ATS-14-818

Form 3160-3
(March 2012)

OCD Hobbs

HOBBS OCD

DEC 02 2014

RECEIVED

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

UNORTHODOX LOCATION

5. Lease Serial No. NMNM128366

6. If Indian, Allotee or Tribe Name

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. (313919) Black Pearl 1 Federal #3H

2. Name of Operator COG Operating LLC. (229137)

9. API Well No. 30-025-42294

3a. Address 2208 West Main Street, Artesia, NM 88210

3b. Phone No. *(include area code)* 575-748-6940

10. Field and Pool, or Exploratory Lea; Bone Spring (37570)

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

At surface 190' FNL & 1260' FWL Lot #4 (NWNW) SHL Section 1-T20S-R34E

At proposed prod. Zone 330' FSL & 1980' FWL Unit Letter N (SESW) BHL Section 1-T20S-R34E

11. Sec., T.R.M. or Blk and Survey or Area Section 1 - T20S - R34E

14. Distance in miles and direction from nearest town or post office* Approximately 20 miles from Eunice

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)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
190'	602.04	160.38
18. Distance from location* to nearest well, drilling, completed, applied for, on this lease, ft.	**19. Proposed Depth**	**20. BLM/BIA Bond No. on file**
SHL: 100' (Black Pearl #4H) BHL: 3258'	TVD: 10,940' MD: 15,535'	NMB000740 &NMB00215
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	**22. Approximate date work will start***	**23. Estimated duration**
3695.4' GL	7/1/2014	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)*	Date
Mayte Reyes	Mayte Reyes	5-14-2014

Title: Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
Steve Caffey		NOV 21 2014
Title	**Office**	
FIELD MANAGER	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 theron.

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)

KZ 12/02/14

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 3H
SHL: 190' FNL & 1260' FWL of Section 1
BHL: 330' FSL & 1980' FWL of Section 1
Section 1 T20S 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	~270'	
Rustler	1,792'	
Top of Salt	1,892'	
Tansill	3,471'	
Yates	3,612'	
7 Rivers	4,012'	
Queen	4,592'	
Delaware	5,532'	Oil
Bone Springs	8,112'	Oil
FBSG	9,487'	
SBSG	10,012'	
TBSG	10,712'	
Wolfcamp	10,960'	
TD TVD	10,940'	
TD MD	15,535'	

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 ½" 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

See COA

Hole Size	Depths	Section	OD Casing	New/ Used	Wt	Collar	Grade	Collapse Design Factor	Burst Design Factor	Tension Design Factor
17 ½"	0' – ~~1825'~~ 1900'	Surface	13 3/8"	New	54.5#	STC	J-55	1.125	1.125	1.6
12 ¼"	0' – 3500'	Intrmd	9 5/8"	New	36#	LTC	J-55	1.125	1.125	1.6
8 ¾"- 7-7/8"	0' – 15,535'	Production Curve & Lateral	5 ½"	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.

- 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: 1000 sx Class C + 4% Gel + 2% $CaCl_2$
(13.5 ppg/ 1.75 ctft/sx / 9.2 gal/sk)
Tail: 250 sx Class C + 2% $CaCl_2$
(14.8 ppg / 1.34 cuft/sx/ 6.3 gal/sk)
**Calculated w/ 50% excess on OH volumes

b. 9 5/8" Intermediate:
Lead: 650 sx 35:65:6 C Blend
(12.7 ppg / 2 cuft/sx / 10.6 gal/sk)
Tail: 250 sx Class C
(14.8 ppg / 1.34 cuft/sx / 6.3 gal/sk)
**Calculated w/35% excess on OH volumes

c. 5 ½" Production:
Lead: 1100 sx 50:50:10 H Blend
(11.9 ppg / 2.51 cuft/sx / 14.1 gal/sk)
Tail: 1050 sx 50:50:2 H +Salt+GasStop +CFR-3
(14.4 ppg /1.24 cuft/sx / 6.4 gal/sk)
**Calculated w/35% excess on OH volumes

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

5. Pressure Control:

Nipple up on 13 3/8 with annular preventer tested to 2000 psi 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. A remotely operated choke will be installed before drilling out intermediate shoe. If H2S is monitored with 100 ppm in the gas stream while drilling intermediate, we will shut in and install a remote operated choke.

6. Estimated BHP & BHT:

Lateral TD = 5,120 psi
Lateral TD= 163° 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' – ~~1825'~~ 1900'	Fresh Water	8.4 – 8.6	29	N.C.
~~1825'~~ – 3,500'	Brine	10-10.2	29	N.C.
3,500' – 15,535'	Cut Brine	8.8 – 9.2	29	N.C.

See COA

- 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 ½" 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 ½" 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
#3H

OH

Plan: Design #1

Standard Planning Report

22 April, 2014

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #3H
Company:	COG Operating LLC	**TVD Reference:**	WELL (copy) @ 3712.4usft (Original Well Elev)
Project:	Lea County, NM	**MD Reference:**	WELL (copy) @ 3712.4usft (Original Well Elev)
Site:	Black Pearl 1 Federal	**North Reference:**	Grid
Well:	#3H	**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:		**Northing:**	586,220.00 usft	**Latitude:**	32° 36' 32.078 N
From:	Map	**Easting:**	754,185.00 usft	**Longitude:**	103° 30' 28.361 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.44 °

Well #3H

Well Position	**+N/-S**	-30.8 usft	**Northing:**	586,189.20 usft	**Latitude:**	32° 36' 32.005 N
	+E/-W	-3,032.0 usft	**Easting:**	751,153.00 usft	**Longitude:**	103° 31' 3.808 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**		**Ground Level:**	3,695.4 usft

Wellbore OH

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

Design Design #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	171.14

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	177.99	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,000.0	0.00	177.99	4,000.0	0.0	0.0	0.00	0.00	0.00	177.99	
4,500.0	5.00	90.00	4,499.4	0.0	21.8	1.00	1.00	0.00	90.00	
10,449.0	5.00	90.00	10,425.7	0.0	540.3	0.00	0.00	0.00	0.00	
11,193.2	89.47	177.99	10,900.0	-471.4	597.9	12.00	11.35	11.82	88.04	
15,535.0	89.47	177.99	10,940.2	-4,810.3	750.2	0.00	0.00	0.00	0.00	PBHL(BP#3)

