

13-93

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

OCD HODD
HOBBY

FEB 12 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. <39716> Triste Draw 5 Federal Com #2H	
2. Name of Operator COG Production LLC		9. API Well No. 30-025-40581	
3a. Address 2208 West Main Street Artesia, NM 88210	3b. Phone No. (include area code) 575-748-6940	10. Field and Pool, or Exploratory <96191> Mesa Verde; Delaware	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 360' FNL & 1750' FWL Lot #3 (NENW) SHL At proposed prod. Zone 330' FSL & 2090' FWL Unit Letter N (SESW) BHL		11. Sec., T.R.M. or Blk and Survey or Area Sec. 5 - T245 - R32E	
14. Distance in miles and direction from nearest town or post office* 21 miles to Malaga		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) 330'	16. No. of acres in lease SHL: State BHL: 560.03	17. Spacing Unit dedicated to this well 159.84	
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 1139' BHL: 1739'	19. Proposed Depth TVD: 8430' MD: 12812'	20. BLM/BIA Bond No. on file 345 NMB000215 & NMB000860	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3628'	22. Approximate date work will start* ASAP	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 	Name (Printed/Typed) Mayte Reyes	Date 10/19/2012
Title		
Regulatory Analyst Approved by (Signature)	Name (Printed/Typed) /s/ Don Peterson	Date 2/18/13
Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Continued on page 2)

*(Instructions on page 2)

Carlsbad Controlled Water Basin

KZ
02/13/2013Approval Subject to General Requirements
& Special Stipulations AttachedSEE ATTACHED FOR
CONDITIONS OF APPROVAL

COG Production LLC
DRILLING AND OPERATIONS PROGRAM
Triste Draw 5 Fed Com 2H
SHL: 360' FNL & 1750' FWL
BHL: 330' FSL & 2090' FWL
Section 5 T24S R32E
Lea County, New Mexico

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In conjunction with Form 3160-3, Application for Permit to Drill subject well, COG Production 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	400'	
Rustler	1,053'	
Top of Salt	1,386'	
Base of Salt	4,593'	
Delaware	4,726'	Oil
Bone Spring	8,580'	Oil
TD TVD	8,430'	
TD MD	12,812'	

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 1,100' 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	Section	OD Casing	New/Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 1/2"	0' – 1,100'	Surface	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 1/4"	0' – 3,500'	Intrmd	9 5/8"	New	36#	BTC	J-55	1.125	1.125	1.6
12 1/4"	3,500'-4740'	Intrmd	9 5/8"	New	40#	BTC	J-55	1.125	1.125	1.6
7 7/8"	0' – 12,812'	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: 500 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: 925 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: 400 sx 50:50:10 H + Salt+Gilsonite+CFR-3+ HR601
 (11.8 ppg / 2.5 cuft/sx)
 Tail: 925 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. 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 = 3656 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' – 1,100'	Fresh Water	8.4	29	N.C.
1,100' – 4,740'	Brine	10	29	N.C.
4,740' – 12,812' (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: *See COA*

- 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. The well has been spud as a state well with a planned 1/2 mile, 80 acre lateral and the location and road are already built. Drilling operations will continue when an approved federal APD has been obtained for a full one mile 160 acre lateral. Move in operations and drilling is expected to take 30 days.



COG Production LLC

Lea County, NM

Triste Draw 5 Federal Com

#2H

OH

Plan: Plan #1

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Standard Planning Report

19 October, 2012





Planning Report



Database: Houston R5000 Database
Company: COG Production LLC

Local Co-ordinate Reference:
TVD Reference:

Well #2H
 WELL @ 3645.5usft (Silver Oak #7 - 17.5' KB)

Project: Lea County, NM

MD Reference:

WELL @ 3645.5usft (Silver Oak #7 - 17.5' KB)

Site: Triste Draw 5 Federal Com

North Reference:

Grid

Well: #2H

Survey Calculation Method:

Minimum Curvature

Wellbore: OH
Design: Plan #1

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	Triste Draw 5 Federal Com		
Site Position:		Northing:	456,197.70 usft
From:	Map	Easting:	696,077.00 usft
Position Uncertainty:	2.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 15' 9.404 N
		Longitude:	103° 41' 56.676 W
		Grid Convergence:	0.34 °

Well	#2H		
Well Position	+N/-S	0.0 usft	Northing: 456,197.70 usft
	+E/-W	0.0 usft	Easting: 696,077.00 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	Latitude: 32° 15' 9.404 N
			Longitude: 103° 41' 56.676 W
			Ground Level: 3,628.0 usft

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	9/25/2012	7.49	60.16	48,490

Design	Plan #1				
Audit Notes:					
Version:	Phase:	PLAN		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)	
	0.0	0.0	0.0	175.71	

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	
7,952.5	0.00	0.00	7,952.5	0.0	0.0	0.00	0.00	0.00	0.00	
8,702.5	90.00	175.71	8,430.0	-476.2	35.7	12.00	12.00	0.00	175.71	
12,812.4	90.00	175.71	8,430.0	-4,574.5	343.2	0.00	0.00	0.00	0.00	PBHL (TD5Fed#2H)



