

HOBBS OGD

DEC 02 2014 Hobbs

975-14-828

FORM APPROVED
OMB No. 1004-0137
Expires October 31, 2014

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

RECEIVED
UNORTHODOX
LOCATION

1a. Type of Work: ☒ DRILL ☐ REENTER		5. Lease Serial No. NMNM128366
1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6. If Indian, Allottee or Tribe Name Black Pearl 1 Federal #4H
2. Name of Operator COG Operating LLC. (229137)		7. If Unit or CA Agreement, Name and No.
3a. Address 2208 West Main Street Artesia, NM 88210	3b. Phone No. (include area code) 575-748-6940	8. Lease Name and Well No. (31399) Black Pearl 1 Federal #4H
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface 190' FNL & 1160' FWL Lot #4 (NWNW) SHL Section 1-T20S-R34E At proposed prod. Zone 330' FSL & 660' FWL Unit Letter M (SWSW) BHL Section 1-T20S-R34E		9. API Well No. 20025-42295
14. Distance in miles and direction from nearest town or post office* Approximately 20 miles from Eunice		10. Field and Pool, or Exploratory Lea; Bone Spring (37470)
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. Unit line, if any) 190'		11. Sec., T.R.M. or Blk and Survey or Area Section 1 - T20S - R34E
16. No. of acres in lease 602.04		12. County or Parish Lea County
17. Spacing Unit dedicated to this well 160.38		13. State NM
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft. SHL: 100' (Black Pearl #3H) BHL: 1759'		20. BLM/BIA Bond No. on file NMB000740 & NMB00215
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3695.7' GL		22. Approximate date work will start* 7/1/2014
		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 6-4-14
Title Regulatory Analyst		
Approved by (Signature) <i>Steve Caffey</i>	Name (Printed/Typed)	Date NOV 21 2014
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)

Capitan Controlled Water Basin

Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

DEC 03 2014

COG Operating LLC
DRILLING AND OPERATIONS PROGRAM
Black Pearl 1 Federal 4H
SHL: 190' FNL & 1160' FWL of Section 1
BHL: 330' FSL & 660' FWL of Section 1
Section 1 T20S R34E
Lea County, New Mexico

HOBBS OCD

DEC 02 2014

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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	~270'	
Rustler	1,793'	
Top of Salt	1,893'	
Tansill	3,472'	
Yates	3,613'	
7 Rivers	4,013'	
Queen	4,593'	
Delaware	5,533'	Oil
Bone Springs	8,113'	Oil
FBSG	9,488'	
SBSG	10,013'	
TBSG	10,713'	
Wolfcamp	10,960'	
TD TVD	10,930'	
TD MD	15,628'	

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 ~~1825'~~ ^{1900'} 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' - 1825' ^{1900'}	Surface	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 1/4"	0' - 3500'	Intrmd	9 5/8"	New	36#	LTC	J-55	1.125	1.125	1.6
8 3/4"-7-7/8"	0' - 15,628'	Production Curve & Lateral	5 1/2"	New	17#	LTC	P-110	1.125	1.125	1.6

- After landing the curve we will reduce hole size to 7-7/8" and drill the lateral.

Depth	Type System	Mud Weight	Viscosity (sec)	Waterloss (cc)
0' - 1825'	Fresh Water	8.4 - 8.6	29	N.C.
1825' - 3,500'	Brine	10-10.2	29	N.C.
3,500' - 15,628'	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.
- 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 total, 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 tourly 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.
- See COA*

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: *yes, See COA*

- 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.
- See COA*

11. Anticipated starting date and Duration of Operations:

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 35 days.



COG Operating LLC

Lea County, NM

Black Pearl 1 Federal

#4H

OH

Plan: Design #1

Standard Planning Report

26 April, 2014



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3712.7usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3712.7usft (Original Well Elev)
Site:	Black Pearl 1 Federal	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #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:	Black Pearl 1 Federal		
Site Position:	Map	Northing:	586,220.00 usft
From:		Easting:	754,185.00 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 36' 32.078 N
		Longitude:	103° 30' 28.361 W
		Grid Convergence:	0.44 °

Well:	#4H		
Well Position	+N/-S	-31.9 usft	Northing:
	+E/-W	-3,132.1 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	
		Latitude:	32° 36' 32.002 N
		Longitude:	103° 31' 4.978 W
		Ground Level:	3,695.7 usft

Wellbore:	OH		
Magnetics	Model Name	Sample Date	Declination
			(°)
	IGRF2010	4/22/2014	7.24
			Dip Angle
			(°)
			60.48
			Field Strength
			(nT)
			48,566

Design:	Design #1		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			185.56

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	
10,422.5	0.00	0.00	10,422.5	0.0	0.0	0.00	0.00	0.00	0.00	
11,169.4	89.62	212.00	10,900.0	-402.3	-251.4	12.00	12.00	0.00	212.00	
11,969.2	89.62	180.01	10,905.5	-1,161.1	-469.0	4.00	0.00	-4.00	-90.12	
15,628.4	89.62	180.01	10,930.0	-4,820.2	-469.6	0.00	0.00	0.00	0.00	PBHL(BP#4H)



Wellplanning
Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3712.7usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3712.7usft (Original Well Elev)
Site:	Black Pearl 1 Federal	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

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



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Wellbore:	OH		
Design:	Design #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
9,400.0	0.00	0.00	9,400.0	0.0	0.0	0.0	0.00	0.00	0.00
9,500.0	0.00	0.00	9,500.0	0.0	0.0	0.0	0.00	0.00	0.00
9,600.0	0.00	0.00	9,600.0	0.0	0.0	0.0	0.00	0.00	0.00
9,700.0	0.00	0.00	9,700.0	0.0	0.0	0.0	0.00	0.00	0.00
9,800.0	0.00	0.00	9,800.0	0.0	0.0	0.0	0.00	0.00	0.00
9,900.0	0.00	0.00	9,900.0	0.0	0.0	0.0	0.00	0.00	0.00
10,000.0	0.00	0.00	10,000.0	0.0	0.0	0.0	0.00	0.00	0.00
10,100.0	0.00	0.00	10,100.0	0.0	0.0	0.0	0.00	0.00	0.00
10,200.0	0.00	0.00	10,200.0	0.0	0.0	0.0	0.00	0.00	0.00
10,300.0	0.00	0.00	10,300.0	0.0	0.0	0.0	0.00	0.00	0.00
10,400.0	0.00	0.00	10,400.0	0.0	0.0	0.0	0.00	0.00	0.00
10,422.5	0.00	0.00	10,422.5	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 10422.5 'MD, 0.00° INC, 0.00° AZI									