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Project:	Lea County, NM	**MD Reference:**	WELL (copy) @ 3712.4usft (Original Well Elev)
Site:	Black Pearl 1 Federal	**North Reference:**	Grid
Well:	#3H	**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	177.99	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	177.99	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	177.99	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	177.99	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	177.99	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	177.99	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	177.99	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	177.99	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	177.99	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	177.99	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	177.99	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	177.99	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	177.99	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	177.99	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	177.99	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	177.99	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	177.99	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	177.99	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	177.99	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	177.99	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	177.99	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	177.99	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	177.99	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	177.99	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	177.99	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	177.99	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	177.99	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	177.99	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	177.99	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	177.99	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	177.99	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	177.99	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	177.99	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	177.99	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	177.99	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	177.99	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	177.99	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	177.99	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	177.99	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	177.99	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	177.99	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,001.1	0.01	90.00	4,001.1	0.0	0.0	0.0	1.00	1.00	0.00
Start Build 1.00									
4,100.0	1.00	90.00	4,100.0	0.0	0.9	0.1	1.00	1.00	0.00
4,200.0	2.00	90.00	4,200.0	0.0	3.5	0.5	1.00	1.00	0.00
4,300.0	3.00	90.00	4,299.9	0.0	7.9	1.2	1.00	1.00	0.00
4,400.0	4.00	90.00	4,399.7	0.0	14.0	2.2	1.00	1.00	0.00
4,500.0	5.00	90.00	4,499.4	0.0	21.8	3.4	1.00	1.00	0.00
4,501.1	5.00	90.00	4,500.5	0.0	21.9	3.4	0.00	0.00	0.00
Start 6035.3 hold at 4500.0 MD									
4,600.0	5.00	90.00	4,599.0	0.0	30.5	4.7	0.00	0.00	0.00
4,700.0	5.00	90.00	4,698.6	0.0	39.2	6.0	0.00	0.00	0.00

