ATS-11-171

OCD Artesia

Form 3160-3
(April 2004)

FORM APPROVED
OMB No 1004-0137
Expires March 31, 2007

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5 Lease Serial No.
NMLC - 029418 (b)

6. If Indian, Allotee or Tribe Name
N/A

1a. Type of work ☑ DRILL ☐ REENTER

7 If Unit or CA Agreement, Name and No
N/A

37516

1b Type of Well ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

8 Lease Name and Well No.
Tex Mack 11 Federal #21

2 Name of Operator
COG Operating LLC 229137

9 API Well No.
30-015- 39703

3a Address
550 W. Texas Ave., Suite 100
Midland, TX 79701

3b Phone No *(include area code)*
432-685-4384

10 Field and Pool, or Exploratory
Loco Hills; Glorieta-Yeso, East 97213 (97866)

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

At surface **SHL: 985' FSL & 2005' FEL, Unit O**

At proposed prod. zone **BHL: 330' FSL & 1650' FEL, Unit O**

11 Sec, T R M or Blk and Survey or Area
Sec 11 T17S R31E

14 Distance in miles and direction from nearest town or post office*
6 miles East of Loco Hills, NM

12 County or Parish
EDDY

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
985'	**1200**	**40**
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft **96' 192'**	19 Proposed Depth **TVD: 7000' MD: 7046'**	20 BLM/BIA Bond No. on file **NMB000740; NMB000215**
21 Elevations (Show whether DF, KDB, RT, GL, etc.) **3940' GR**	22 Approximate date work will start* **11/30/2011**	23 Estimated duration **15 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
Title **Permitting Tech**	**Kelly J. Holly**	**09/09/2011**

Approved by *(Signature)* **/s/ Don Peterson**	Name *(Printed/Typed)*	Date **NOV 16 2011**
Title **CARLSBAD FIELD OFFICE**	Office **FIELD MANAGER**	

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

(Instructions on page 2)

Roswell Controlled Water Basin

RECEIVED
NOV 18 2011
NMOCD ARTESIA

Approval Subject to General Requirements & Special Stipulations Attached

SEE ATTACHED FOR CONDITIONS OF APPROVAL

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Rustler	670'
Top of Salt	801'
Base of Salt	1771'
Yates	2006'
Seven Rivers	2332'
Queen	2952'
Grayburg	3392'
San Andres	3718'
Glorietta	5222'
Paddock	5285'
Blinebry	5688'
Tubb	6700'

3. Estimated Depths of Anticipated Fresh Water, Oil and Gas

Water Sand	150'	Fresh Water
Grayburg	3392'	Oil/Gas
San Andres	3718'	Oil/Gas
Glorieta	5222'	Oil/Gas
Paddock	5285'	Oil/Gas
Blinebry	5688'	Oil/Gas
Tubb	6700'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 695' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 8 5/8" casing to ~~1800'~~ and circulating cement, in a single or multi-stage job and/or with an ECP, back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them. This will be achieved by cementing, with a single or multi-stage job, the 5 1/2" production casing back 200' into the intermediate casing, (but calculated to surface) to be run at TD. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or the environment.

See COA

See COA

4. Casing Program

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	burst/collapse/tension
17 ½"	0-695'	13 3/8"	48#	H-40orJ-55	New	ST&C	8.71/3.724/14.91
11" 1950	0-~~1800'~~	8 5/8"	24or32#	J-55	New	ST&C	2.91/1.46/5.65
7 7/8"	0-T.D.	5 1/2"	15.5 or17#	J-55orL80	New	LT&C	1.71/1.574/2.20

See COA

5. Cement Program

13 3/8" Surface Casing: See COA Class C, 475 sx w/ 2% CaCl2, 0.25 pps CF, yield-1.32, back to surface 100% excess

8 5/8" Intermediate Casing:

11" Hole:

Single Stage: LEAD 350 sx 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, yield-2.45 + TAIL 200 sx Class C w/2% CaCl2, yield-1.32, back to surface. 145% excess