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3712.7usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3712.7usft (Original Well Elev)
Site:	Black Pearl 1 Federal	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

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)
10,425.0	0.30	212.00	10,425.0	0.0	0.0	0.0	12.00	12.00	0.00
10,450.0	3.30	212.00	10,450.0	-0.7	-0.4	0.7	12.00	12.00	0.00
10,475.0	6.30	212.00	10,474.9	-2.4	-1.5	2.6	12.00	12.00	0.00
10,500.0	9.30	212.00	10,499.7	-5.3	-3.3	5.6	12.00	12.00	0.00
10,525.0	12.30	212.00	10,524.2	-9.3	-5.8	9.8	12.00	12.00	0.00
10,550.0	15.30	212.00	10,548.5	-14.3	-9.0	15.2	12.00	12.00	0.00
10,575.0	18.30	212.00	10,572.4	-20.5	-12.8	21.6	12.00	12.00	0.00
10,600.0	21.30	212.00	10,595.9	-27.7	-17.3	29.2	12.00	12.00	0.00
10,625.0	24.30	212.00	10,619.0	-35.9	-22.4	37.9	12.00	12.00	0.00
10,650.0	27.30	212.00	10,641.5	-45.1	-28.2	47.6	12.00	12.00	0.00
10,675.0	30.30	212.00	10,663.4	-55.3	-34.6	58.4	12.00	12.00	0.00
10,700.0	33.30	212.00	10,684.6	-66.5	-41.5	70.2	12.00	12.00	0.00
10,725.0	36.30	212.00	10,705.2	-78.6	-49.1	83.0	12.00	12.00	0.00
10,750.0	39.30	212.00	10,724.9	-91.6	-57.2	96.7	12.00	12.00	0.00
10,775.0	42.30	212.00	10,743.8	-105.4	-65.9	111.3	12.00	12.00	0.00
10,800.0	45.30	212.00	10,761.9	-120.1	-75.0	126.8	12.00	12.00	0.00
10,825.0	48.30	212.00	10,779.0	-135.5	-84.7	143.1	12.00	12.00	0.00
10,850.0	51.30	212.00	10,795.1	-151.7	-94.8	160.2	12.00	12.00	0.00
10,875.0	54.29	212.00	10,810.3	-168.6	-105.4	178.0	12.00	12.00	0.00
10,900.0	57.29	212.00	10,824.3	-186.1	-116.3	196.5	12.00	12.00	0.00
10,925.0	60.29	212.00	10,837.3	-204.3	-127.6	215.7	12.00	12.00	0.00
10,950.0	63.29	212.00	10,849.1	-223.0	-139.3	235.4	12.00	12.00	0.00
10,975.0	66.29	212.00	10,859.7	-242.1	-151.3	255.7	12.00	12.00	0.00
11,000.0	69.29	212.00	10,869.2	-261.8	-163.6	276.4	12.00	12.00	0.00
11,025.0	72.29	212.00	10,877.4	-281.8	-176.1	297.5	12.00	12.00	0.00
11,050.0	75.29	212.00	10,884.4	-302.1	-188.8	319.0	12.00	12.00	0.00
11,075.0	78.29	212.00	10,890.1	-322.8	-201.7	340.8	12.00	12.00	0.00
11,100.0	81.29	212.00	10,894.5	-343.6	-214.7	362.8	12.00	12.00	0.00
11,125.0	84.29	212.00	10,897.6	-364.7	-227.9	385.1	12.00	12.00	0.00
11,150.0	87.29	212.00	10,899.5	-385.8	-241.1	407.4	12.00	12.00	0.00
11,169.3	89.61	212.00	10,900.0	-402.2	-251.3	424.7	12.00	12.00	0.00
EOC- 11169.3 'MD, 89.61° INC, 212.00° AZI									
11,169.4	89.62	212.00	10,900.0	-402.3	-251.4	424.7	12.00	12.00	0.00
11,200.0	89.62	210.78	10,900.2	-428.4	-267.3	452.3	4.00	-0.01	-4.00
11,300.0	89.61	206.78	10,900.9	-516.0	-315.4	544.2	4.00	-0.01	-4.00
11,400.0	89.61	202.78	10,901.6	-606.8	-357.3	638.6	4.00	0.00	-4.00
11,500.0	89.60	198.78	10,902.3	-700.3	-392.8	735.1	4.00	0.00	-4.00
11,600.0	89.60	194.78	10,902.9	-796.0	-421.6	833.1	4.00	0.00	-4.00
11,700.0	89.60	190.78	10,903.6	-893.5	-443.8	932.3	4.00	0.00	-4.00
11,800.0	89.61	186.78	10,904.3	-992.3	-459.0	1,032.1	4.00	0.00	-4.00
11,900.0	89.61	182.78	10,905.0	-1,091.9	-467.3	1,132.1	4.00	0.00	-4.00
11,969.2	89.62	180.01	10,905.5	-1,161.1	-469.0	1,201.1	4.00	0.01	-4.00
12,000.0	89.62	180.01	10,905.7	-1,191.9	-469.0	1,231.8	0.00	0.00	0.00
12,100.0	89.62	180.01	10,906.4	-1,291.9	-469.0	1,331.3	0.00	0.00	0.00
12,200.0	89.62	180.01	10,907.0	-1,391.9	-469.0	1,430.8	0.00	0.00	0.00
12,300.0	89.62	180.01	10,907.7	-1,491.9	-469.1	1,530.3	0.00	0.00	0.00
12,400.0	89.62	180.01	10,908.4	-1,591.9	-469.1	1,629.9	0.00	0.00	0.00
12,500.0	89.62	180.01	10,909.0	-1,691.9	-469.1	1,729.4	0.00	0.00	0.00
12,600.0	89.62	180.01	10,909.7	-1,791.9	-469.1	1,828.9	0.00	0.00	0.00
12,700.0	89.62	180.01	10,910.4	-1,891.9	-469.1	1,928.5	0.00	0.00	0.00
12,800.0	89.62	180.01	10,911.0	-1,991.9	-469.1	2,028.0	0.00	0.00	0.00
12,900.0	89.62	180.01	10,911.7	-2,091.9	-469.2	2,127.5	0.00	0.00	0.00
13,000.0	89.62	180.01	10,912.4	-2,191.9	-469.2	2,227.0	0.00	0.00	0.00
13,100.0	89.62	180.01	10,913.1	-2,291.9	-469.2	2,326.6	0.00	0.00	0.00



