

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

RECEIVED
MAY 20 2013

1a. Type of Work: ☒ DRILL ☐ REENTER		7. If Unit or CA Agreement, Name and No.	
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone		8. Lease Name and Well No. 399127 Gunner 8 Federal Com #4H	
2. Name of Operator COG Operating LLC.		9. API Well No. 30-025-41187	
3a. Address 2208 West Main Street Artesia, NM 88210	3b. Phone No. (include area code) 575-748-6940	10. Field and Pool, or Exploration 606 5263407P Wildcat, Bone Spring	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 190' FSL & 380' FEL Unit Letter P (SESE) Sec. 8 - T26S - R34E SHL At proposed prod. Zone 330' FNL & 420' FEL Unit Letter A (NENE) Sec. 5-T26S-R34E BHL		11. Sec., T.R.M. or Blk and Survey or Area Sec. 8 - T26S - R34E	
14. Distance in miles and direction from nearest town or post office* About 17 miles from Jal		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) 190'	16. No. of acres in lease 1120	17. Spacing Unit dedicated to this well 320	
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. 4639'	19. Proposed Depth TVD: 9625 MD: 19645'	20. BLM/BIA Bond No. on file NMB000740 & NMB00215	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3335'	22. Approximate date work will start* 12/1/2012	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. | 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 shall be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature <i>Mayte Reyes</i>	Name (Printed/Typed) Mayte Reyes	Date 9/14/2012
Title Regulatory Analyst		
Approved by (Signature) <i>/s/George MacDonell</i>	Name (Printed/Typed)	Date MAY 16 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.

APPROVAL FOR TWO YEARS

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)

Carlsbad Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

MAY 23 2013

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM
Gunner 8 Federal Com #4H
SHL: 190' FSL & 380' FEL of Section 8.
BHL: 330' FNL & 420' FEL of Section 5.
Section 5 & 8 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	684'	
Top of Salt	1,043'	
Base of Salt	5,039'	
Delaware	5,290'	Oil
Bone Spring	9,536'	Oil
Upper Avalon	9,593'	Oil
TD TVD	9,625'	
TD MD	19,645'	

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 710' 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.

see COA

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

Hole Size	Depths	Section	OD Casing	New/Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' - 710' 800'	Surface	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 1/4"	0' - 3,500' 5,250'	Intrmd	9 5/8"	New	36#	LTC	J-55	1.125	1.125	1.6
12 1/4"	3,500' - 5,150'	Intrmd	9 5/8"	New	40#	LTC	J-55	1.125	1.125	1.6
7 7/8"	0' - 19,645'	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 Lead: 250 sx Class C + 4% Gel + 2% CaCl₂
 (13.5 ppg /1.75 cuft/sx)
 Tail: 250 sx Class C + 2% CaCl₂
 (14.8 ppg / 1.34 cuft/sx)
 **Calculated w/50% excess on OH volumes
- b. 9 5/8" Intermediate: Lead: 1050 sx Class C + 4% Gel + 2% CaCl₂
 (13.5 ppg /1.75 cuft/sx)
 Tail: 250 sx Class C + 2% CaCl₂
 (14.8 ppg / 1.34 cuft/sx)
 **Calculated w/35% excess on OH volumes
- d. 5 1/2" Production Lead: 450 sx 50:50:10 H + Salt+Gilsonite+CFR-3+ HR601
 (11.8 ppg / 2.5 cuft/sx)
 Tail: 1950 sx 50:50:2 H +Salt+GasStop +HR601 +CFR-3
 (14.4 ppg /1.25 cuft/sx)
 **Calculated w/35% excess on OH volumes
- The above cement volumes could be revised pending the caliper measurement from the open hole logs.
 - The 9-5/8" intermediate string is designed to circulate to surface.
 - The production string will at least tie back 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:

Lateral TD = 4174 psi

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

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 710' 820'	Fresh Water	8.4	29	N.C.
820' 710' - 5150' 5350'	Brine	10	29	N.C.
5150' - 19,645' (Lateral)	Cut Brine	8.8 - 9.2	29	N.C.

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

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 soon 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 Federal com #4#

Gunner Federal com #4#

Wellbore #1

Plan: Plan #1

Standard Planning Report

21 August, 2012

Planning Report

Database: Houston R5000 Database
 Company: COG Operating LLC
 Project: Lea County, NM
 Site: Gunner 8 Federal 4H
 Well: Gunner 8 Federal 4H
 Wellbore: Wellbore #1
 Design: Plan #1

Local Co-ordinate Reference: Site Gunner 8 Federal 4H
 TVD Reference: WELL @ 3365.00ft (Original Well Elev)
 MD Reference: WELL @ 3365.00ft (Original Well Elev)
 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 4H		
Site Position:	Map	Northing:	383,347.50 ft
From:		Easting:	763,104.70 ft
Position Uncertainty:	0.00 ft	Slot Radius:	13.200 in
		Latitude:	32.051091
		Longitude:	-103.484142
		Grid Convergence:	0.45 °

Well	Gunner 8 Federal 4H		
Well Position	+N/-S	0.00 ft	Northing:
	+E/-W	0.00 ft	Easting:
Position Uncertainty	0.00 ft	Wellhead Elevation:	3,335.00 ft
		Latitude:	32.051091
		Longitude:	-103.484142
		Ground Level:	3,335.00 ft

Wellbore	Wellbore #1		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	8/21/2012	7.39
			Dip Angle
			60.01
			Field Strength
			48,404