Planning Report



Database: Houston R5000 Database
Company: COG Production LLC

Project: Lea County, NM

Site: Triste Draw 5 Federal Com
Well: #2H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #2H
TVD Reference: WELL @ 3645.5usft (Silver Oak #7 - 17.5' KB)
MD Reference: WELL @ 3645.5usft (Silver Oak #7 - 17.5' 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



Planning Report



Database: Houston R5000 Database
Company: COG Production LLC
Project: Lea County, NM
Site: Triste Draw 5 Federal Com
Well: #2H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #2H
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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)
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
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
7,952.5	0.00	0.00	7,952.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 7952.50' MD, 7952.50' TVD, 0.00° INC, 0.00° AZI, 0.00° VS									
7,975.0	2.70	175.71	7,975.0	-0.5	0.0	0.5	12.00	12.00	0.00
8,000.0	5.70	175.71	7,999.9	-2.4	0.2	2.4	12.00	12.00	0.00
8,025.0	8.70	175.71	8,024.7	-5.5	0.4	5.5	12.00	12.00	0.00
8,050.0	11.70	175.71	8,049.3	-9.9	0.7	9.9	12.00	12.00	0.00
8,075.0	14.70	175.71	8,073.7	-15.6	1.2	15.6	12.00	12.00	0.00
8,100.0	17.70	175.71	8,097.7	-22.5	1.7	22.6	12.00	12.00	0.00
8,125.0	20.70	175.71	8,121.3	-30.7	2.3	30.8	12.00	12.00	0.00
8,150.0	23.70	175.71	8,144.4	-40.2	3.0	40.3	12.00	12.00	0.00
8,175.0	26.70	175.71	8,167.0	-50.8	3.8	50.9	12.00	12.00	0.00
8,200.0	29.70	175.71	8,189.1	-62.6	4.7	62.7	12.00	12.00	0.00
8,225.0	32.70	175.71	8,210.4	-75.5	5.7	75.7	12.00	12.00	0.00
8,250.0	35.70	175.71	8,231.1	-89.5	6.7	89.7	12.00	12.00	0.00
8,275.0	38.70	175.71	8,251.0	-104.5	7.8	104.8	12.00	12.00	0.00
8,300.0	41.70	175.71	8,270.1	-120.6	9.0	121.0	12.00	12.00	0.00
8,325.0	44.70	175.71	8,288.3	-137.7	10.3	138.1	12.00	12.00	0.00
8,350.0	47.70	175.71	8,305.6	-155.7	11.7	156.1	12.00	12.00	0.00
8,375.0	50.70	175.71	8,322.0	-174.6	13.1	175.0	12.00	12.00	0.00
8,400.0	53.70	175.71	8,337.3	-194.3	14.6	194.8	12.00	12.00	0.00
8,425.0	56.70	175.71	8,351.6	-214.7	16.1	215.3	12.00	12.00	0.00
8,450.0	59.70	175.71	8,364.7	-235.9	17.7	236.6	12.00	12.00	0.00
8,475.0	62.70	175.71	8,376.8	-257.8	19.3	258.5	12.00	12.00	0.00
8,500.0	65.70	175.71	8,387.7	-280.2	21.0	281.0	12.00	12.00	0.00



Planning Report



Database: Houston R5000 Database
 Company: COG Production LLC
 Project: Lea County, NM
 Site: Triste Draw 5 Federal Com
 Well: #2H
 Wellbore: OH
 Design: Plan #1