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Site:	Black Pearl 1 Federal	**North Reference:**	Grid
Well:	#3H	**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)
4,800.0	5.00	90.00	4,798.2	0.0	47.9	7.4	0.00	0.00	0.00
4,900.0	5.00	90.00	4,897.8	0.0	56.7	8.7	0.00	0.00	0.00
5,000.0	5.00	90.00	4,997.5	0.0	65.4	10.1	0.00	0.00	0.00
5,100.0	5.00	90.00	5,097.1	0.0	74.1	11.4	0.00	0.00	0.00
5,200.0	5.00	90.00	5,196.7	0.0	82.8	12.8	0.00	0.00	0.00
5,300.0	5.00	90.00	5,296.3	0.0	91.5	14.1	0.00	0.00	0.00
5,400.0	5.00	90.00	5,395.9	0.0	100.2	15.4	0.00	0.00	0.00
5,500.0	5.00	90.00	5,495.6	0.0	109.0	16.8	0.00	0.00	0.00
5,600.0	5.00	90.00	5,595.2	0.0	117.7	18.1	0.00	0.00	0.00
5,700.0	5.00	90.00	5,694.8	0.0	126.4	19.5	0.00	0.00	0.00
5,800.0	5.00	90.00	5,794.4	0.0	135.1	20.8	0.00	0.00	0.00
5,900.0	5.00	90.00	5,894.0	0.0	143.8	22.2	0.00	0.00	0.00
6,000.0	5.00	90.00	5,993.7	0.0	152.5	23.5	0.00	0.00	0.00
6,100.0	5.00	90.00	6,093.3	0.0	161.3	24.8	0.00	0.00	0.00
6,200.0	5.00	90.00	6,192.9	0.0	170.0	26.2	0.00	0.00	0.00
6,300.0	5.00	90.00	6,292.5	0.0	178.7	27.5	0.00	0.00	0.00
6,400.0	5.00	90.00	6,392.1	0.0	187.4	28.9	0.00	0.00	0.00
6,500.0	5.00	90.00	6,491.8	0.0	196.1	30.2	0.00	0.00	0.00
6,600.0	5.00	90.00	6,591.4	0.0	204.8	31.6	0.00	0.00	0.00
6,700.0	5.00	90.00	6,691.0	0.0	213.5	32.9	0.00	0.00	0.00
6,800.0	5.00	90.00	6,790.6	0.0	222.3	34.3	0.00	0.00	0.00
6,900.0	5.00	90.00	6,890.2	0.0	231.0	35.6	0.00	0.00	0.00
7,000.0	5.00	90.00	6,989.9	0.0	239.7	36.9	0.00	0.00	0.00
7,100.0	5.00	90.00	7,089.5	0.0	248.4	38.3	0.00	0.00	0.00
7,200.0	5.00	90.00	7,189.1	0.0	257.1	39.6	0.00	0.00	0.00
7,300.0	5.00	90.00	7,288.7	0.0	265.8	41.0	0.00	0.00	0.00
7,400.0	5.00	90.00	7,388.3	0.0	274.6	42.3	0.00	0.00	0.00
7,500.0	5.00	90.00	7,487.9	0.0	283.3	43.7	0.00	0.00	0.00
7,600.0	5.00	90.00	7,587.6	0.0	292.0	45.0	0.00	0.00	0.00
7,700.0	5.00	90.00	7,687.2	0.0	300.7	46.3	0.00	0.00	0.00
7,800.0	5.00	90.00	7,786.8	0.0	309.4	47.7	0.00	0.00	0.00
7,900.0	5.00	90.00	7,886.4	0.0	318.1	49.0	0.00	0.00	0.00
8,000.0	5.00	90.00	7,986.0	0.0	326.8	50.4	0.00	0.00	0.00
8,100.0	5.00	90.00	8,085.7	0.0	335.6	51.7	0.00	0.00	0.00
8,200.0	5.00	90.00	8,185.3	0.0	344.3	53.1	0.00	0.00	0.00
8,300.0	5.00	90.00	8,284.9	0.0	353.0	54.4	0.00	0.00	0.00
8,400.0	5.00	90.00	8,384.5	0.0	361.7	55.7	0.00	0.00	0.00
8,500.0	5.00	90.00	8,484.1	0.0	370.4	57.1	0.00	0.00	0.00
8,600.0	5.00	90.00	8,583.8	0.0	379.1	58.4	0.00	0.00	0.00
8,700.0	5.00	90.00	8,683.4	0.0	387.9	59.8	0.00	0.00	0.00
8,800.0	5.00	90.00	8,783.0	0.0	396.6	61.1	0.00	0.00	0.00
8,900.0	5.00	90.00	8,882.6	0.0	405.3	62.5	0.00	0.00	0.00
9,000.0	5.00	90.00	8,982.2	0.0	414.0	63.8	0.00	0.00	0.00
9,100.0	5.00	90.00	9,081.9	0.0	422.7	65.1	0.00	0.00	0.00
9,200.0	5.00	90.00	9,181.5	0.0	431.4	66.5	0.00	0.00	0.00
9,300.0	5.00	90.00	9,281.1	0.0	440.2	67.8	0.00	0.00	0.00
9,400.0	5.00	90.00	9,380.7	0.0	448.9	69.2	0.00	0.00	0.00
9,500.0	5.00	90.00	9,480.3	0.0	457.6	70.5	0.00	0.00	0.00
9,600.0	5.00	90.00	9,580.0	0.0	466.3	71.9	0.00	0.00	0.00
9,700.0	5.00	90.00	9,679.6	0.0	475.0	73.2	0.00	0.00	0.00
9,800.0	5.00	90.00	9,779.2	0.0	483.7	74.5	0.00	0.00	0.00
9,900.0	5.00	90.00	9,878.8	0.0	492.4	75.9	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #3H
Company:	COG Operating LLC	**TVD Reference:**	WELL (copy) @ 3712.4usft (Original Well Elev)
Project:	Lea County, NM	**MD Reference:**	WELL (copy) @ 3712.4usft (Original Well Elev)
Site:	Black Pearl 1 Federal	**North Reference:**	Grid
Well:	#3H	**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)
10,000.0	5.00	90.00	9,978.4	0.0	501.2	77.2	0.00	0.00	0.00
10,100.0	5.00	90.00	10,078.1	0.0	509.9	78.6	0.00	0.00	0.00
10,200.0	5.00	90.00	10,177.7	0.0	518.6	79.9	0.00	0.00	0.00
10,300.0	5.00	90.00	10,277.3	0.0	527.3	81.3	0.00	0.00	0.00
10,400.0	5.00	90.00	10,376.9	0.0	536.0	82.6	0.00	0.00	0.00
10,449.0	5.00	90.00	10,425.7	0.0	540.3	83.3	0.00	0.00	0.00
10,475.0	5.98	121.46	10,451.6	-0.7	542.6	84.3	12.00	3.77	121.02
10,500.0	8.03	139.72	10,476.4	-2.7	544.8	86.6	12.00	8.19	73.02
10,525.0	10.54	150.00	10,501.1	-6.0	547.1	90.3	12.00	10.04	41.12
10,536.4	11.76	153.20	10,512.3	-8.0	548.1	92.3	12.00	10.71	28.05
KOP - 10535.3 'MD, 5.00° INC, 270.00° AZI									
10,550.0	13.25	156.24	10,525.6	-10.6	549.4	95.2	12.00	10.98	22.38
10,575.0	16.07	160.36	10,549.7	-16.5	551.7	101.3	12.00	11.26	16.48
10,600.0	18.94	163.27	10,573.6	-23.7	554.0	108.8	12.00	11.48	11.64
10,625.0	21.84	165.44	10,597.0	-32.0	556.4	117.4	12.00	11.62	8.65
10,650.0	24.77	167.11	10,620.0	-41.7	558.7	127.3	12.00	11.70	6.70
10,675.0	27.71	168.45	10,642.4	-52.5	561.0	138.3	12.00	11.76	5.36
10,700.0	30.66	169.55	10,664.2	-64.4	563.4	150.5	12.00	11.80	4.41
10,725.0	33.62	170.48	10,685.4	-77.5	565.7	163.8	12.00	11.84	3.70
10,750.0	36.58	171.27	10,705.8	-91.7	567.9	178.1	12.00	11.86	3.17
10,775.0	39.55	171.96	10,725.5	-107.0	570.2	193.5	12.00	11.88	2.75
10,800.0	42.52	172.57	10,744.4	-123.2	572.4	210.0	12.00	11.89	2.43
10,825.0	45.50	173.11	10,762.4	-140.5	574.6	227.3	12.00	11.90	2.17
10,850.0	48.48	173.60	10,779.4	-158.6	576.7	245.6	12.00	11.91	1.96
10,875.0	51.46	174.04	10,795.5	-177.6	578.7	264.7	12.00	11.92	1.78
10,900.0	54.44	174.45	10,810.5	-197.5	580.7	284.6	12.00	11.93	1.64
10,925.0	57.42	174.83	10,824.6	-218.1	582.7	305.3	12.00	11.93	1.52
10,950.0	60.41	175.19	10,837.5	-239.4	584.5	326.6	12.00	11.94	1.43
10,975.0	63.39	175.53	10,849.2	-261.4	586.3	348.6	12.00	11.94	1.34
11,000.0	66.38	175.84	10,859.8	-284.0	588.0	371.2	12.00	11.94	1.28
11,025.0	69.36	176.15	10,869.3	-307.1	589.6	394.3	12.00	11.95	1.22
11,050.0	72.35	176.44	10,877.5	-330.6	591.1	417.8	12.00	11.95	1.17
11,075.0	75.34	176.73	10,884.4	-354.6	592.6	441.7	12.00	11.95	1.13
11,100.0	78.33	177.00	10,890.1	-378.9	593.9	465.9	12.00	11.95	1.10
11,125.0	81.31	177.27	10,894.5	-403.5	595.1	490.4	12.00	11.95	1.08
11,150.0	84.30	177.54	10,897.7	-428.3	596.3	515.0	12.00	11.95	1.06
11,175.0	87.29	177.80	10,899.5	-453.2	597.3	539.8	12.00	11.95	1.05
11,193.2	89.47	177.99	10,900.0	-471.4	597.9	557.9	12.00	11.95	1.05
11,200.0	89.47	177.99	10,900.1	-478.1	598.2	564.6	0.00	0.00	0.00
11,285.1	89.47	177.99	10,900.9	-563.2	601.2	649.2	0.00	0.00	0.00
EOC- 11284.0 'MD, 90.13° INC, 183.14° AZI									
11,300.0	89.47	177.99	10,901.0	-578.1	601.7	663.9	0.00	0.00	0.00
11,400.0	89.47	177.99	10,901.9	-678.0	605.2	763.2	0.00	0.00	0.00
11,500.0	89.47	177.99	10,902.8	-778.0	608.7	862.5	0.00	0.00	0.00
11,600.0	89.47	177.99	10,903.8	-877.9	612.2	961.7	0.00	0.00	0.00
11,700.0	89.47	177.99	10,904.7	-977.8	615.7	1,061.0	0.00	0.00	0.00
11,800.0	89.47	177.99	10,905.6	-1,077.8	619.2	1,160.3	0.00	0.00	0.00
11,900.0	89.47	177.99	10,906.5	-1,177.7	622.7	1,259.6	0.00	0.00	0.00
12,000.0	89.47	177.99	10,907.5	-1,277.6	626.2	1,358.9	0.00	0.00	0.00
12,100.0	89.47	177.99	10,908.4	-1,377.6	629.8	1,458.1	0.00	0.00	0.00
12,200.0	89.47	177.99	10,909.3	-1,477.5	633.3	1,557.4	0.00	0.00	0.00
12,300.0	89.47	177.99	10,910.2	-1,577.4	636.8	1,656.7	0.00	0.00	0.00

Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Well #3H
Company:	COG Operating LLC	TVD Reference:	WELL (copy) @ 3712.4usft (Original Well Elev)
Project:	Lea County, NM	MD Reference:	WELL (copy) @ 3712.4usft (Original Well Elev)
Site:	Black Pearl 1 Federal	North Reference:	Grid
Well:	#3H	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)
12,400.0	89.47	177.99	10,911.2	-1,677.4	640.3	1,756.0	0.00	0.00	0.00
12,500.0	89.47	177.99	10,912.1	-1,777.3	643.8	1,855.3	0.00	0.00	0.00
12,600.0	89.47	177.99	10,913.0	-1,877.2	647.3	1,954.6	0.00	0.00	0.00
12,700.0	89.47	177.99	10,913.9	-1,977.2	650.8	2,053.8	0.00	0.00	0.00
12,800.0	89.47	177.99	10,914.9	-2,077.1	654.3	2,153.1	0.00	0.00	0.00
12,900.0	89.47	177.99	10,915.8	-2,177.0	657.8	2,252.4	0.00	0.00	0.00
13,000.0	89.47	177.99	10,916.7	-2,277.0	661.3	2,351.7	0.00	0.00	0.00
13,100.0	89.47	177.99	10,917.6	-2,376.9	664.8	2,451.0	0.00	0.00	0.00
13,200.0	89.47	177.99	10,918.6	-2,476.8	668.3	2,550.2	0.00	0.00	0.00
13,300.0	89.47	177.99	10,919.5	-2,576.8	671.8	2,649.5	0.00	0.00	0.00
13,400.0	89.47	177.99	10,920.4	-2,676.7	675.3	2,748.8	0.00	0.00	0.00
13,500.0	89.47	177.99	10,921.3	-2,776.6	678.9	2,848.1	0.00	0.00	0.00
13,600.0	89.47	177.99	10,922.3	-2,876.6	682.4	2,947.4	0.00	0.00	0.00
13,700.0	89.47	177.99	10,923.2	-2,976.5	685.9	3,046.6	0.00	0.00	0.00
13,800.0	89.47	177.99	10,924.1	-3,076.4	689.4	3,145.9	0.00	0.00	0.00
13,900.0	89.47	177.99	10,925.0	-3,176.4	692.9	3,245.2	0.00	0.00	0.00
14,000.0	89.47	177.99	10,926.0	-3,276.3	696.4	3,344.5	0.00	0.00	0.00
14,100.0	89.47	177.99	10,926.9	-3,376.2	699.9	3,443.8	0.00	0.00	0.00
14,200.0	89.47	177.99	10,927.8	-3,476.2	703.4	3,543.0	0.00	0.00	0.00
14,300.0	89.47	177.99	10,928.7	-3,576.1	706.9	3,642.3	0.00	0.00	0.00
14,400.0	89.47	177.99	10,929.7	-3,676.0	710.4	3,741.6	0.00	0.00	0.00
14,500.0	89.47	177.99	10,930.6	-3,776.0	713.9	3,840.9	0.00	0.00	0.00
14,600.0	89.47	177.99	10,931.5	-3,875.9	717.4	3,940.2	0.00	0.00	0.00
14,700.0	89.47	177.99	10,932.4	-3,975.8	720.9	4,039.5	0.00	0.00	0.00
14,800.0	89.47	177.99	10,933.4	-4,075.8	724.4	4,138.7	0.00	0.00	0.00
14,900.0	89.47	177.99	10,934.3	-4,175.7	728.0	4,238.0	0.00	0.00	0.00
15,000.0	89.47	177.99	10,935.2	-4,275.6	731.5	4,337.3	0.00	0.00	0.00
15,100.0	89.47	177.99	10,936.1	-4,375.6	735.0	4,436.6	0.00	0.00	0.00
15,200.0	89.47	177.99	10,937.1	-4,475.5	738.5	4,535.9	0.00	0.00	0.00
15,300.0	89.47	177.99	10,938.0	-4,575.5	742.0	4,635.1	0.00	0.00	0.00
15,400.0	89.47	177.99	10,938.9	-4,675.4	745.5	4,734.4	0.00	0.00	0.00
15,500.0	89.47	177.99	10,939.8	-4,775.3	749.0	4,833.7	0.00	0.00	0.00
15,535.0	89.47	177.99	10,940.2	-4,810.3	750.2	4,868.5	0.00	0.00	0.00
PBHL(BP#3) - PBHL(BP#2H)									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL(BP#3)	0.00	0.00	10,940.0	-4,810.3	750.3	581,378.90	751,903.30	32° 35' 44.351 N	103° 30' 55.469 W
- plan misses target center by 0.2usft at 15535.0usft MD (10940.2 TVD, -4810.3 N, 750.2 E)									
- Point									
PBHL(BP#2H)	0.00	0.00	10,976.1	-4,799.3	2,077.4	581,389.90	753,230.40	32° 35' 44.359 N	103° 30' 39.957 W
- plan misses target center by 1327.7usft at 15535.0usft MD (10940.2 TVD, -4810.3 N, 750.2 E)									
- Point									

Database:	EDM 5000.1 Single User Db	**Local Co-ordinate Reference:**	Well #3H
Company:	COG Operating LLC	**TVD Reference:**	WELL (copy) @ 3712.4usft (Original Well Elev)
Project:	Lea County, NM	**MD Reference:**	WELL (copy) @ 3712.4usft (Original Well Elev)
Site:	Black Pearl 1 Federal	**North Reference:**	Grid
Well:	#3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Design #1		

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	+E/-W (usft)	Comment
4,001.1	4,001.1	0.0	0.0	Start Build 1.00
4,501.1	4,500.5	0.0	-21.8	Start 6035.3 hold at 4500.0 MD
10,536.4	10,512.8	0.0	-547.8	KOP - 10535.3 'MD, 5.00° INC, 270.00° AZI
11,285.1	10,986.1	-475.5	-615.4	EOC- 11284.0 'MD, 90.13° INC, 183.14° AZI
15,645.3	10,977.4	-4,263.7	1,163.3	TD at 15644.2

CONCHO

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	
1	0.0	0.00	177.99	0.0	0.0	0.0	0.00	0.00	0.0	
2	4000.0	0.00	177.99	4000.0	0.0	0.0	0.00	177.99	0.0	
3	4500.0	5.00	90.00	4499.4	0.0	21.8	1.00	90.00	3.4	
4	10449.0	5.00	90.00	10425.7	0.0	540.3	0.00	0.00	83.3	
5	11193.2	89.47	177.99	10900.0	-471.4	597.9	12.00	88.04	557.9	
6	15535.0	89.47	177.99	10940.2	-4810.3	750.2	0.00	0.00	4868.5	PBHL(BP#3)

:OG Operating LLC
ject: Lea County, NM
: Black Pearl 1 Federal
Well: #3H
Wellbore: OH
n: Design #1 (#3H/OH)