Design	Plan #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.00
Vertical Section:	Depth From (TVD)	+N/-S	Direction
	(ft)	(ft)	(°)
	0.00	0.00	359.28

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
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
9,327.62	0.00	0.00	9,327.62	0.00	0.00	0.00	0.00	0.00	0.00	
10,086.62	91.08	359.28	9,805.00	486.42	-6.14	12.00	12.00	0.00	359.28	
19,644.95	91.08	359.28	9,625.00	10,042.30	-126.70	0.00	0.00	0.00	0.00	PBHL (Gunner 8 Fed

Planning Report

Database: Houston R5000 Database
 Company: COG Operating LLC
 Project: Lea County, NM
 Site: Gunner 8 Federal 4H
 Well: Gunner 8 Federal 4H
 Wellbore: Wellbore #1
 Design: Plan #1

Local Co-ordinate Reference: Site Gunner 8 Federal 4H
 TVD Reference: WELL @ 3365.00ft (Original Well Elev)
 MD Reference: WELL @ 3365.00ft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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)
9,327.62	0.00	0.00	9,327.62	0.00	0.00	0.00	0.00	0.00	0.00
KOP - Start Build @ 12.00°/100'									
9,400.00	8.69	359.28	9,399.72	5.47	-0.07	5.47	12.00	12.00	0.00
9,500.00	20.69	359.28	9,496.28	30.78	-0.39	30.78	12.00	12.00	0.00
9,600.00	32.69	359.28	9,585.47	75.60	-0.95	75.61	12.00	12.00	0.00
9,700.00	44.69	359.28	9,663.38	137.98	-1.74	138.00	12.00	12.00	0.00
9,800.00	56.69	359.28	9,726.62	215.20	-2.72	215.22	12.00	12.00	0.00
9,900.00	68.69	359.28	9,772.43	303.88	-3.83	303.91	12.00	12.00	0.00
10,000.00	80.69	359.28	9,798.79	400.15	-5.05	400.18	12.00	12.00	0.00
10,086.62	91.08	359.28	9,805.00	486.42	-6.14	486.46	12.00	12.00	0.00
Landing Point - Hold @ 91.08° INC, 359.28° AZ									
10,100.00	91.08	359.28	9,804.75	499.80	-6.31	499.84	0.00	0.00	0.00
10,200.00	91.08	359.28	9,802.87	599.77	-7.57	599.82	0.00	0.00	0.00
10,300.00	91.08	359.28	9,800.99	699.75	-8.83	699.80	0.00	0.00	0.00
10,400.00	91.08	359.28	9,799.10	799.72	-10.09	799.78	0.00	0.00	0.00
10,500.00	91.08	359.28	9,797.22	899.69	-11.35	899.77	0.00	0.00	0.00
10,600.00	91.08	359.28	9,795.34	999.67	-12.61	999.75	0.00	0.00	0.00
10,700.00	91.08	359.28	9,793.45	1,099.64	-13.87	1,099.73	0.00	0.00	0.00
10,800.00	91.08	359.28	9,791.57	1,199.62	-15.14	1,199.71	0.00	0.00	0.00
10,900.00	91.08	359.28	9,789.69	1,299.59	-16.40	1,299.70	0.00	0.00	0.00
11,000.00	91.08	359.28	9,787.80	1,399.57	-17.66	1,399.68	0.00	0.00	0.00
11,100.00	91.08	359.28	9,785.92	1,499.54	-18.92	1,499.66	0.00	0.00	0.00
11,200.00	91.08	359.28	9,784.04	1,599.52	-20.18	1,599.64	0.00	0.00	0.00
11,300.00	91.08	359.28	9,782.15	1,699.49	-21.44	1,699.62	0.00	0.00	0.00
11,400.00	91.08	359.28	9,780.27	1,799.46	-22.70	1,799.61	0.00	0.00	0.00
11,500.00	91.08	359.28	9,778.39	1,899.44	-23.96	1,899.59	0.00	0.00	0.00
11,600.00	91.08	359.28	9,776.50	1,999.41	-25.23	1,999.57	0.00	0.00	0.00
11,700.00	91.08	359.28	9,774.62	2,099.39	-26.49	2,099.55	0.00	0.00	0.00
11,800.00	91.08	359.28	9,772.74	2,199.36	-27.75	2,199.54	0.00	0.00	0.00
11,900.00	91.08	359.28	9,770.85	2,299.34	-29.01	2,299.52	0.00	0.00	0.00
12,000.00	91.08	359.28	9,768.97	2,399.31	-30.27	2,399.50	0.00	0.00	0.00
12,100.00	91.08	359.28	9,767.09	2,499.28	-31.53	2,499.48	0.00	0.00	0.00
12,200.00	91.08	359.28	9,765.21	2,599.26	-32.79	2,599.47	0.00	0.00	0.00
12,300.00	91.08	359.28	9,763.32	2,699.23	-34.06	2,699.45	0.00	0.00	0.00
12,400.00	91.08	359.28	9,761.44	2,799.21	-35.32	2,799.43	0.00	0.00	0.00
12,500.00	91.08	359.28	9,759.56	2,899.18	-36.58	2,899.41	0.00	0.00	0.00
12,600.00	91.08	359.28	9,757.67	2,999.16	-37.84	2,999.39	0.00	0.00	0.00
12,700.00	91.08	359.28	9,755.79	3,099.13	-39.10	3,099.38	0.00	0.00	0.00
12,800.00	91.08	359.28	9,753.91	3,199.10	-40.36	3,199.36	0.00	0.00	0.00
12,900.00	91.08	359.28	9,752.02	3,299.08	-41.62	3,299.34	0.00	0.00	0.00
13,000.00	91.08	359.28	9,750.14	3,399.05	-42.88	3,399.32	0.00	0.00	0.00
13,100.00	91.08	359.28	9,748.26	3,499.03	-44.15	3,499.31	0.00	0.00	0.00
13,200.00	91.08	359.28	9,746.37	3,599.00	-45.41	3,599.29	0.00	0.00	0.00
13,300.00	91.08	359.28	9,744.49	3,698.98	-46.67	3,699.27	0.00	0.00	0.00
13,400.00	91.08	359.28	9,742.61	3,798.95	-47.93	3,799.25	0.00	0.00	0.00
13,500.00	91.08	359.28	9,740.72	3,898.92	-49.19	3,899.23	0.00	0.00	0.00
13,600.00	91.08	359.28	9,738.84	3,998.90	-50.45	3,999.22	0.00	0.00	0.00
13,700.00	91.08	359.28	9,736.96	4,098.87	-51.71	4,099.20	0.00	0.00	0.00
13,800.00	91.08	359.28	9,735.07	4,198.85	-52.98	4,199.18	0.00	0.00	0.00
13,900.00	91.08	359.28	9,733.19	4,298.82	-54.24	4,299.16	0.00	0.00	0.00
14,000.00	91.08	359.28	9,731.31	4,398.80	-55.50	4,399.15	0.00	0.00	0.00
14,100.00	91.08	359.28	9,729.42	4,498.77	-56.76	4,499.13	0.00	0.00	0.00
14,200.00	91.08	359.28	9,727.54	4,598.74	-58.02	4,599.11	0.00	0.00	0.00

