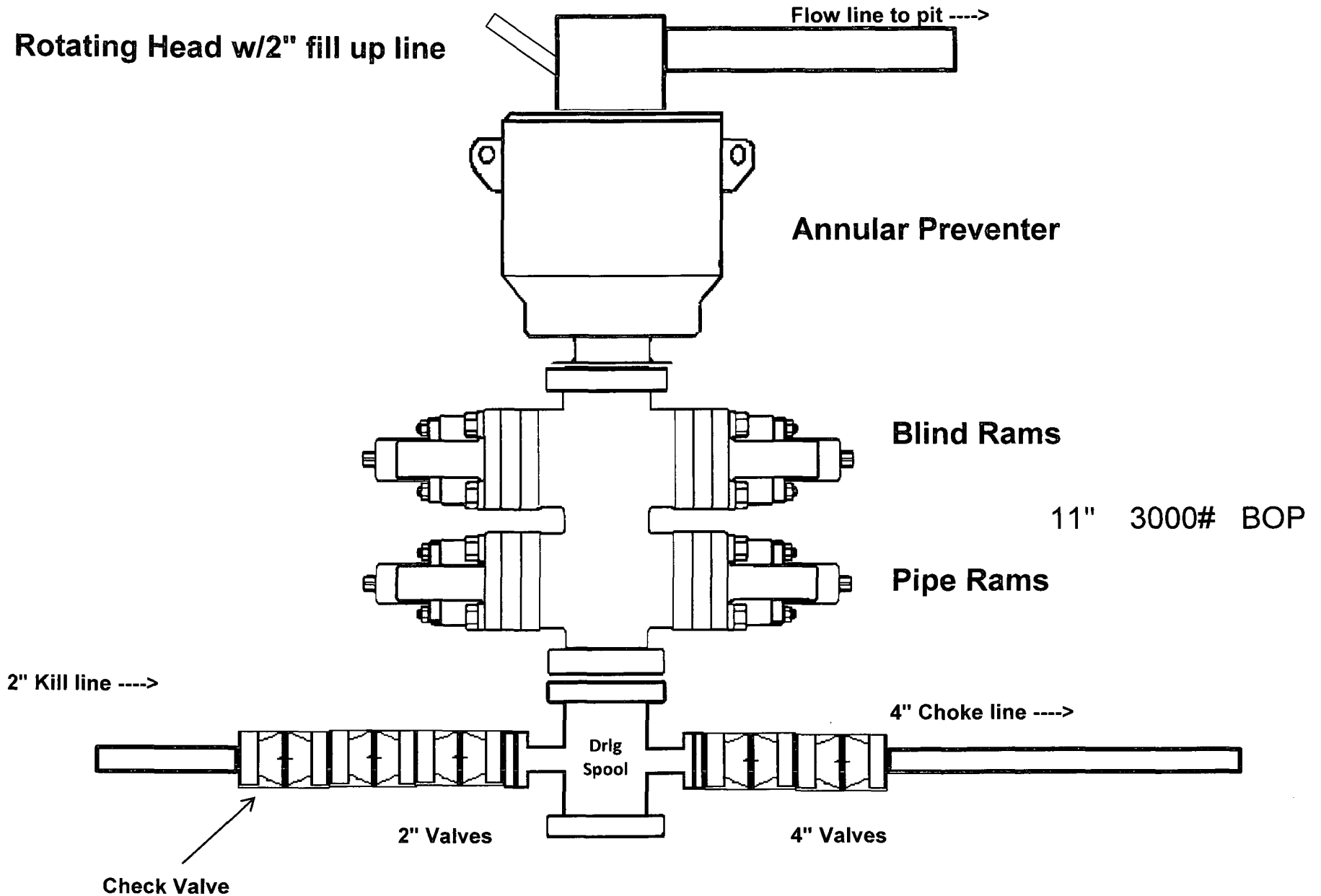
Crescent Directional Drilling
7715 West Industrial Ave. Midland, Tx 79706
Phone: 432-618-1135