Local Co-ordinate Reference: Well #2H
 TVD Reference: WELL @ 3645.5usft (Silver Oak #7 - 17.5' KB)
 MD Reference: WELL @ 3645.5usft (Silver Oak #7 - 17.5' 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)
8,525.0	68.70	175.71	8,397.4	-303.2	22.7	304.0	12.00	12.00	0.00
8,550.0	71.70	175.71	8,405.8	-326.6	24.5	327.5	12.00	12.00	0.00
8,575.0	74.70	175.71	8,413.1	-350.5	26.3	351.5	12.00	12.00	0.00
8,600.0	77.70	175.71	8,419.0	-374.7	28.1	375.7	12.00	12.00	0.00
8,625.0	80.70	175.71	8,423.7	-399.2	29.9	400.3	12.00	12.00	0.00
8,650.0	83.70	175.71	8,427.1	-423.9	31.8	425.1	12.00	12.00	0.00
8,675.0	86.70	175.71	8,429.2	-448.7	33.7	450.0	12.00	12.00	0.00
8,700.0	89.70	175.71	8,430.0	-473.6	35.5	475.0	12.00	12.00	0.00
8,702.5	90.00	175.71	8,430.0	-476.2	35.7	477.5	11.98	11.98	0.00
EOC - 8702.56' MD, 8430.00' TVD, 90.00° INC, 175.71° AZI, 477.50' VS									
8,800.0	90.00	175.71	8,430.0	-573.4	43.0	575.0	0.00	0.00	0.00
8,900.0	90.00	175.71	8,430.0	-673.1	50.5	675.0	0.00	0.00	0.00
9,000.0	90.00	175.71	8,430.0	-772.8	58.0	775.0	0.00	0.00	0.00
9,100.0	90.00	175.71	8,430.0	-872.5	65.5	875.0	0.00	0.00	0.00
9,200.0	90.00	175.71	8,430.0	-972.2	72.9	975.0	0.00	0.00	0.00
9,300.0	90.00	175.71	8,430.0	-1,071.9	80.4	1,075.0	0.00	0.00	0.00
9,400.0	90.00	175.71	8,430.0	-1,171.7	87.9	1,175.0	0.00	0.00	0.00
9,500.0	90.00	175.71	8,430.0	-1,271.4	95.4	1,275.0	0.00	0.00	0.00
9,600.0	90.00	175.71	8,430.0	-1,371.1	102.9	1,375.0	0.00	0.00	0.00
9,700.0	90.00	175.71	8,430.0	-1,470.8	110.3	1,475.0	0.00	0.00	0.00
9,800.0	90.00	175.71	8,430.0	-1,570.5	117.8	1,575.0	0.00	0.00	0.00
9,900.0	90.00	175.71	8,430.0	-1,670.3	125.3	1,675.0	0.00	0.00	0.00
10,000.0	90.00	175.71	8,430.0	-1,770.0	132.8	1,775.0	0.00	0.00	0.00
10,100.0	90.00	175.71	8,430.0	-1,869.7	140.3	1,875.0	0.00	0.00	0.00
10,200.0	90.00	175.71	8,430.0	-1,969.4	147.7	1,975.0	0.00	0.00	0.00
10,300.0	90.00	175.71	8,430.0	-2,069.1	155.2	2,075.0	0.00	0.00	0.00
10,400.0	90.00	175.71	8,430.0	-2,168.9	162.7	2,175.0	0.00	0.00	0.00
10,500.0	90.00	175.71	8,430.0	-2,268.6	170.2	2,275.0	0.00	0.00	0.00
10,600.0	90.00	175.71	8,430.0	-2,368.3	177.7	2,375.0	0.00	0.00	0.00
10,700.0	90.00	175.71	8,430.0	-2,468.0	185.1	2,475.0	0.00	0.00	0.00
10,800.0	90.00	175.71	8,430.0	-2,567.7	192.6	2,575.0	0.00	0.00	0.00
10,900.0	90.00	175.71	8,430.0	-2,667.5	200.1	2,675.0	0.00	0.00	0.00
11,000.0	90.00	175.71	8,430.0	-2,767.2	207.6	2,775.0	0.00	0.00	0.00
11,100.0	90.00	175.71	8,430.0	-2,866.9	215.1	2,875.0	0.00	0.00	0.00
11,200.0	90.00	175.71	8,430.0	-2,966.6	222.5	2,975.0	0.00	0.00	0.00
11,300.0	90.00	175.71	8,430.0	-3,066.3	230.0	3,075.0	0.00	0.00	0.00
11,400.0	90.00	175.71	8,430.0	-3,166.1	237.5	3,175.0	0.00	0.00	0.00
11,500.0	90.00	175.71	8,430.0	-3,265.8	245.0	3,275.0	0.00	0.00	0.00
11,600.0	90.00	175.71	8,430.0	-3,365.5	252.5	3,375.0	0.00	0.00	0.00
11,700.0	90.00	175.71	8,430.0	-3,465.2	259.9	3,475.0	0.00	0.00	0.00
11,800.0	90.00	175.71	8,430.0	-3,564.9	267.4	3,575.0	0.00	0.00	0.00
11,900.0	90.00	175.71	8,430.0	-3,664.7	274.9	3,675.0	0.00	0.00	0.00
12,000.0	90.00	175.71	8,430.0	-3,764.4	282.4	3,775.0	0.00	0.00	0.00
12,100.0	90.00	175.71	8,430.0	-3,864.1	289.9	3,875.0	0.00	0.00	0.00
12,200.0	90.00	175.71	8,430.0	-3,963.8	297.3	3,975.0	0.00	0.00	0.00
12,300.0	90.00	175.71	8,430.0	-4,063.5	304.8	4,075.0	0.00	0.00	0.00
12,400.0	90.00	175.71	8,430.0	-4,163.3	312.3	4,175.0	0.00	0.00	0.00
12,500.0	90.00	175.71	8,430.0	-4,263.0	319.8	4,275.0	0.00	0.00	0.00
12,600.0	90.00	175.71	8,430.0	-4,362.7	327.3	4,375.0	0.00	0.00	0.00
12,700.0	90.00	175.71	8,430.0	-4,462.4	334.7	4,475.0	0.00	0.00	0.00
12,800.0	90.00	175.71	8,430.0	-4,562.1	342.2	4,575.0	0.00	0.00	0.00
12,812.4	90.00	175.71	8,430.0	-4,574.5	343.2	4,587.3	0.00	0.00	0.00