Wellplanning Planning Report

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #4H
Company:	COG Operating LLC	TVD Reference:	WELL @ 3712.7usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL @ 3712.7usft (Original Well Elev)
Site:	Black Pearl 1 Federal	North Reference:	Grid
Well:	#4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

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)	
13,200.0	89.62	180.01	10,913.7	-2,391.9	-469.2	2,426.1	0.00	0.00	0.00	
13,300.0	89.62	180.01	10,914.4	-2,491.9	-469.2	2,525.6	0.00	0.00	0.00	
13,400.0	89.62	180.01	10,915.1	-2,591.9	-469.2	2,625.2	0.00	0.00	0.00	
13,500.0	89.62	180.01	10,915.7	-2,691.9	-469.3	2,724.7	0.00	0.00	0.00	
13,600.0	89.62	180.01	10,916.4	-2,791.9	-469.3	2,824.2	0.00	0.00	0.00	
13,700.0	89.62	180.01	10,917.1	-2,891.9	-469.3	2,923.7	0.00	0.00	0.00	
13,800.0	89.62	180.01	10,917.7	-2,991.9	-469.3	3,023.3	0.00	0.00	0.00	
13,900.0	89.62	180.01	10,918.4	-3,091.9	-469.3	3,122.8	0.00	0.00	0.00	
14,000.0	89.62	180.01	10,919.1	-3,191.9	-469.3	3,222.3	0.00	0.00	0.00	
14,100.0	89.62	180.01	10,919.8	-3,291.8	-469.4	3,321.8	0.00	0.00	0.00	
14,200.0	89.62	180.01	10,920.4	-3,391.8	-469.4	3,421.4	0.00	0.00	0.00	
14,300.0	89.62	180.01	10,921.1	-3,491.8	-469.4	3,520.9	0.00	0.00	0.00	
14,400.0	89.62	180.01	10,921.8	-3,591.8	-469.4	3,620.4	0.00	0.00	0.00	
14,500.0	89.62	180.01	10,922.4	-3,691.8	-469.4	3,720.0	0.00	0.00	0.00	
14,600.0	89.62	180.01	10,923.1	-3,791.8	-469.4	3,819.5	0.00	0.00	0.00	
14,700.0	89.62	180.01	10,923.8	-3,891.8	-469.5	3,919.0	0.00	0.00	0.00	
14,800.0	89.62	180.01	10,924.4	-3,991.8	-469.5	4,018.5	0.00	0.00	0.00	
14,900.0	89.62	180.01	10,925.1	-4,091.8	-469.5	4,118.1	0.00	0.00	0.00	
15,000.0	89.62	180.01	10,925.8	-4,191.8	-469.5	4,217.6	0.00	0.00	0.00	
15,100.0	89.62	180.01	10,926.5	-4,291.8	-469.5	4,317.1	0.00	0.00	0.00	
15,200.0	89.62	180.01	10,927.1	-4,391.8	-469.5	4,416.7	0.00	0.00	0.00	
15,300.0	89.62	180.01	10,927.8	-4,491.8	-469.5	4,516.2	0.00	0.00	0.00	
15,400.0	89.62	180.01	10,928.5	-4,591.8	-469.6	4,615.7	0.00	0.00	0.00	
15,500.0	89.62	180.01	10,929.1	-4,691.8	-469.6	4,715.2	0.00	0.00	0.00	
15,600.0	89.62	180.01	10,929.8	-4,791.8	-469.6	4,814.8	0.00	0.00	0.00	
15,628.4	89.62	180.01	10,930.0	-4,820.2	-469.6	4,843.0	0.00	0.00	0.00	
TD at 15628.4 - PBHL(BP#4H)										

Design Targets										
Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude	
PBHL(BP#4H)	0.00	0.00	10,930.0	-4,820.2	-469.6	581,367.90	750,583.30	32° 35' 44.343 N	103° 31' 10.899 W	
- hit/miss target										
- Shape										
- plan hits target center										
- Point										

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates			
		+N/-S (usft)	+E/-W (usft)	Comment	
10,422.5	10,422.5	0.0	0.0	KOP - 10422.5 'MD, 0.00° INC, 0.00° AZI	
11,169.3	10,900.0	-402.2	-251.3	EOC- 11169.3 'MD, 89.61° INC, 212.00° AZI	
15,628.4	10,930.0	-1,161.0	-469.0	TD at 15628.4	



Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	10422.5	0.00	0.00	10422.5	0.0	0.0	0.00	0.00	0.0	
3	11169.4	89.62	212.00	10900.0	-402.3	-251.4	12.00	212.00	424.7	
4	11969.2	89.62	180.01	10905.5	-1161.1	-469.0	4.00	-90.12	1201.1	
5	15628.4	89.62	180.01	10930.0	-4820.2	-469.6	0.00	0.00	4843.0	PBHL(BP#4H)

COG Operating LLC
Project: Lea County, NM
Site: Black Pearl 1 Federal
Well: #4H
Wellbore: OH
Plan: Design #1 (#4H/OH)

Ground Elevation:: 3695.7
RKB Elevation: WELL @ 3712.7usft (Original Well Elev)
Rig Name: Original Well Elev