Planning Report

Database: Houston R5000 Database
 Company: COG Operating LLC
 Project: Lea County, NM
 Site: Gunner 8 Federal 4H
 Well: Gunner 8 Federal 4H
 Wellbore: Wellbore #1
 Design: Plan #1

Local Co-ordinate Reference: Site Gunner 8 Federal 4H
 TVD Reference: WELL @ 3365.00ft (Original Well Elev)
 MD Reference: WELL @ 3365.00ft (Original Well Elev)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature

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)
14,300.00	91.08	359.28	9,725.66	4,698.72	-59.28	4,699.09	0.00	0.00	0.00
14,400.00	91.08	359.28	9,723.77	4,798.69	-60.54	4,799.07	0.00	0.00	0.00
14,500.00	91.08	359.28	9,721.89	4,898.67	-61.80	4,899.06	0.00	0.00	0.00
14,600.00	91.08	359.28	9,720.01	4,998.64	-63.07	4,999.04	0.00	0.00	0.00
14,700.00	91.08	359.28	9,718.12	5,098.62	-64.33	5,099.02	0.00	0.00	0.00
14,800.00	91.08	359.28	9,716.24	5,198.59	-65.59	5,199.00	0.00	0.00	0.00
14,900.00	91.08	359.28	9,714.36	5,298.56	-66.85	5,298.99	0.00	0.00	0.00
15,000.00	91.08	359.28	9,712.47	5,398.54	-68.11	5,398.97	0.00	0.00	0.00
15,100.00	91.08	359.28	9,710.59	5,498.51	-69.37	5,498.95	0.00	0.00	0.00
15,200.00	91.08	359.28	9,708.71	5,598.49	-70.63	5,598.93	0.00	0.00	0.00
15,300.00	91.08	359.28	9,706.83	5,698.46	-71.90	5,698.92	0.00	0.00	0.00
15,400.00	91.08	359.28	9,704.94	5,798.44	-73.16	5,798.90	0.00	0.00	0.00
15,500.00	91.08	359.28	9,703.06	5,898.41	-74.42	5,898.88	0.00	0.00	0.00
15,600.00	91.08	359.28	9,701.18	5,998.38	-75.68	5,998.86	0.00	0.00	0.00
15,700.00	91.08	359.28	9,699.29	6,098.36	-76.94	6,098.84	0.00	0.00	0.00
15,800.00	91.08	359.28	9,697.41	6,198.33	-78.20	6,198.83	0.00	0.00	0.00
15,900.00	91.08	359.28	9,695.53	6,298.31	-79.46	6,298.81	0.00	0.00	0.00
16,000.00	91.08	359.28	9,693.64	6,398.28	-80.72	6,398.79	0.00	0.00	0.00
16,100.00	91.08	359.28	9,691.76	6,498.26	-81.99	6,498.77	0.00	0.00	0.00
16,200.00	91.08	359.28	9,689.88	6,598.23	-83.25	6,598.76	0.00	0.00	0.00
16,300.00	91.08	359.28	9,687.99	6,698.20	-84.51	6,698.74	0.00	0.00	0.00
16,400.00	91.08	359.28	9,686.11	6,798.18	-85.77	6,798.72	0.00	0.00	0.00
16,500.00	91.08	359.28	9,684.23	6,898.15	-87.03	6,898.70	0.00	0.00	0.00
16,600.00	91.08	359.28	9,682.34	6,998.13	-88.29	6,998.68	0.00	0.00	0.00
16,700.00	91.08	359.28	9,680.46	7,098.10	-89.55	7,098.67	0.00	0.00	0.00
16,800.00	91.08	359.28	9,678.58	7,198.08	-90.82	7,198.65	0.00	0.00	0.00
16,900.00	91.08	359.28	9,676.69	7,298.05	-92.08	7,298.63	0.00	0.00	0.00
17,000.00	91.08	359.28	9,674.81	7,398.03	-93.34	7,398.61	0.00	0.00	0.00
17,100.00	91.08	359.28	9,672.93	7,498.00	-94.60	7,498.60	0.00	0.00	0.00
17,200.00	91.08	359.28	9,671.04	7,597.97	-95.86	7,598.58	0.00	0.00	0.00
17,300.00	91.08	359.28	9,669.16	7,697.95	-97.12	7,698.56	0.00	0.00	0.00