Planning Report



Database: Houston R5000 Database
Company: COG Production LLC
Project: Lea County, NM
Site: Triste Draw 5 Federal Com
Well: #2H
Wellbore: OH
Design: Plan #1

Local Co-ordinate Reference: Well #2H
TVD Reference: WELL @ 3645.5usft (Silver Oak #7 - 17.5' KB)
MD Reference: WELL @ 3645.5usft (Silver Oak #7 - 17.5' 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)
TD @ 12812.40' MD, 8430.00' TVD									

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL (TD5Fed#2H)	0.00	0.00	8,430.0	-4,574.5	343.0	451,623.20	696,420.00	32° 14' 24.116 N	103° 41' 52.997 W
- plan misses target center by 0.2usft at 12812.4usft MD (8430.0 TVD, -4574.5 N, 343.2 E)									
- Point									

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
7,952.5	7,952.5	0.0	0.0	KOP - 7952.50' MD, 7952.50' TVD, 0.00° INC, 0.00° AZI, 0.00' VS
8,702.5	8,430.0	-476.2	35.7	EOC - 8702.56' MD, 8430.00' TVD, 90.00° INC, 175.71° AZI, 477.50' VS
12,812.4	8,430.0	-4,574.5	343.2	TD @ 12812.40' MD, 8430.00' TVD

COG Production LLC
 Project: Lea County, NM
 Site: Triste Draw 5 Federal Com
 Well: #2H
 Wellbore: OH
 Plan: Plan #1 (#2H/OH)



Azimuths to Grid North
 True North: -0.34°
 Magnetic North: 7.15°

Magnetic Field
 Strength: 48490.1snT
 Dip Angle: 60.16°
 Date: 9/25/2012
 Model: IGRF2010

WELL DETAILS: #2H

Ground Elevation:: 3628.0
 RKB Elevation: WELL @ 3645.5usft (Silver Oak #7 - 17.5' KB)
 Rig Name: Silver Oak #7 - 17.5' KB

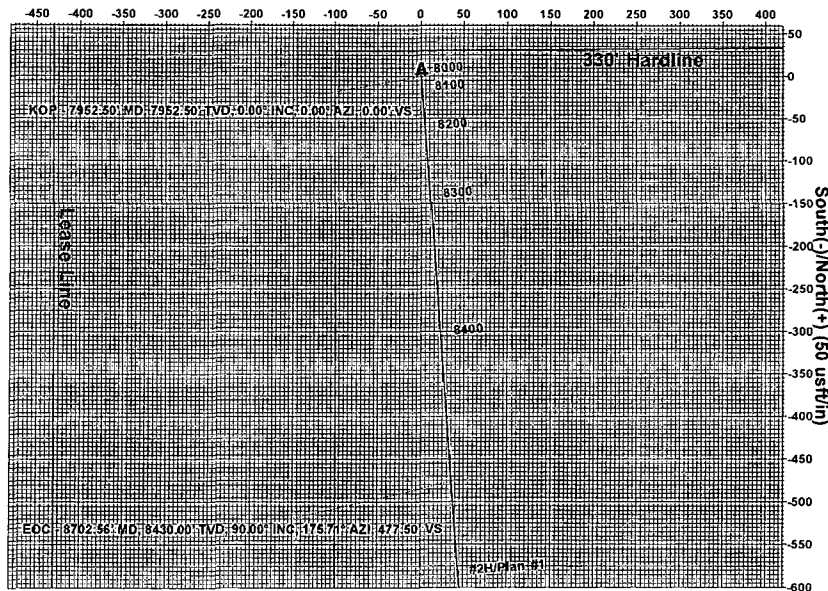
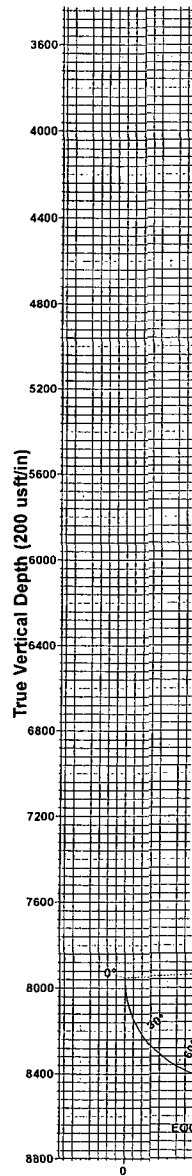
Surface Hole Location

Northing 456197.70 Easting 696077.00 Latitude 32° 15' 9.404 N Longitude 103° 41' 56.676 W

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	7952.5	0.00	0.00	7952.5	0.0	0.0	0.00	0.00	0.0	
3	8702.5	90.00	175.71	8430.0	-476.2	35.7	12.00	175.71	477.5	
4	12812.4	90.00	175.71	8430.0	-4574.5	343.2	0.00	0.00	4587.3	PBHL (TD5Fed#2H)