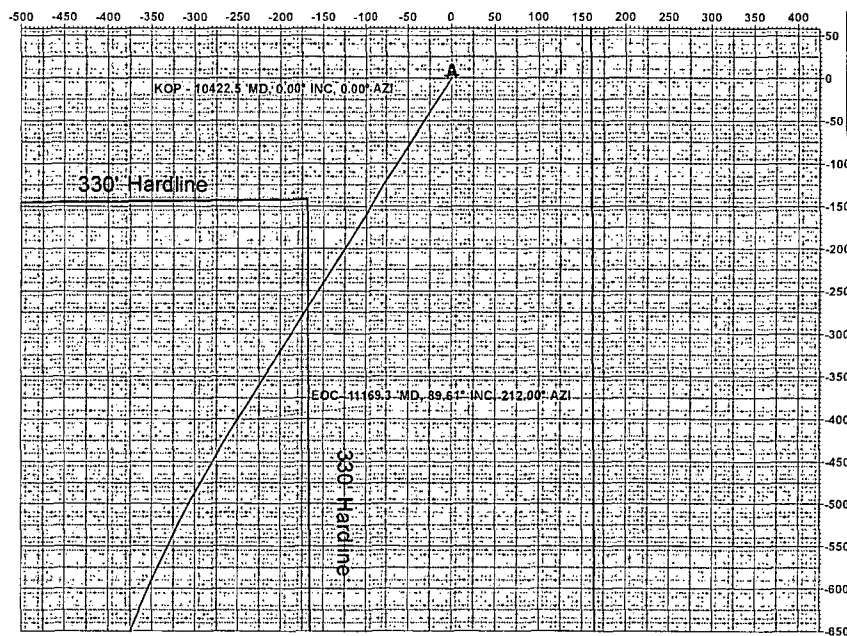
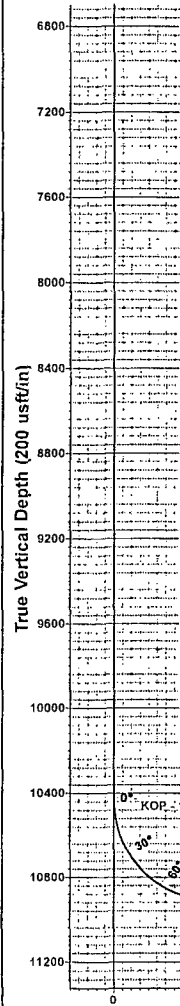
Northing 586188.10 Easting 751052.90 Latitude 32° 36' 32.002 N Longitude 103° 31' 4.978 W

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



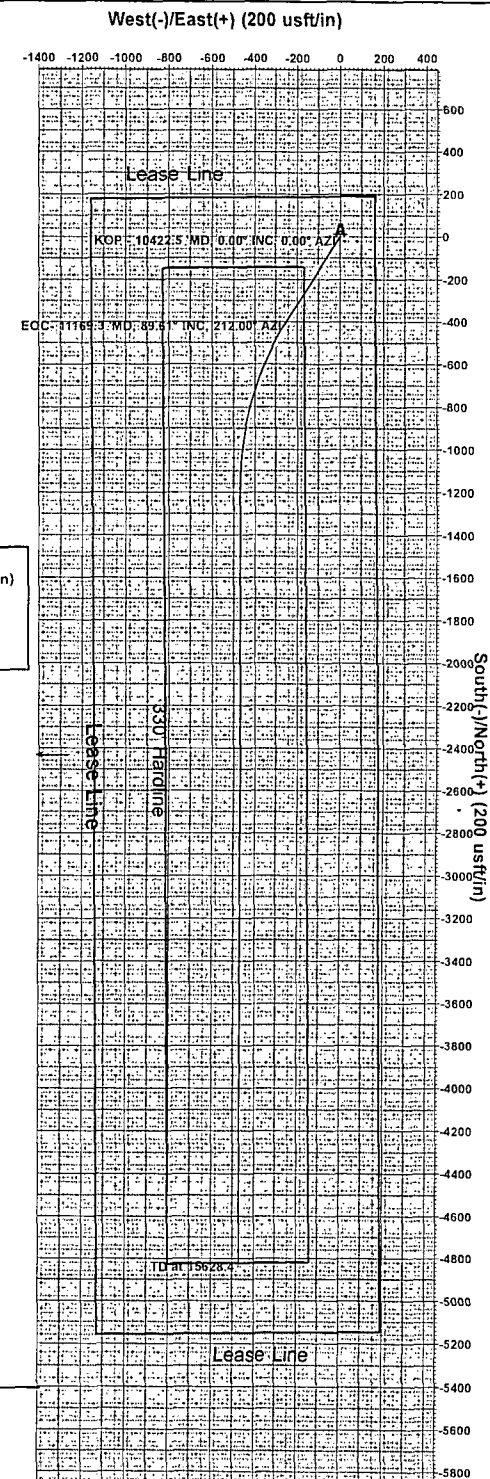
Azimuths to Grid North
True North: -0.44°
Magnetic North: 6.80°

Magnetic Field
Strength: 48565.8snT
Dip Angle: 60.48°
Date: 4/22/2014
Model: IGRF2010



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

Vertical Section at 185.56° (200 usft/in)



Terra Directional Services LLC
322 Spring Hill Drive, Suite A300, Spring, Tx 77386
Phone: 432-425-7532

LLD ACREAGE REPORT

Admin State: NM

Geo State: NM

MTR: 23 0200S 0340E

Section: 001

<u>Sur Type</u>	<u>Sur No</u>	<u>Lld Suff</u>	<u>NE</u> <u>NW</u> <u>SW</u> <u>SE</u>	<u>Sur Note</u>	<u>Dup</u> <u>Flg</u>	<u>Sub</u> <u>Surf</u>	<u>Acreage</u>
			<u>NNSS</u> <u>NNSS</u> <u>NNSS</u> <u>NNSS</u>				
			<u>EWWE</u> <u>EWWE</u> <u>EWWE</u> <u>EWWE</u>				
A			--XX --XX XXXX XXXX				480.000
L	1		X---				40.880
L	2		-X--				40.660
L	3		----				40.380
L	4		----				40.120

Section 001 Total: 642.040

MTR Total Excluding Survey Notes C/D/R
and Sub Surf = Y 642.040Grand Total Excluding Survey Notes C/D/R
and Sub Surf = Y: 642.040



New Mexico Office of the State Engineer

Water Column/Average Depth to Water

No records found.

PLSS Search:

Section(s): 1

Township: 20S

Range: 34E

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

5/12/14 10:42 AM

Page 1 of 1

WATER COLUMN/ AVERAGE
DEPTH TO WATER



New Mexico Office of the State Engineer Water Column/Average Depth to Water

(A CLW##### in the
POD suffix indicates the
POD has been replaced
& no longer serves a
water right file.)