17,400.00	91.08	359.28	9,667.28	7,797.92	-98.38	7,798.54	0.00	0.00	0.00
17,500.00	91.08	359.28	9,665.39	7,897.90	-99.64	7,898.53	0.00	0.00	0.00
17,600.00	91.08	359.28	9,663.51	7,997.87	-100.91	7,998.51	0.00	0.00	0.00
17,700.00	91.08	359.28	9,661.63	8,097.85	-102.17	8,098.49	0.00	0.00	0.00
17,800.00	91.08	359.28	9,659.74	8,197.82	-103.43	8,198.47	0.00	0.00	0.00
17,900.00	91.08	359.28	9,657.86	8,297.79	-104.69	8,298.45	0.00	0.00	0.00
18,000.00	91.08	359.28	9,655.98	8,397.77	-105.95	8,398.44	0.00	0.00	0.00
18,100.00	91.08	359.28	9,654.10	8,497.74	-107.21	8,498.42	0.00	0.00	0.00
18,200.00	91.08	359.28	9,652.21	8,597.72	-108.47	8,598.40	0.00	0.00	0.00
18,300.00	91.08	359.28	9,650.33	8,697.69	-109.74	8,698.38	0.00	0.00	0.00
18,400.00	91.08	359.28	9,648.45	8,797.67	-111.00	8,798.37	0.00	0.00	0.00
18,500.00	91.08	359.28	9,646.56	8,897.64	-112.26	8,898.35	0.00	0.00	0.00
18,600.00	91.08	359.28	9,644.68	8,997.61	-113.52	8,998.33	0.00	0.00	0.00
18,700.00	91.08	359.28	9,642.80	9,097.59	-114.78	9,098.31	0.00	0.00	0.00
18,800.00	91.08	359.28	9,640.91	9,197.56	-116.04	9,198.29	0.00	0.00	0.00
18,900.00	91.08	359.28	9,639.03	9,297.54	-117.30	9,298.28	0.00	0.00	0.00
19,000.00	91.08	359.28	9,637.15	9,397.51	-118.56	9,398.26	0.00	0.00	0.00
19,100.00	91.08	359.28	9,635.26	9,497.49	-119.83	9,498.24	0.00	0.00	0.00
19,200.00	91.08	359.28	9,633.38	9,597.46	-121.09	9,598.22	0.00	0.00	0.00
19,300.00	91.08	359.28	9,631.50	9,697.43	-122.35	9,698.21	0.00	0.00	0.00
19,400.00	91.08	359.28	9,629.61	9,797.41	-123.61	9,798.19	0.00	0.00	0.00
19,500.00	91.08	359.28	9,627.73	9,897.38	-124.87	9,898.17	0.00	0.00	0.00
19,600.00	91.08	359.28	9,625.85	9,997.36	-126.13	9,998.15	0.00	0.00	0.00

Planning Report

Database: Houston R5000 Database
Company: COG Operating LLC
Project: Lea County, NM
Site: Gunner 8 Federal 4H
Well: Gunner 8 Federal 4H
Wellbore: Wellbore #1
Design: Plan #1

Local Co-ordinate Reference: Site Gunner 8 Federal 4H
TVD Reference: WELL @ 3365.00ft (Original Well Elev)
MD Reference: WELL @ 3365.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
19,644.95	91.08	359.28	9,625.00	10,042.30	-126.70	10,043.10	0.00	0.00	0.00

TD @ 19644.95' MD, 9625.00' TVD - PBHL (Gunner 8 Federal 4H Plan 1)

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL (Gunner 8 Federa	0.00	0.00	9,625.00	10,042.30	-126.70	393,389.80	762,978.00	32.078697	-103.484296
- plan hits target center									
- Point									

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
9,327.62	9,327.62	0.00	0.00	KOP - Start Build @ 12.00°/100'
10,086.62	9,805.00	486.42	-6.14	Landing Point - Hold @ 91.08° INC, 359.28° AZ
19,644.95	9,625.00	10,042.30	-126.70	TD @ 19644.95' MD, 9625.00' TVD