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



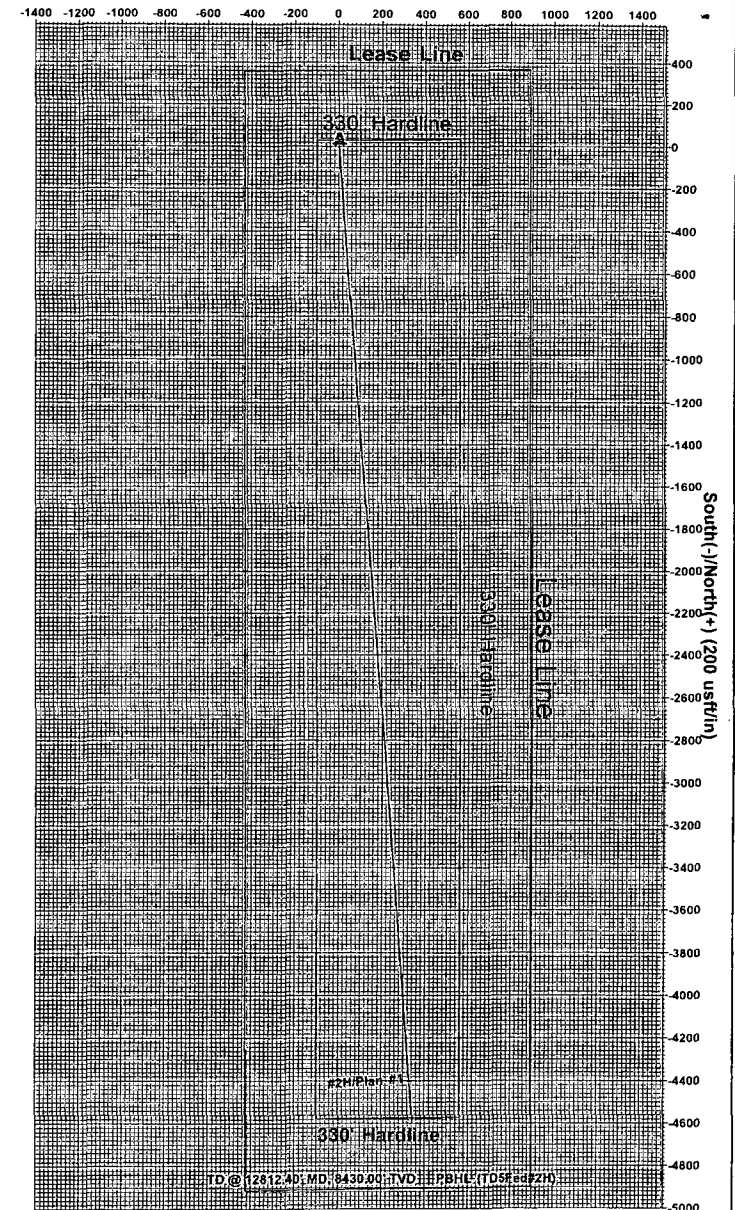
KOP - 7952.50' MD, 7952.50' TVD, 0.00° INC, 0.00° AZI, 0.00° VS

EOC - 8702.56' MD, 8430.00' TVD, 90.00° INC, 175.71° AZI, 477.50° VS

TD @ 12812.40' MD, 8430.00' TVD

Vertical Section at 175.71° (200 usft/in)

West(-)/East(+) (200 usft/in)