#3H

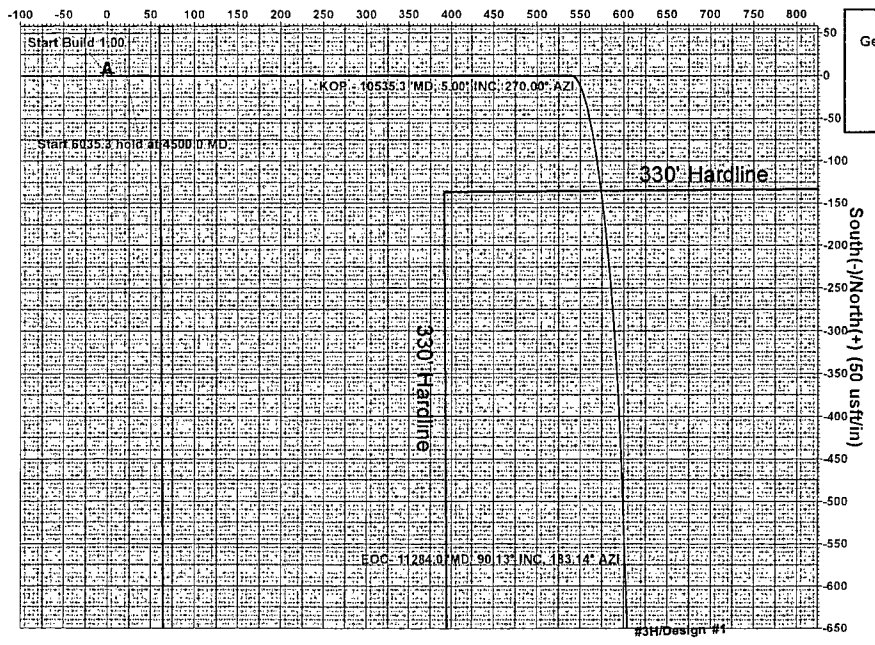
Ground Elevation:: 3695.4
RKB Elevation: WELL (copy) @ 3712.4usft (Original Well Elev)
Rig Name: Original Well Elev

Northing	Easting	Latitude	Longitude
586189.20	751153.00	32° 36' 32.005 N	103° 31' 3.808 W

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

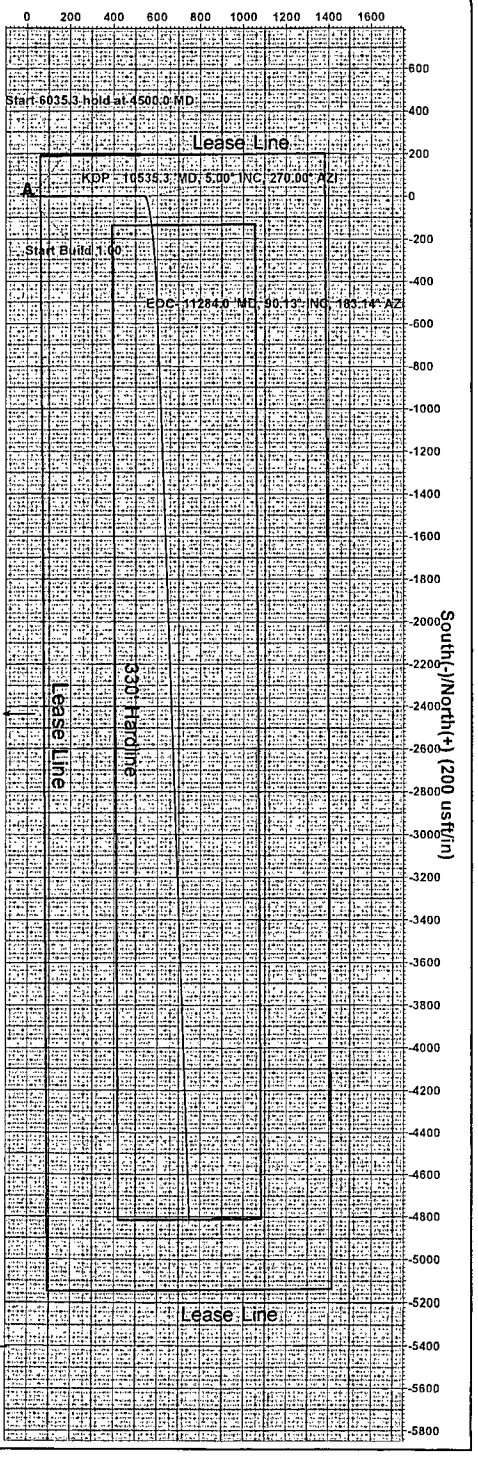
Magnetic Field
Strength: 48565.9snT
Dip Angle: 60.48°
Date: 4/22/2014
Model: IGRF2010

West(-)/East(+) (50 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

West(-)/East(+) (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

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

Section 001 Total: 642.040

MTR Total Exluding Survey Notes C/D/R and Sub Surf = Y 642.040

Grand 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

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-basin Code	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	34	20S	34E	636666	3599364*	100		
CP 00800		LE	2	2	2	22	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**