(R=POD has
been replaced,
O=orphaned,
C=the file is
closed)

(quarters are 1=NW 2=NE 3=SW 4=SE)

(quarters are smallest to largest) (NAD83 UTM in meters)

(In feet)

POD Number	POD Sub-Code	basin	County	Q 64	Q 16	Q 4	Sec	Tws	Rng	X	Y	Depth Well	Depth Water	Water Column
CP 00665			LE	1	4	24	20S	34E		639740	3603128*	698	270	428
CP 00750			LE	3	4	07	20S	34E		631639	3605834*	320		
CP 00799			LE	4	3	4	20S	34E		636666	3599364*	100		
CP 00800			LE	2	2	2	20S	34E		637007	3603994*	220		
CP 01204 POD1			LE	3	1	1	25	20S	34E	638755	3602250	370		

Average Depth to Water: 270 feet

Minimum Depth: 270 feet

Maximum Depth: 270 feet

Record Count: 5

PLSS Search:

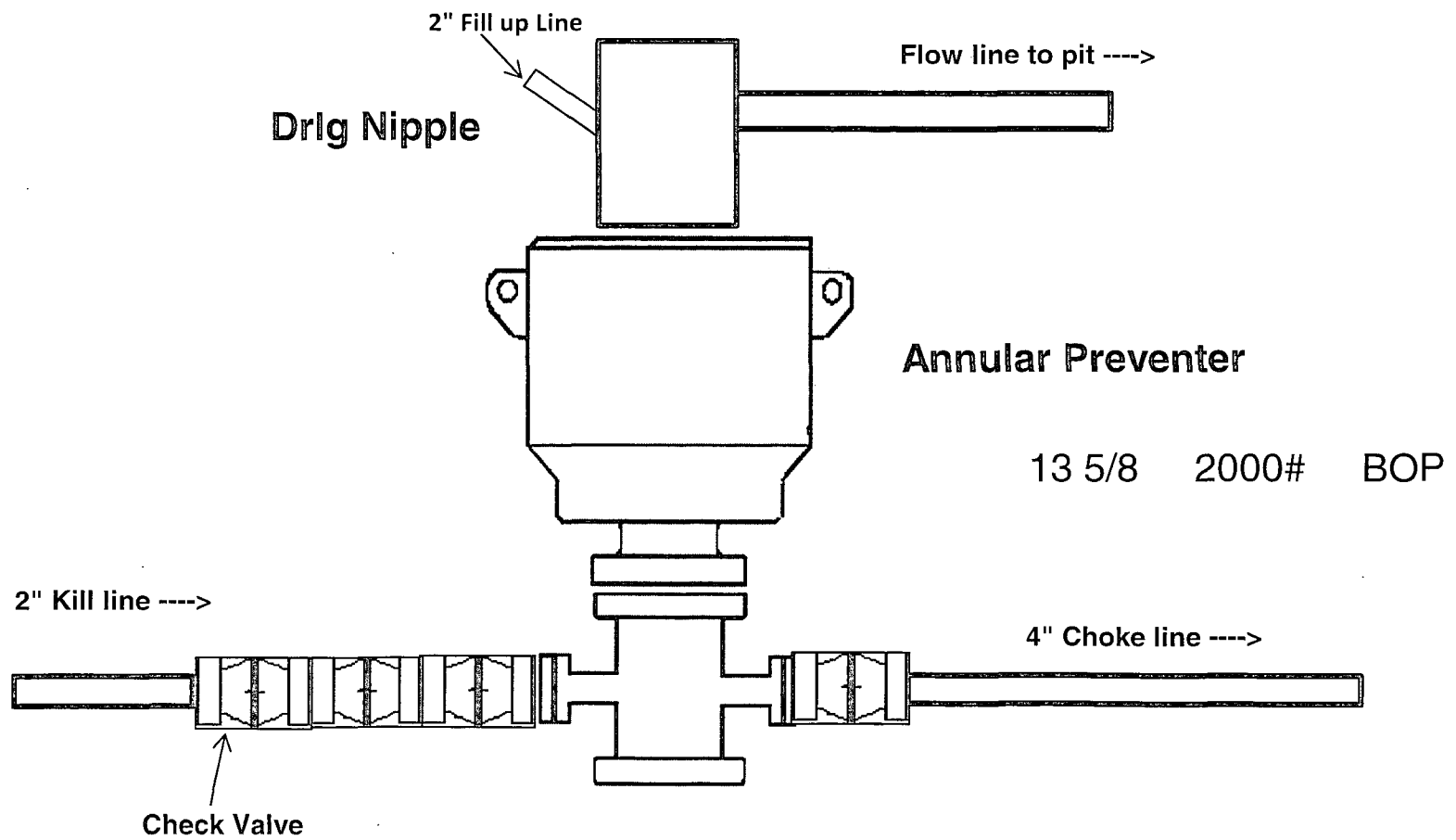
Township: 20S

Range: 34E

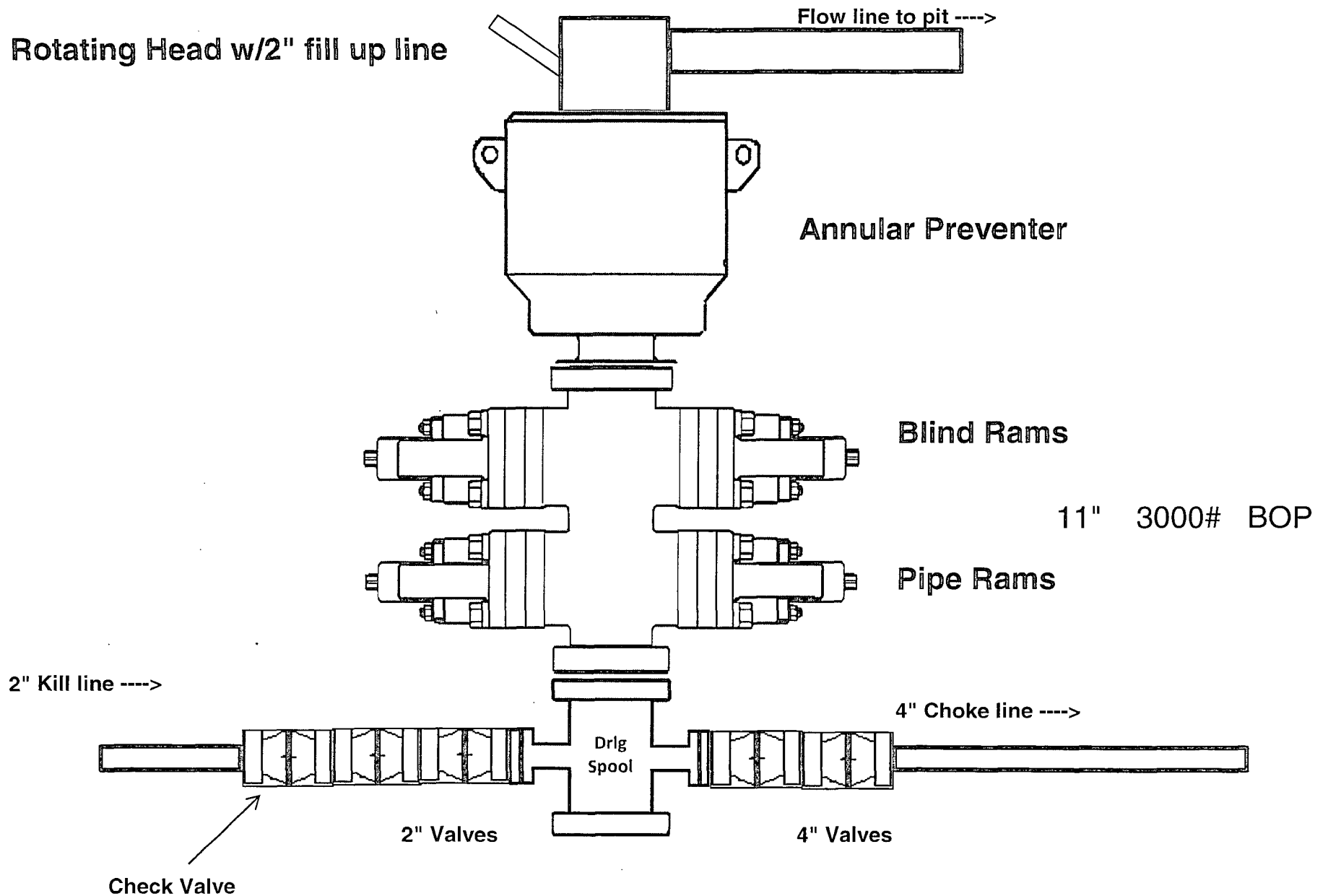
*UTM location was derived from PLSS - see Help

The data is furnished by the NMOSE/ISC and is accepted by the recipient with the expressed understanding that the OSE/ISC make no warranties, expressed or implied, concerning the accuracy, completeness, reliability, usability, or suitability for any particular purpose of the data.