Plan: Plan #1 (#7H/OH)
Created By: Matt Higgins Date: 16:36, November 06 2012

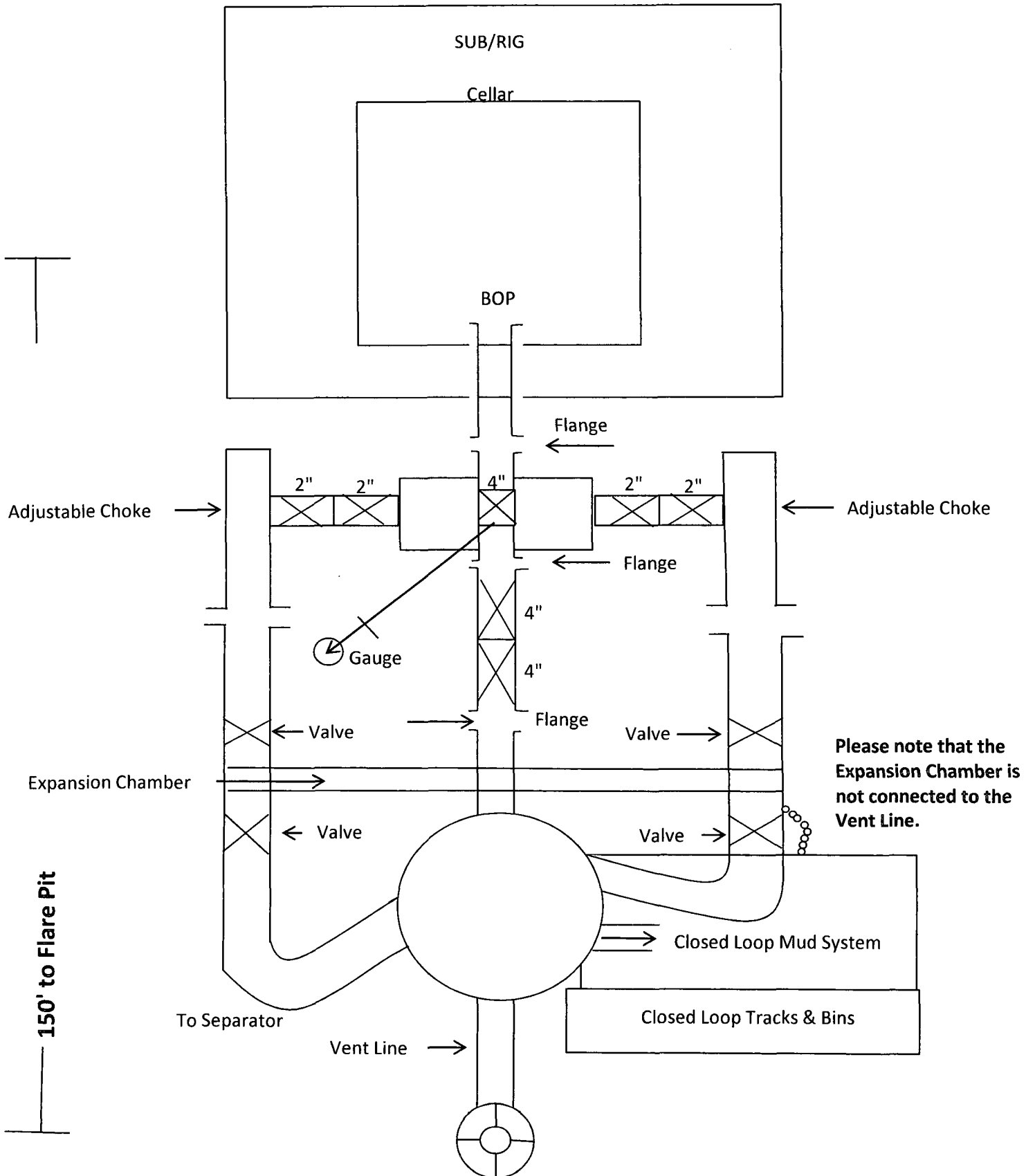
2,000 psi BOP Schematic



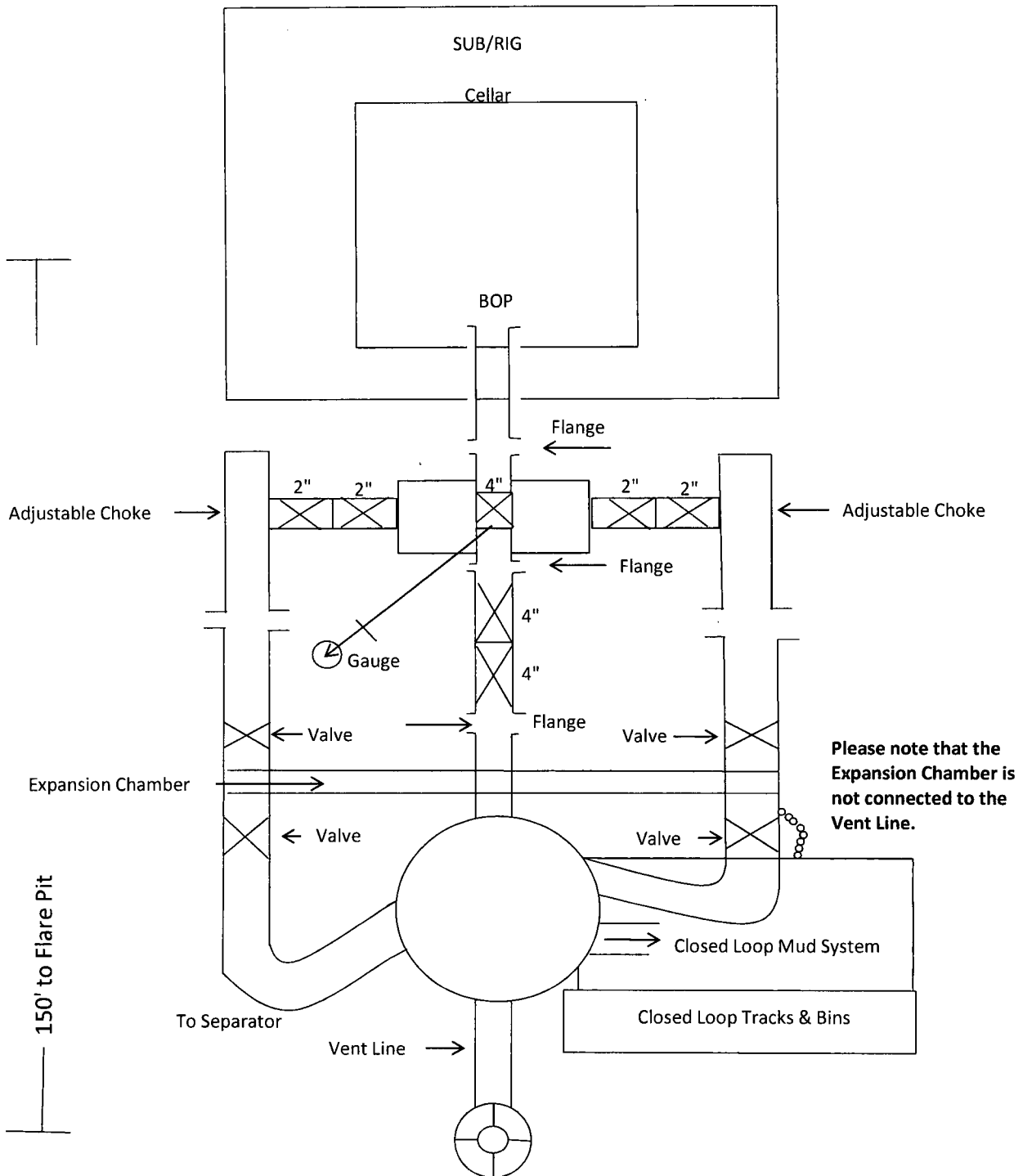
3,000 psi BOP Schematic



2M Choke Manifold Equipment



3M Choke Manifold Equipment



COG Production LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 340' X 340'
with cellar in center of pad