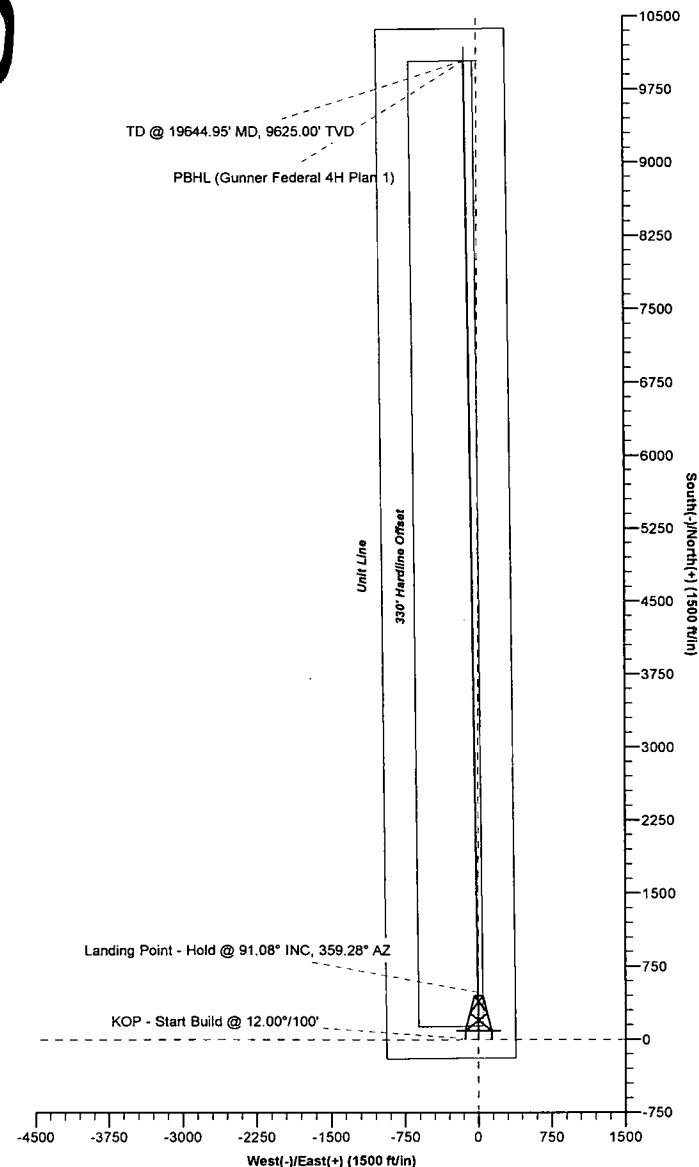
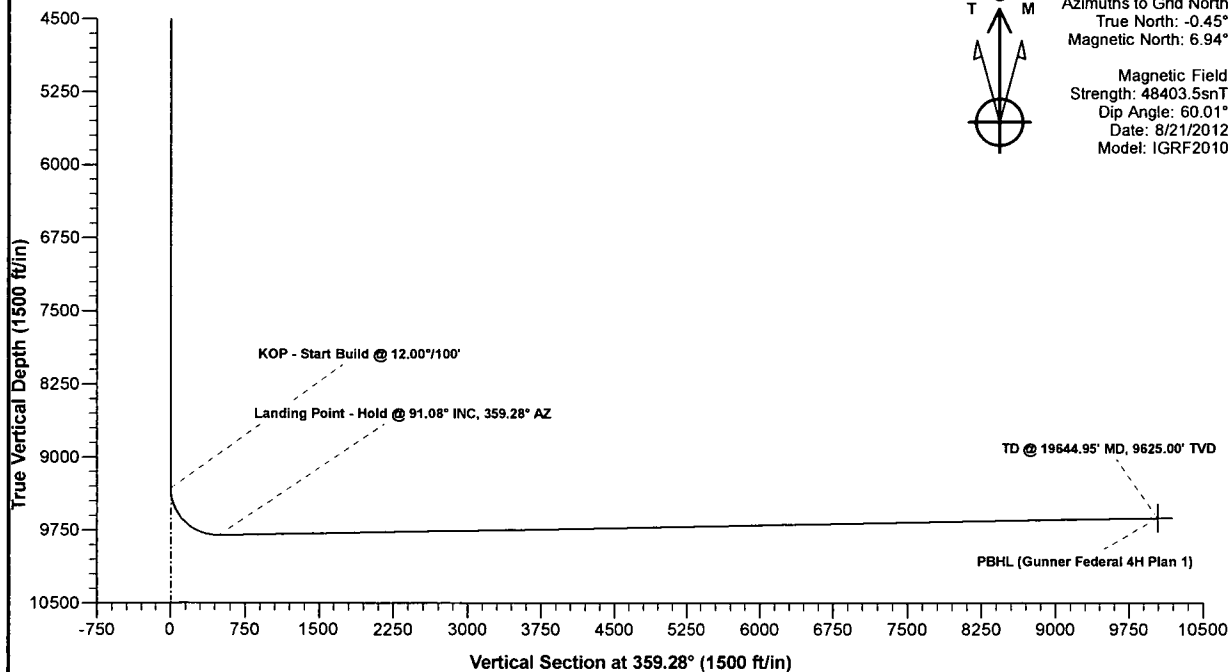
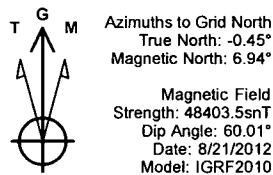
COG Operating LLC
Gunner Federal com #4H
Lea County, NM
Plan #1