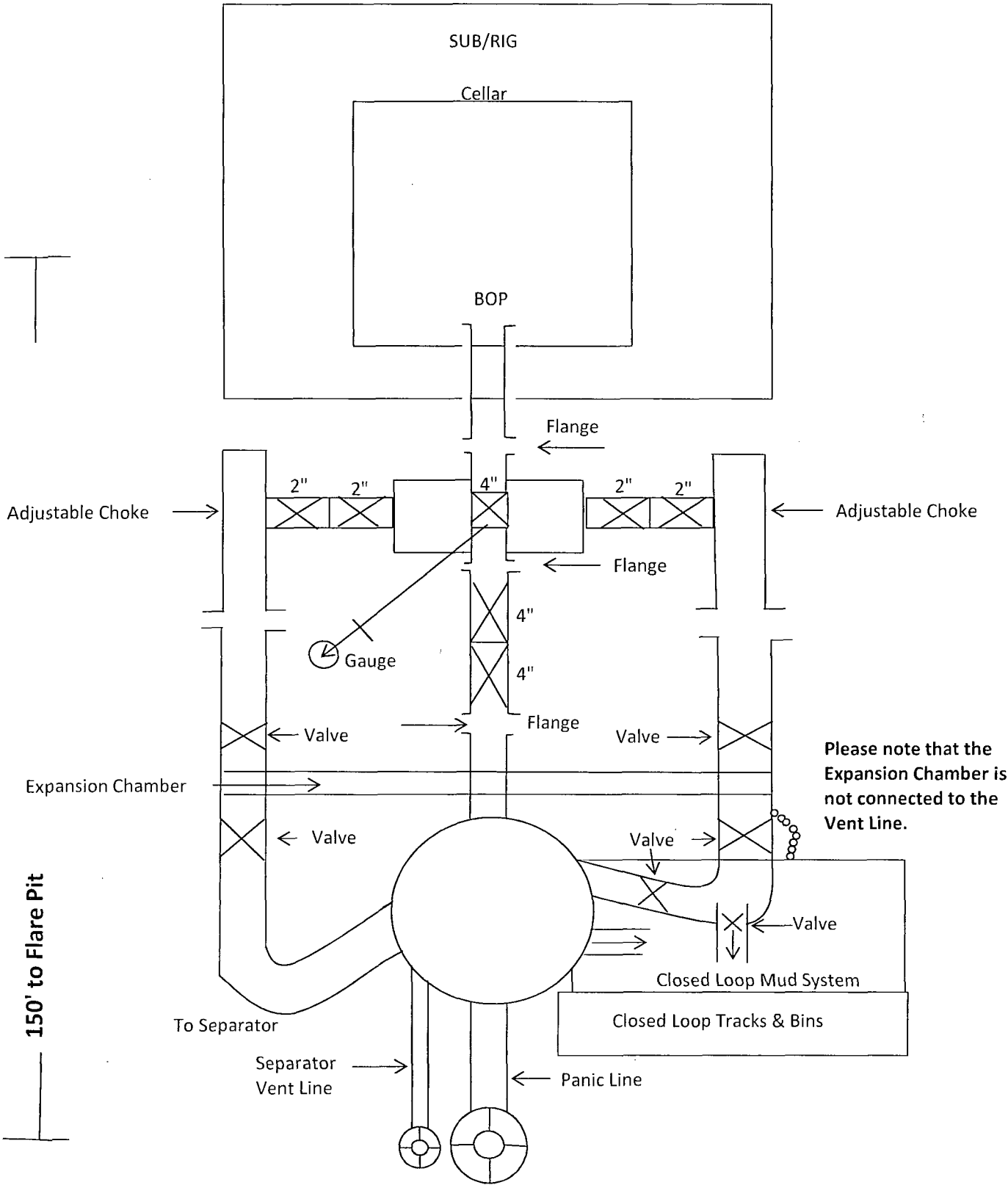
2,000 psi BOP Schematic



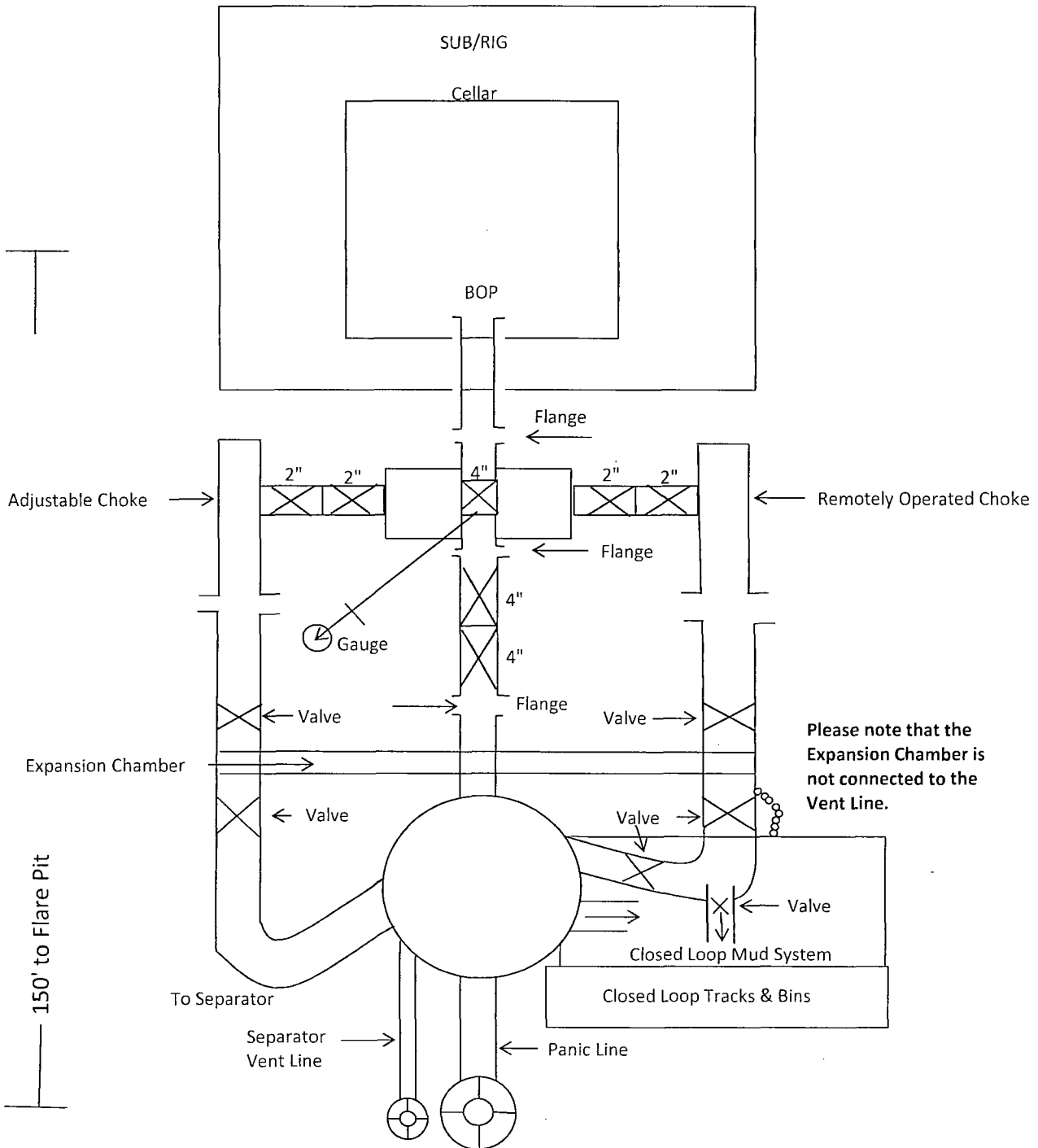
3,000 psi BOP Schematic



2M Choke Manifold Equipment



3M Choke Manifold Equipment



COG Operating LLC

Rig Plat & Closed Loop Equipment Diagram

Well pad will be 440' X 340'
with cellar in center of pad

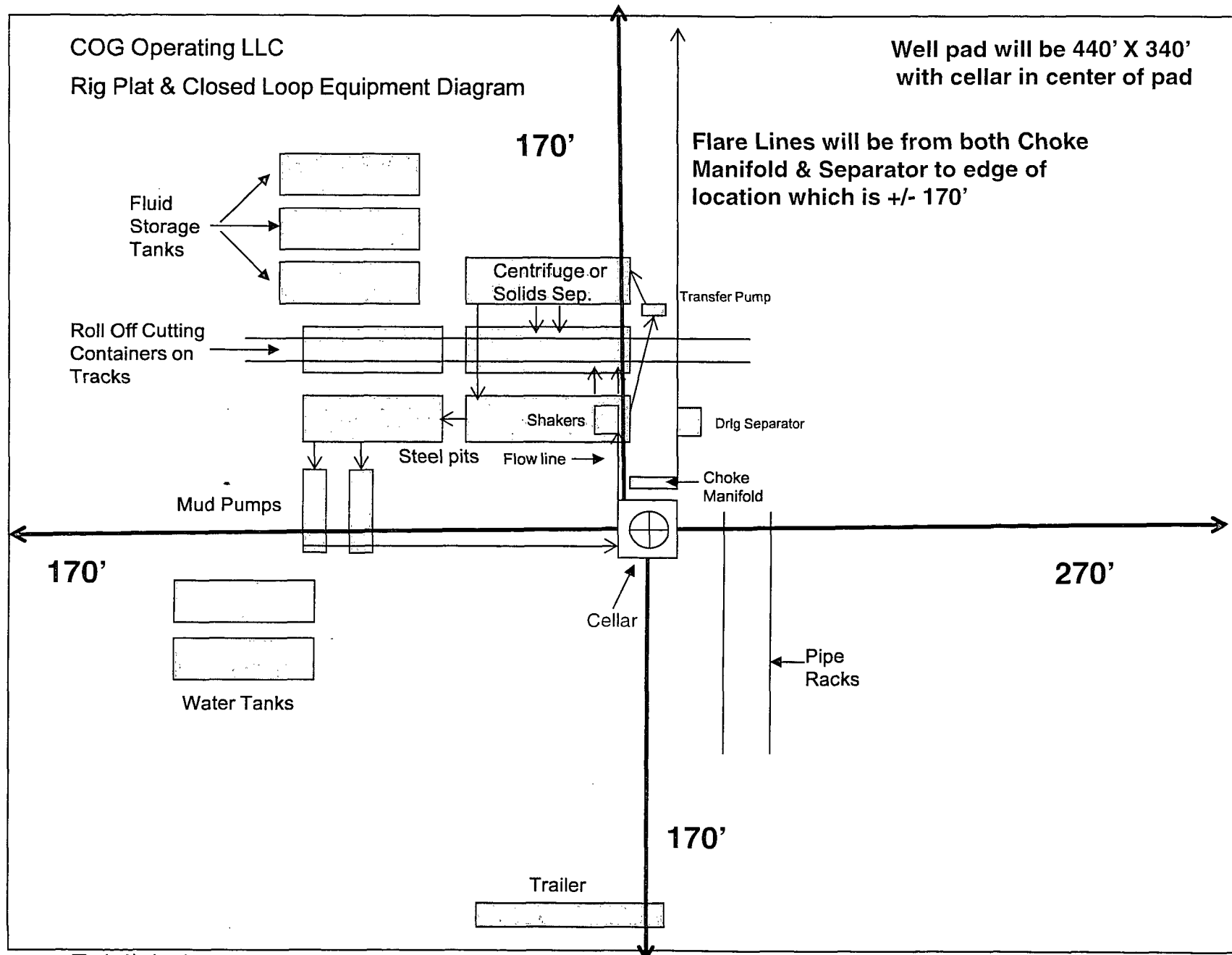


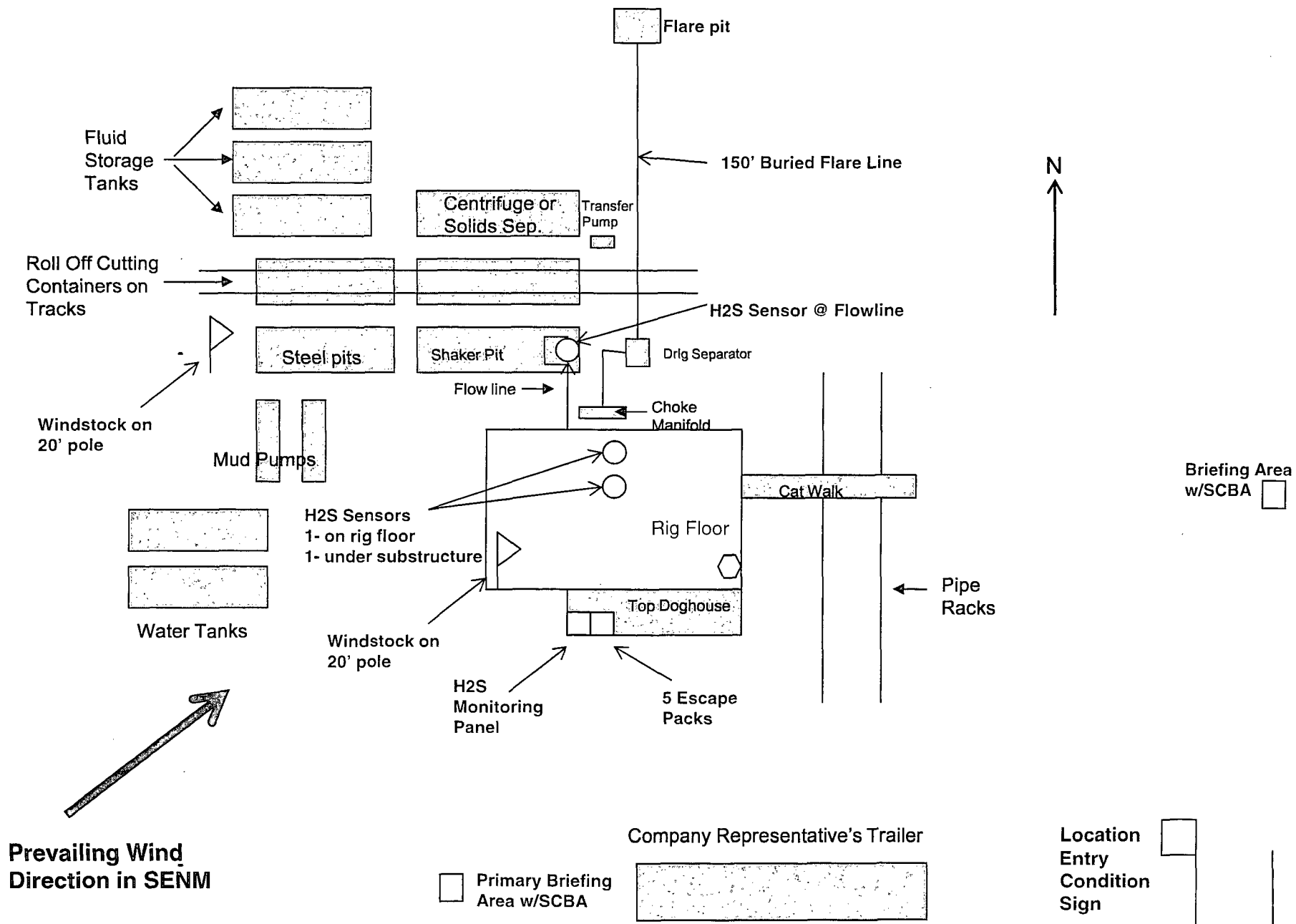
Exhibit 1

"I further certify that COG will comply with Rule 19.15.17
NMAC by using a Closed Loop System."

Secondary egress.

Well pad will be 440' X 340'

COG Operating LLC
H₂S Equipment Schematic
Terrain: Shinnery sand hills.



Surface Use Plan
COG Operating LLC
Black Pearl 1 Federal #4H
SHL: 190' FNL & 1160' FWL Lot #4
Section 1, T20S, R34E
BHL: 330' FSL & 660' FWL ULM
Section 1, T20S, R34E
Lea County, New Mexico

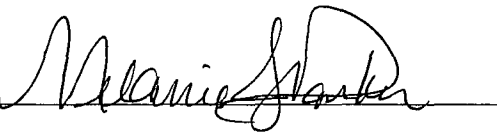
HOBBS OGD

DEC 02 2014

RECEIVED

OPERATOR CERTIFICATION

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 4th day of June, 2014.

Signed: 

Printed Name: Melanie J. Parker

Position: Regulatory Coordinator

Address: 2208 W. Main Street, Artesia, NM 88210

Telephone: (575) 748-6940

Field Representative (if not above signatory): Rand French

E-mail: mparker@concho.com