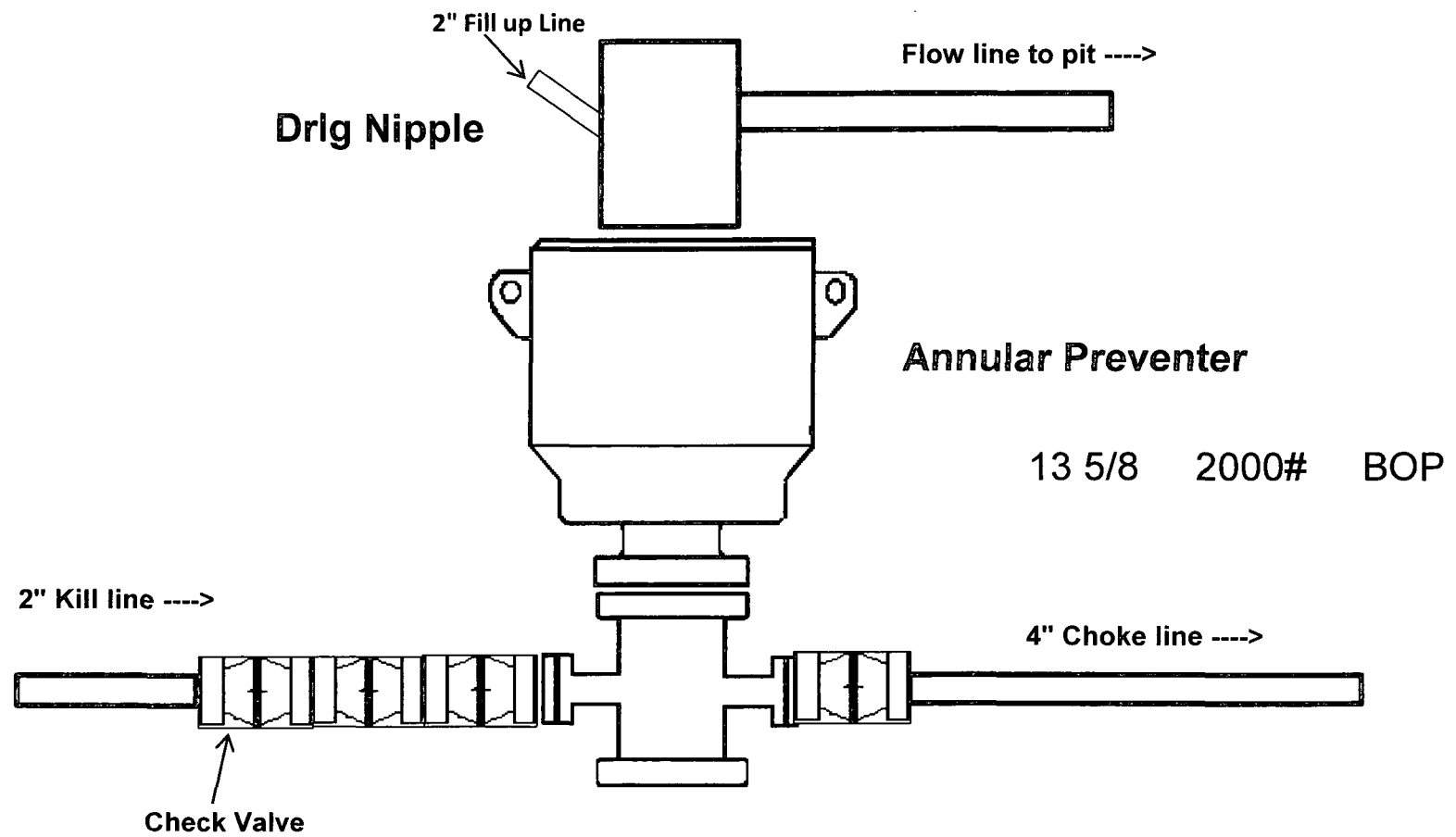
PROJECT DETAILS: Lea County, NM
 Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico East 3001
 System Datum: Mean Sea Level
 Local North: Grid



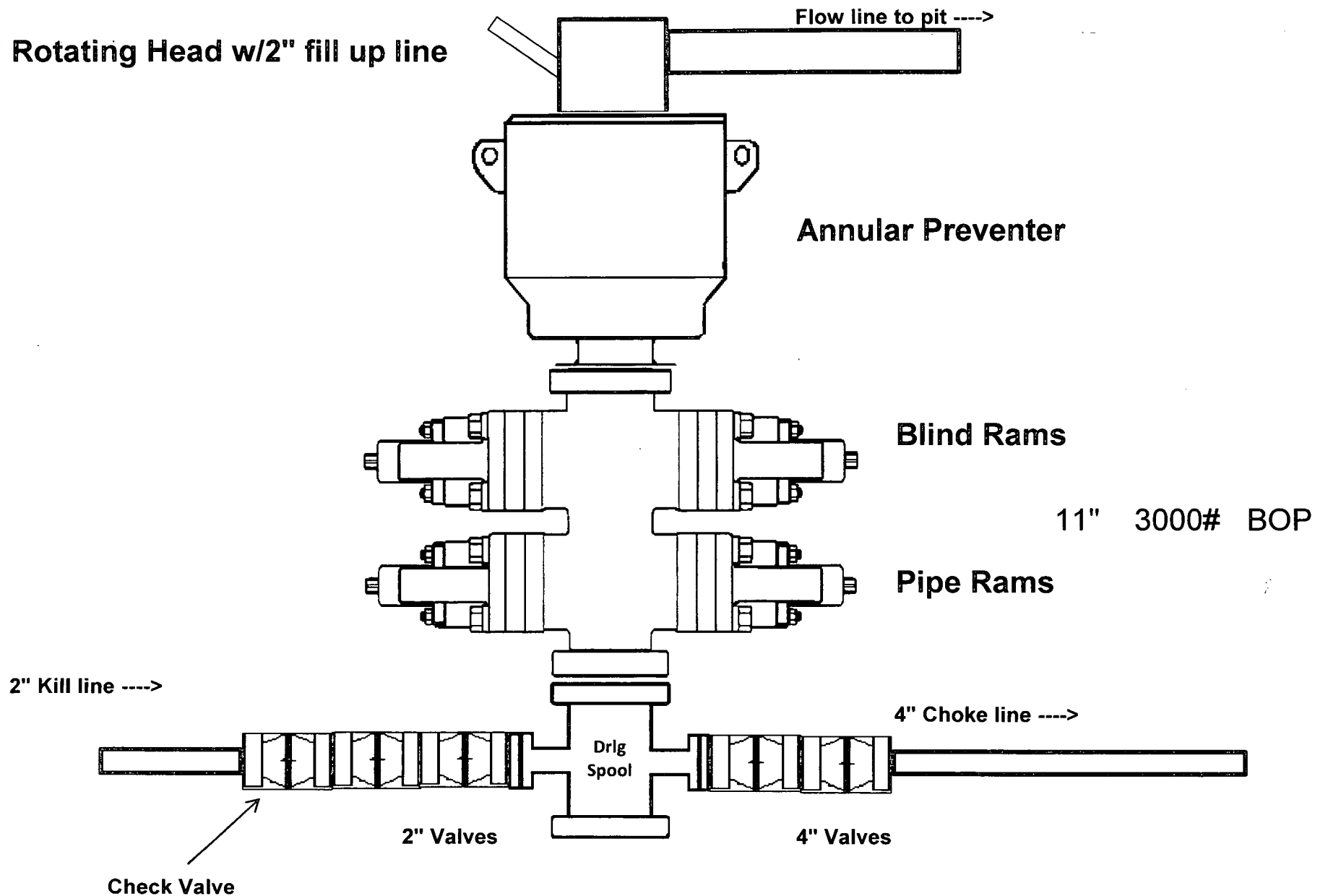
Crescent Directional Drilling
 7715 West Industrial Ave. Midland, Tx 79706
 Phone: 432-618-1135