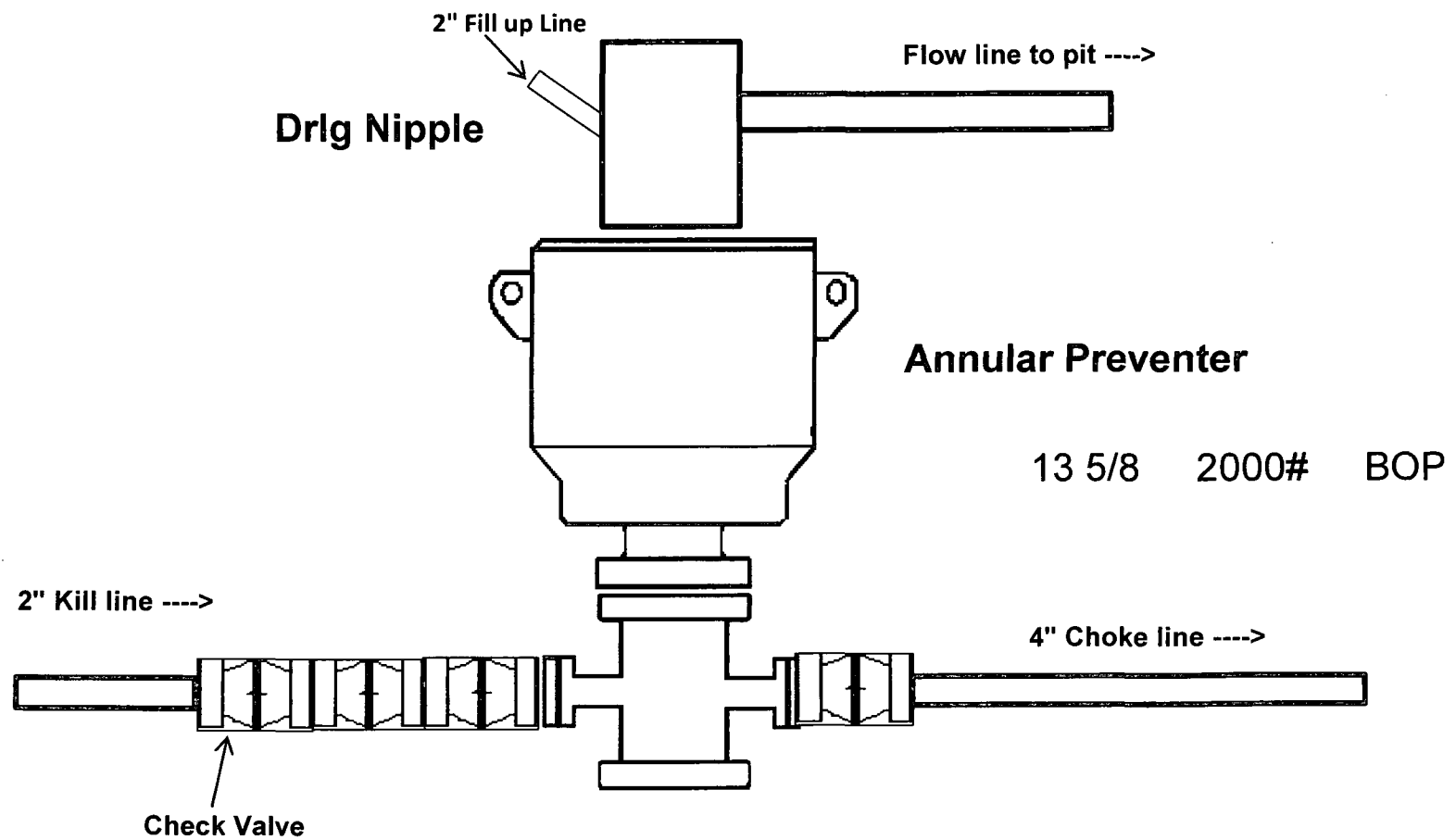
Surface Location		Ground Elev: 3335.00 WELL @ 3365.00ft (Original Well Elev)			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	383347.50	763104.70	32.051091	-103.484141

TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude
PBHL (Gunner Federal 4H Plan 1)	9625.00	10042.30	-126.70	393389.80	762978.00	32.078697