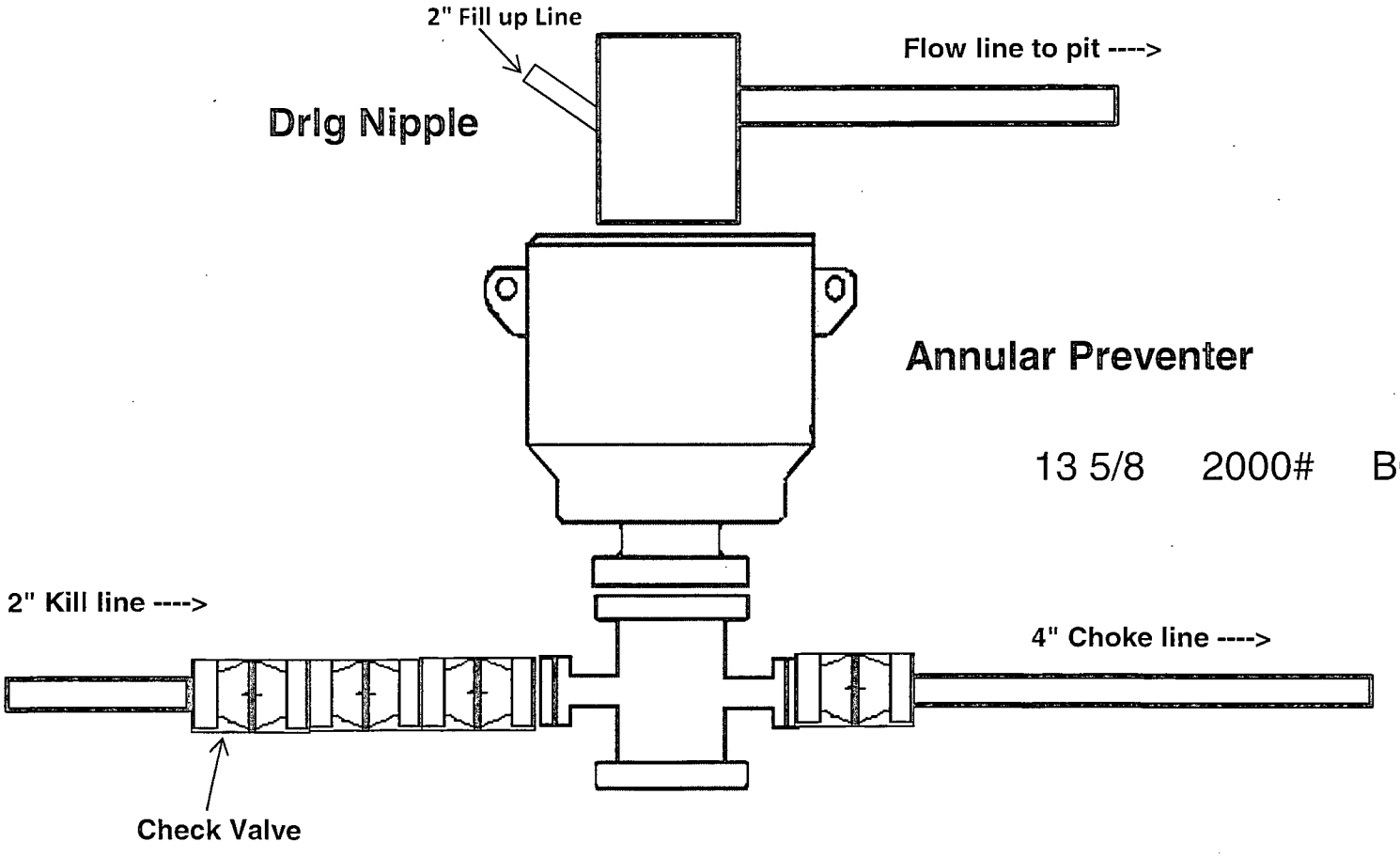
Record Count: 5

PLSS Search:

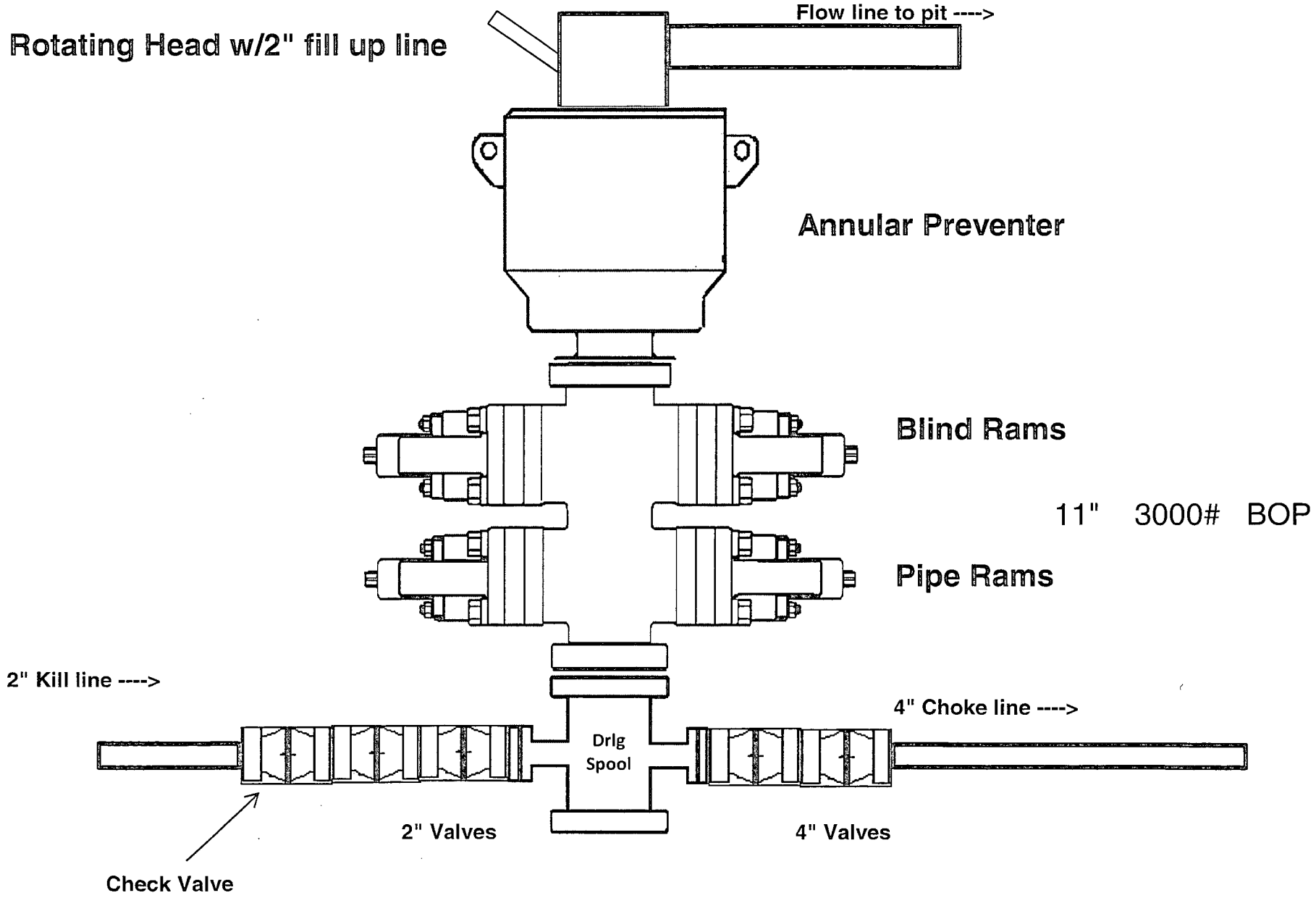
Township: 20S **Range:** 34E

***UTM location was derived from PLSS - see Help**

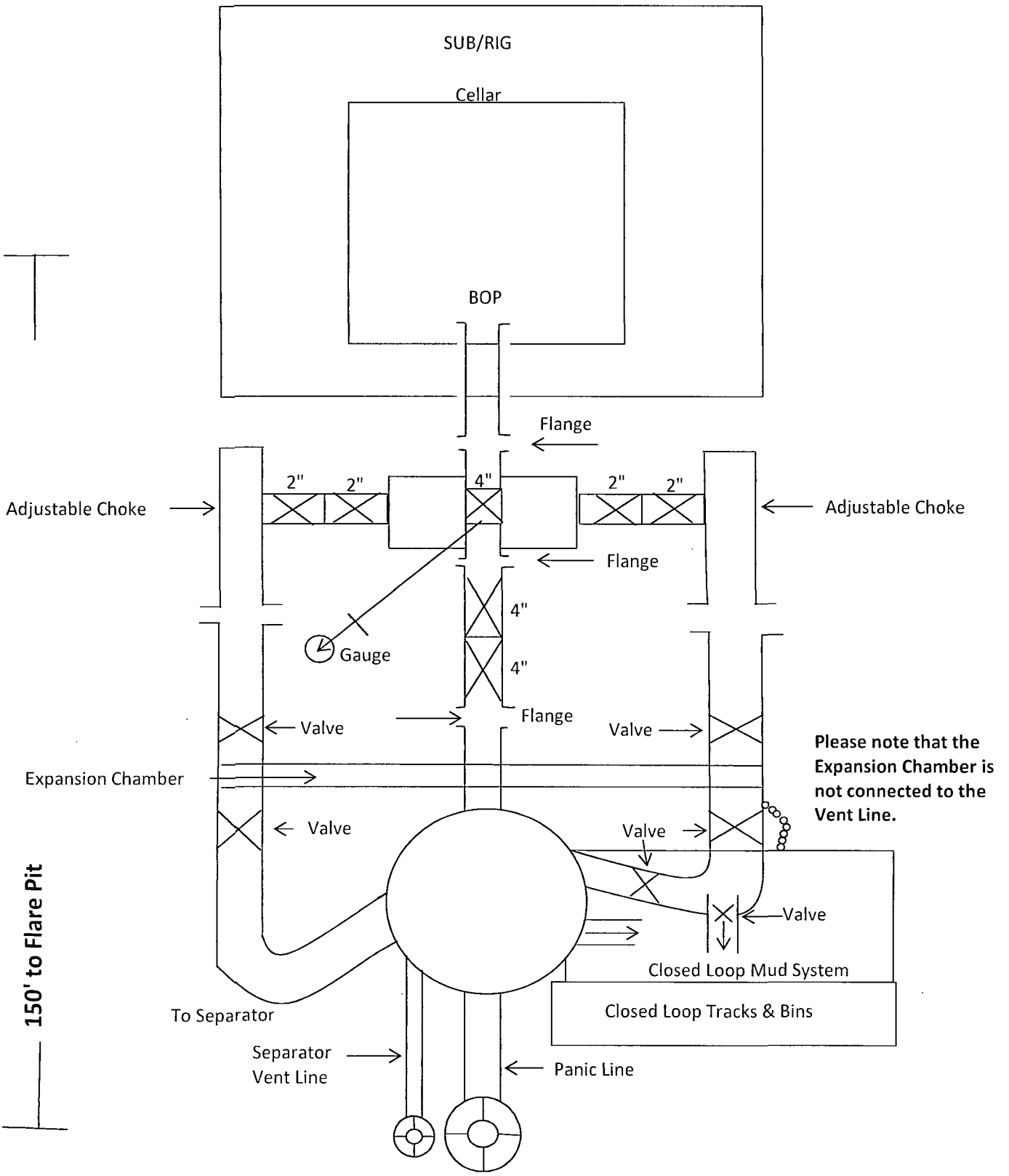
2,000 psi BOP Schematic



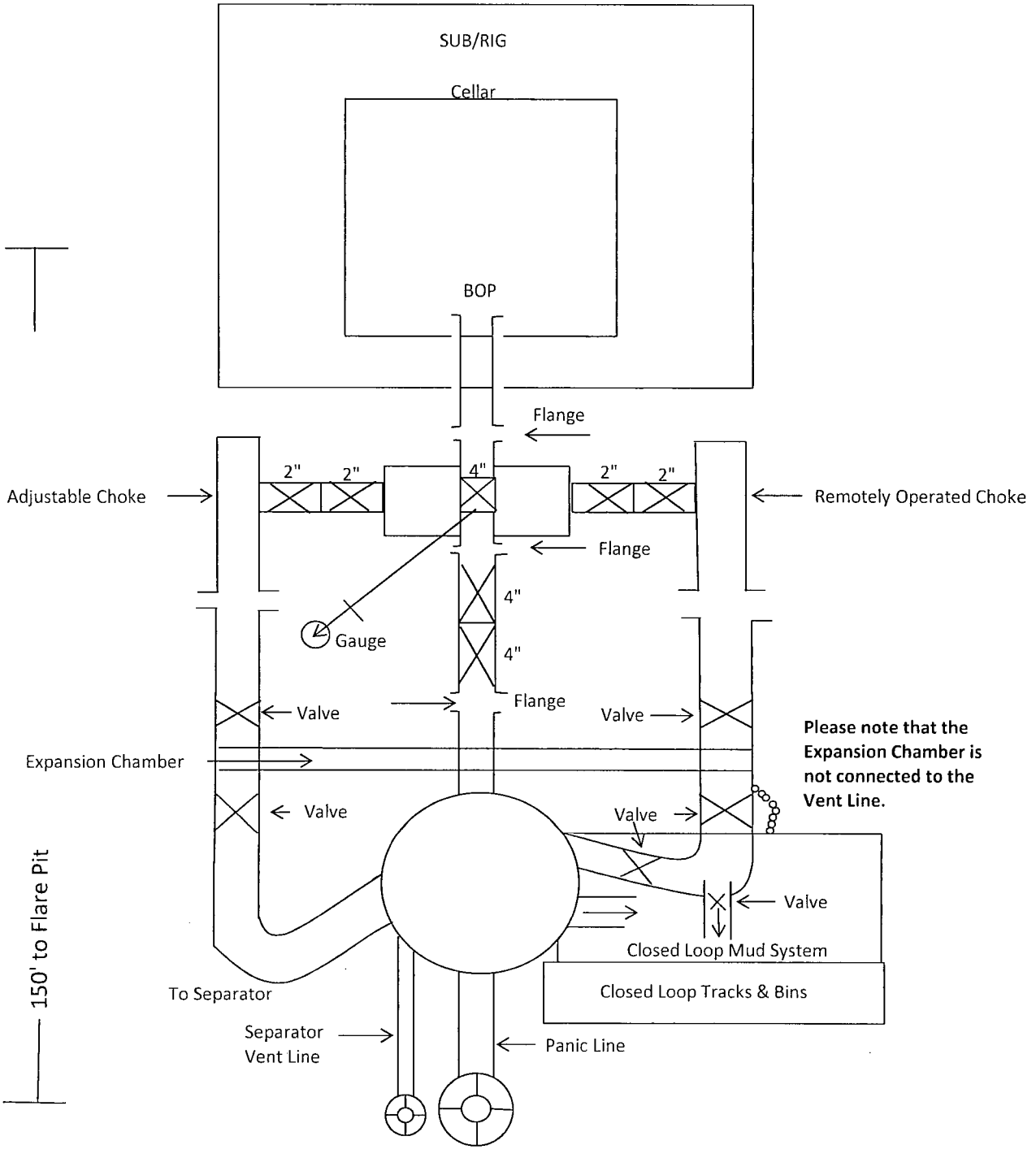
3,000 psi BOP Schematic



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

Flare Lines will be from both Choke Manifold & Separator to edge of location which is +/- 170'