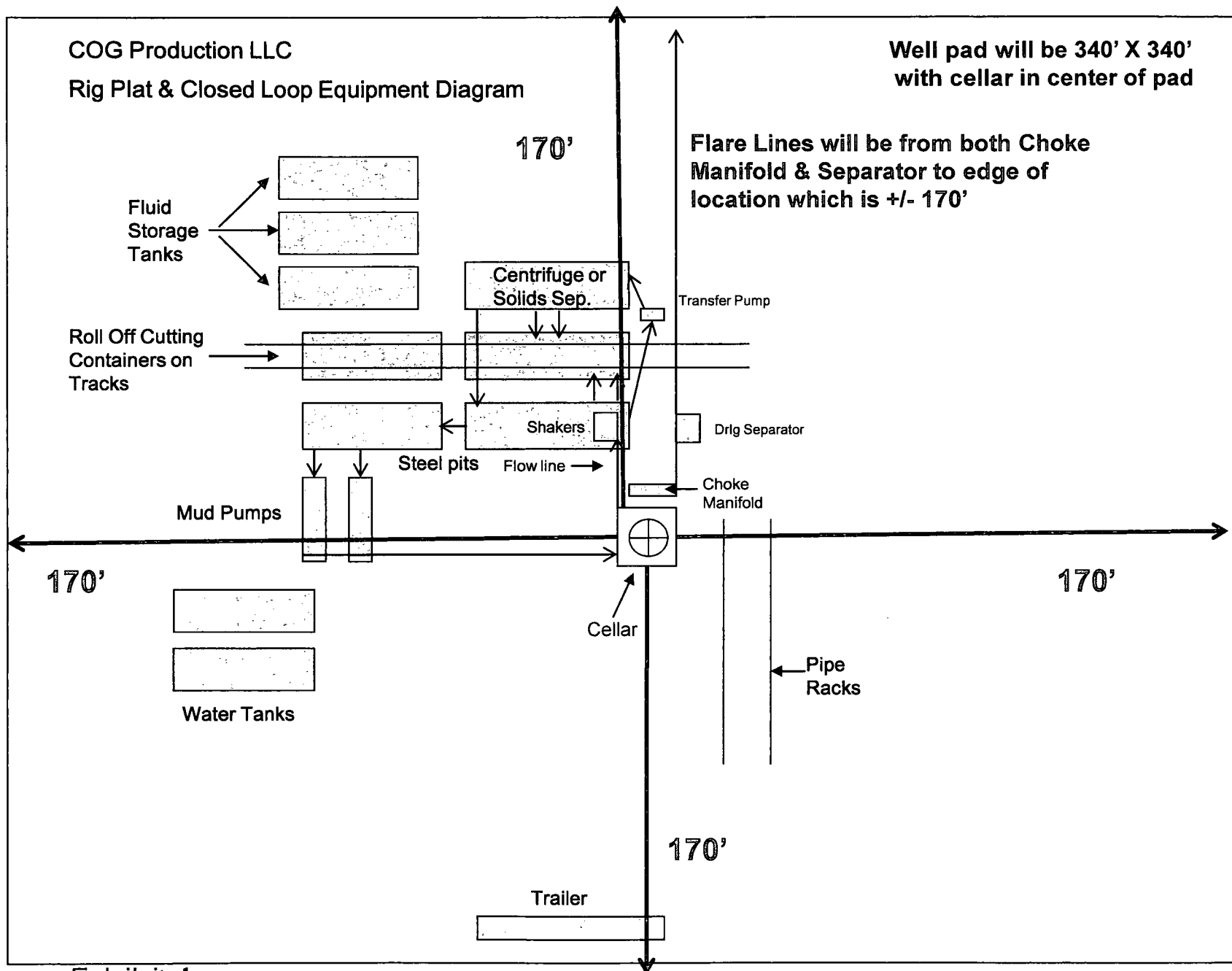


Exhibit 1

**Design Plan
Operating and Maintenance Plan
Closure Plan**

**Gunner 8 Federal 7H
SHL: 190' FSL & 1490' FWL of Section 8
BHL: 1650' FNL & 1490' FEL of Section 5
T26S R34E
Lea County, New Mexico**

COG Operating LLC will be using all above ground steel pits for fluid and cuttings while drilling. If any tank develops a leak we will have immediate visual discovery, we would then transfer the fluid to another tank then remove any contaminated soil and dispose of it in the cuttings bins for transportation. All leaks should be kept to less than 5 barrels. Rig crews will monitor the tanks at all times.

Equipment List:

- 2- Mongoose Shale Shakers
- 1- 414 Centrifuge
- 1- 518 Centrifuge
- 2- Roll Off Bins w/ Tracks
- 2- 500 BBL Frac Tanks

During drilling operations all liquids, drilling fluids and cuttings will be hauled off via CRI (Controlled Recovery Inc.) Permit R-9166 or any other approved facility.