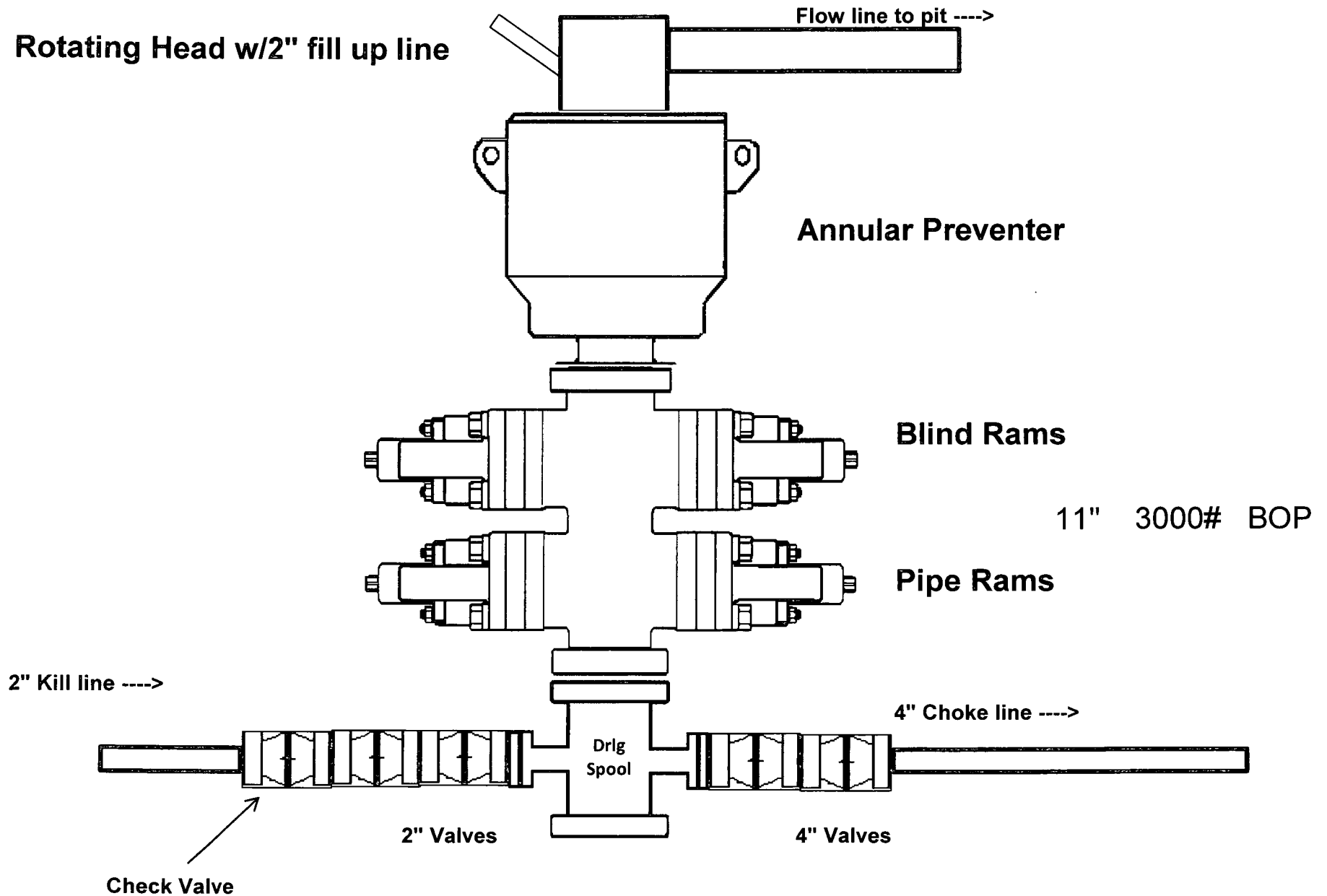
SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Diep	TFace	Vsect	Annotation
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	9327.62	0.00	0.00	9327.62	0.00	0.00	0.00	0.00	0.00	KOP - Start Build @ 12.00°/100'
3	10086.62	91.08	359.28	9805.00	486.42	-6.14	12.00	359.28	486.46	Landing Point - Hold @ 91.08° INC, 359.28° AZ
4	19644.95	91.08	359.28	9625.00	10042.30	-126.70	0.00	0.00	10043.10	TD @ 19644.95' MD, 9625.00' TVD