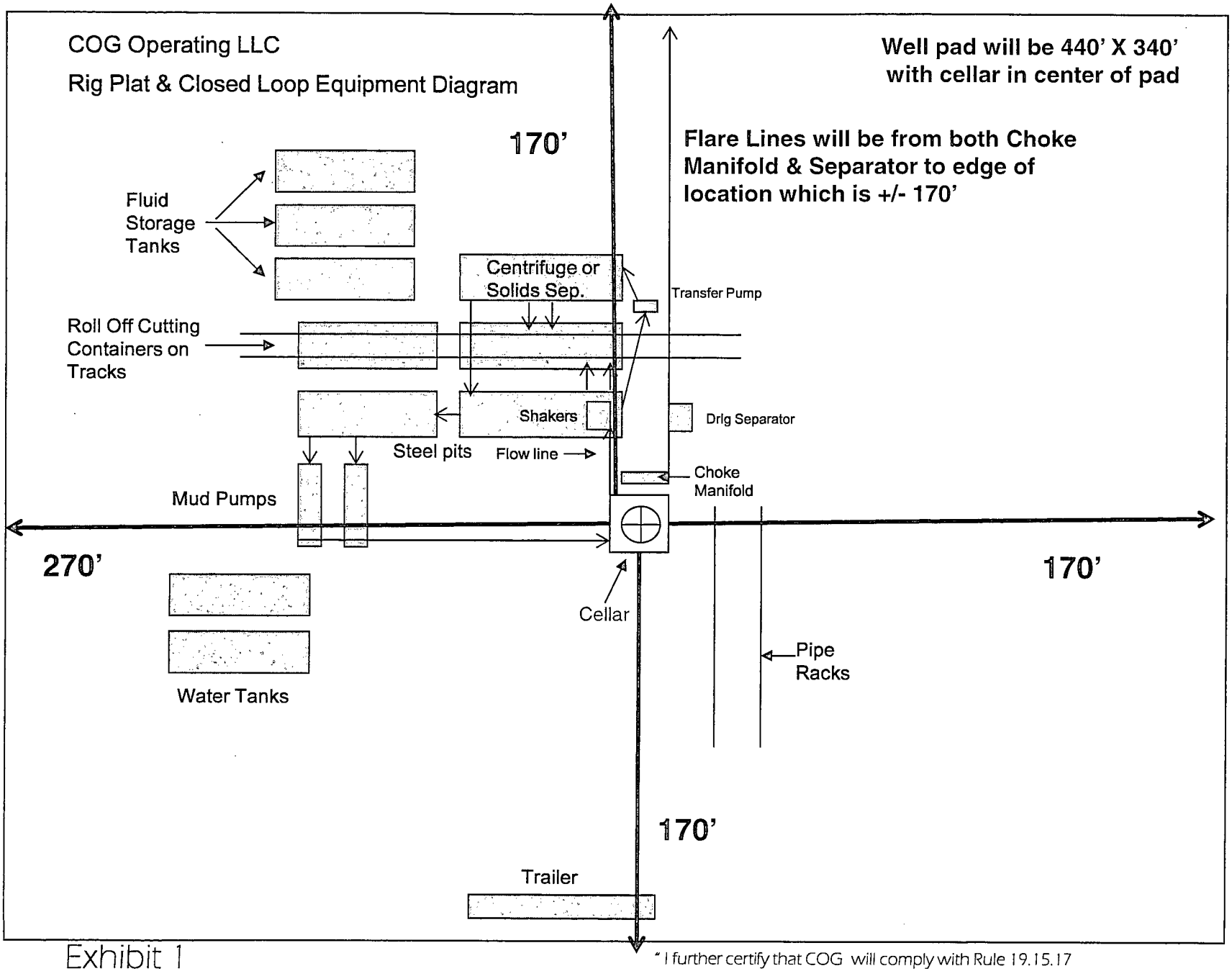


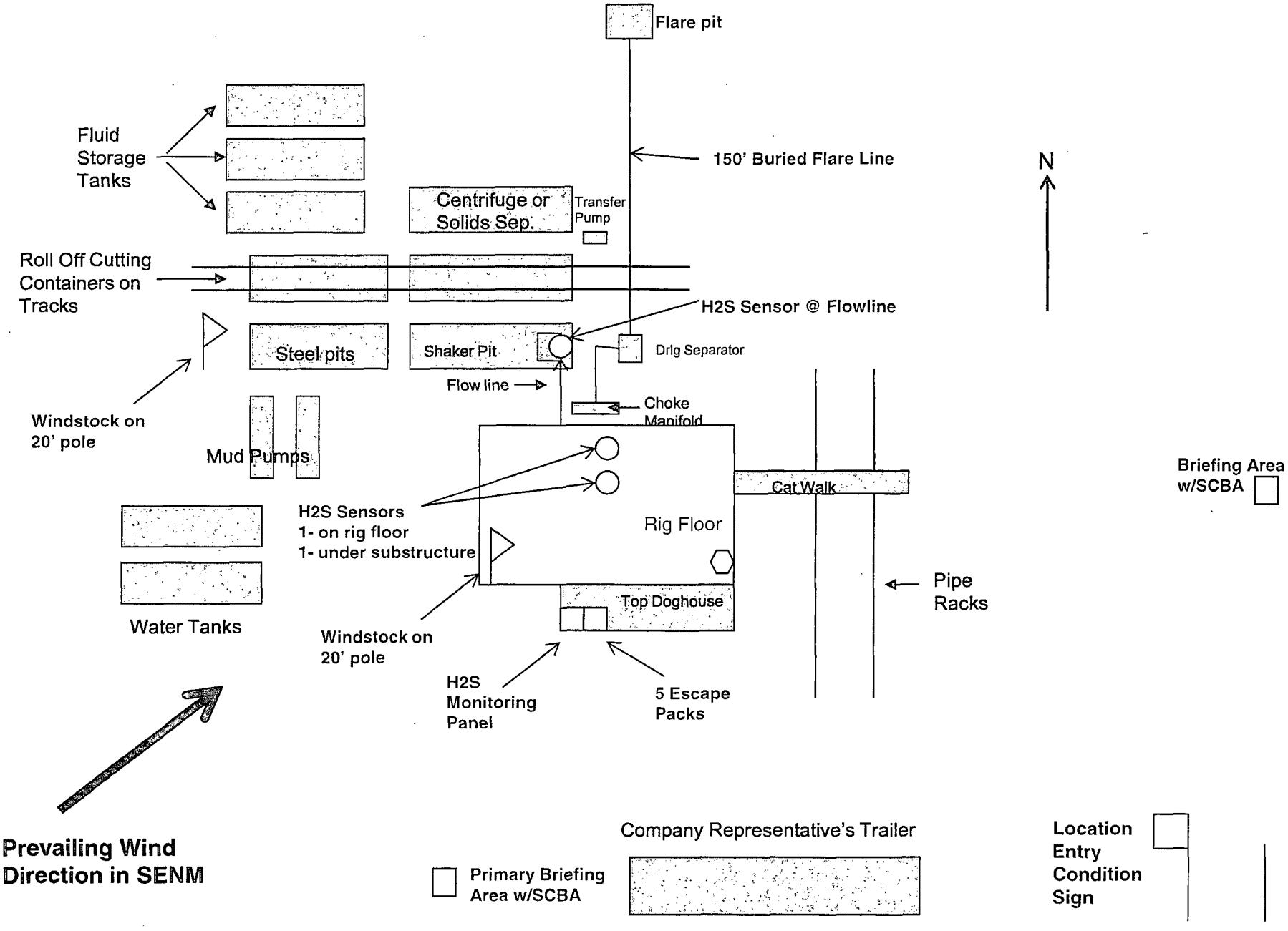
Exhibit 1

"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
H_2S Equipment Schematic
Terrain: Shinnery sand hills.



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 14th day of May, 2014.

Signed: Melanie Parker

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