Plan: Plan #1 (#2H/OH)
 Created By: Matt Higgins Date: 11:01, October 19 2012

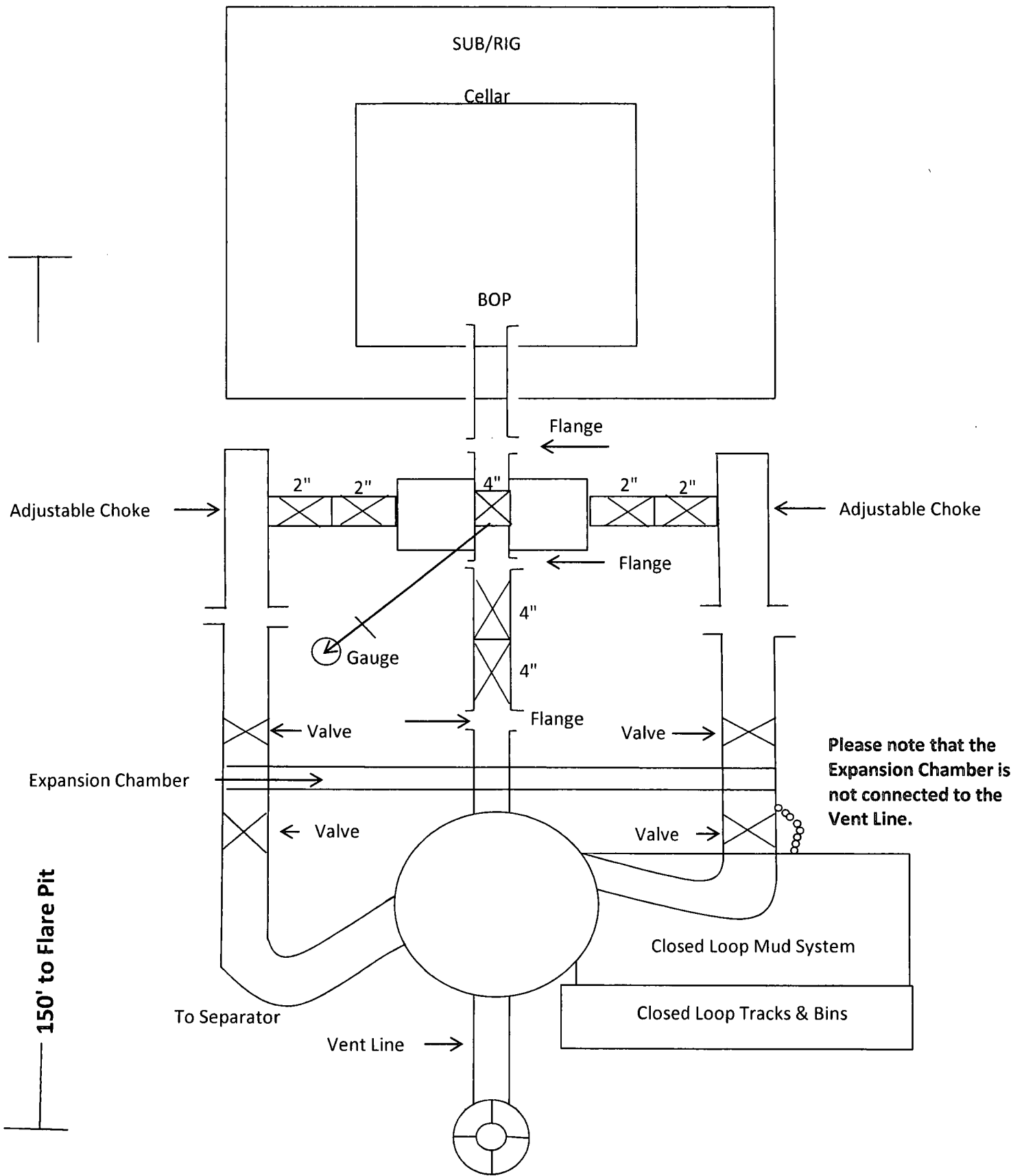
2,000 psi BOP Schematic



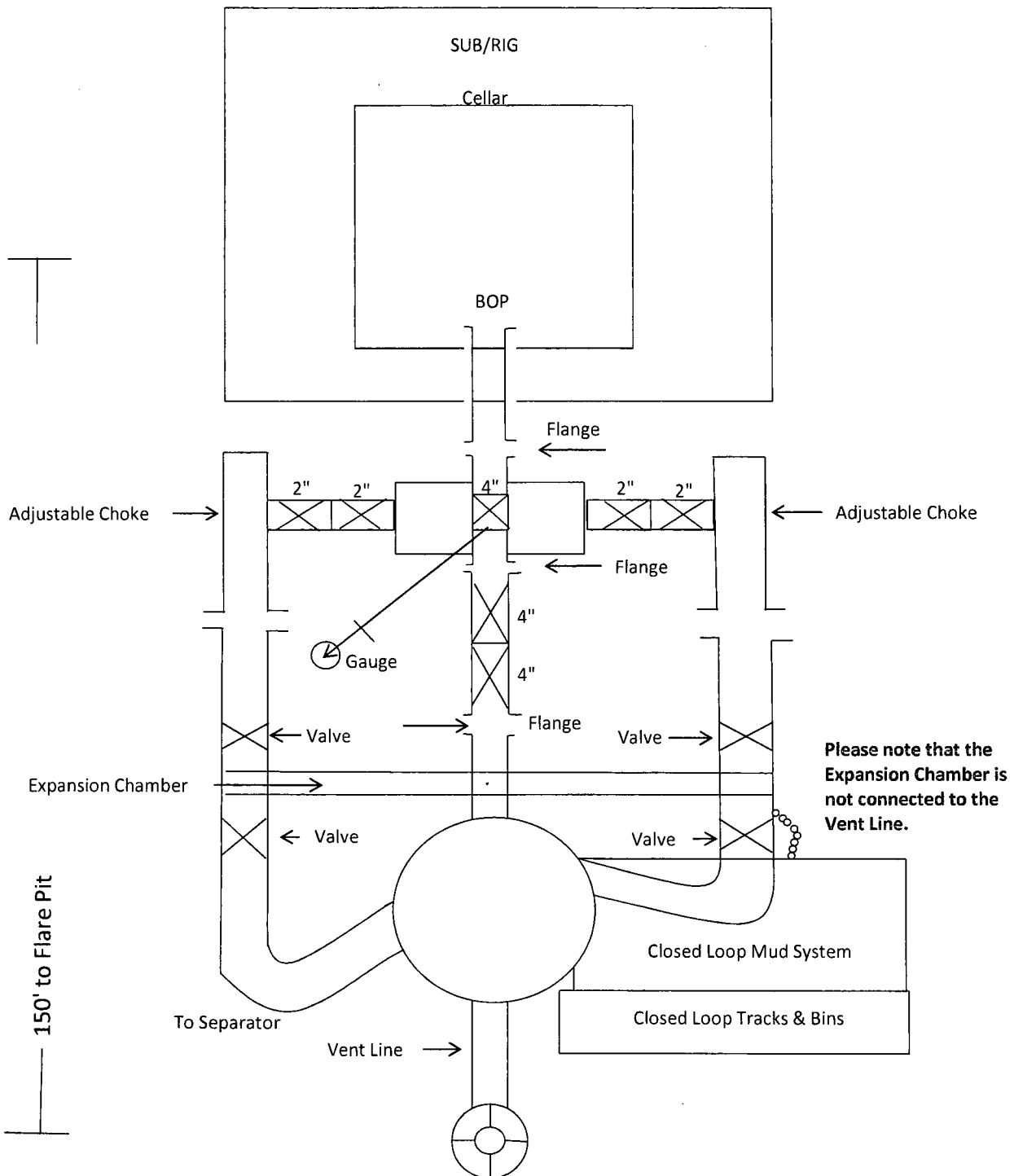
3,000 psi BOP Schematic



2M Choke Manifold Equipment



3M Choke Manifold Equipment



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

**Triste Draw 5 Fed Com 2H
SHL: 360' FNL & 1750' FWL
BHL: 330' FSL & 2090' FWL
Section 5 T24S R32E
Lea County, New Mexico**

COG Production 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.