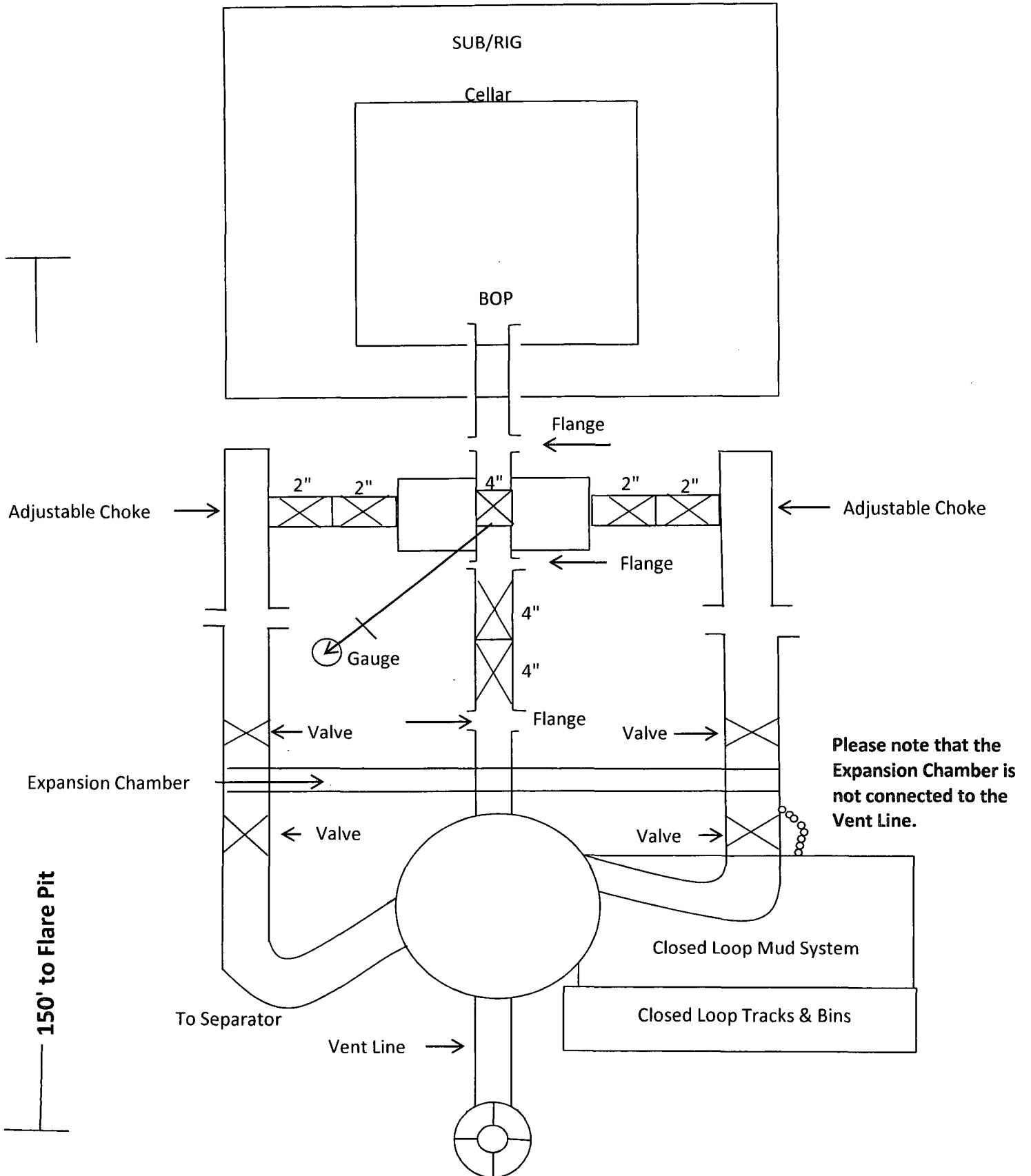
2,000 psi BOP Schematic



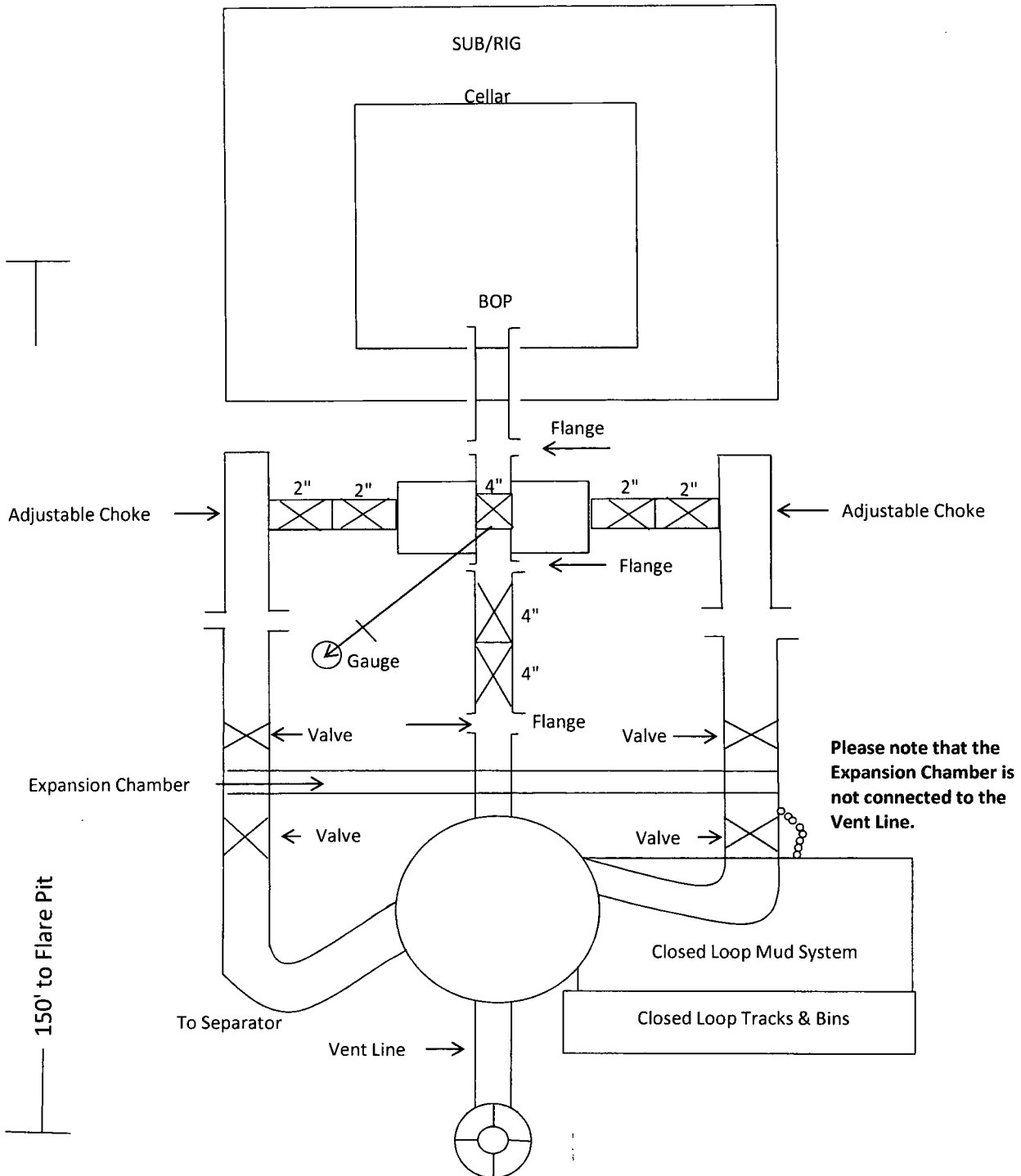
3,000 psi BOP Schematic



2M Choke Manifold Equipment



3M Choke Manifold Equipment



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

**Gunner 8 Federal #4H
SHL: 190' FSL & 380' FEL of Section 8 T26S R34E
BHL: 330' FNL & 420' 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.