Multi-Stage: Stage 1: 350 sx Class C, w/2% CaCl2, yield - 1.32. 40% excess Stage 2: 200 sx Class C w/2% CaCl2, yield – 1.32, back to surface, 108% excess Multi stage tool to be set at approximately, depending on hole conditions, 745' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

See COA

5 1/2" Production Casing:

Single Stage: LEAD 500 sx 35:65:6 C:Poz:Gel w/ 5% Salt + 5 pps LCM + 0.2% SMS + 0.3% FL-52A + 0.125 pps CF, yield-2.05 + TAIL 400 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield-1.37, to 200' minimum tie back to intermediate casing. 44.4% open hole excess, cement calculated back to surface (no need for excess in casing overlap).

Multi-Stage: Stage 1: (Assumed TD of 6900') 500 sx 50:50:2, C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37, 9% excess; **this is a**

See COA

minimum volume and will be adjusted up after caliper is run. Stage 2: LEAD 450 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield - 1.37, + TAIL 250 sx Class C w/ 0.3% R-3 + 1.5% CD-32, yield – 1.02 152% open hole excess, cement calculated back to surface (no need for excess in casing overlap). Multi stage tool to be set at approximately, depending on hole conditions, 3000'. Cement volumes will be adjusted proportionately for depth changes of multi stage tool, assumption for tool is water flow.

6. Minimum Specifications for Pressure Control

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 psi WP) preventer, and in some cases possibly a 2000 psi Hydril type annular preventer as provided for in Onshore Order #2. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on the bottom. A 13-5/8" or 11" BOP will be used, depending on the rig selected, during the drilling of the well. The BOP will be nippled up on the 13 3/8" surface casing with BOP equipment and tested to 2000 psi. When 11" BOP is used the special drilling flange will be utilized on the 13-3/8" head to allow testing the BOP with a retrievable test plug. After setting 8-5/8" the BOP will then be nippled up on the 8 5/8" intermediate casing and tested by a third party to 2000 psi and used continuously until total depth is reached. 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. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve, choke lines and a choke manifold (Exhibit #11) with a 2000 psi WP rating.

The majority of the rigs currently in use have a 13-5/8" BOP, so no special provision is needed for most wells in the area for conventionally testing the BOP with a test plug. However, due to the vagaries of rig scheduling, it might be that one of the few rigs with 11" BOP's might be called upon to drill any specific well in the area. Note that intermediate hole size is always 11". Therefore, COG Operating LLC respectfully requests a variance to the requirement of 13-5/8" BOP on 13-3/8" casing. When that circumstance is encountered the special flange will be utilized to allow testing the entire BOP with a test plug, without subjecting the casing to test pressure. The special flange also allows the return to full-open capability if desired. See COA

7. Types and Characteristics of the Proposed Mud System

The well will be drilled to TD with a combination of brine, cut brine and polymer mud system. The applicable depths and properties of this system are as follows:

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-695'	Fresh Water	8.5	28	N.C.
695-~~1800'~~ 1450	Brine	10	30	N.C.
~~1800'~~-TD	Cut Brine	8.7-9.1	29	N.C.

Sufficient mud materials will be kept at the well site to maintain mud properties and meet minimum lost circulation and weight increase requirements at all times.

8. Auxiliary Well Control and Monitoring Equipment

A. Kelly cock will be kept in the drill string at all times.

B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

9. Logging, Testing and Coring Program See COA

A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be run from TD to 8 5/8" casing shoe.

B. Drill Stem test is not anticipated.

C. No conventional coring is anticipated.

D. Further testing procedures will be determined after the 5 ½" production casing has been cemented at TD, based on drill shows and log evaluation.

10. Abnormal Conditions, Pressure, Temperatures and Potential Hazards

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 110 degrees and the estimated maximum bottom hold pressure is 2300 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, although a Hydrogen Sulfide Drilling Operation Plan is attached to this program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations

Road and location work will not begin until approval has been received from the BLM. As this is a Master Drilling plan, please refer to the Form 3160-3 for the anticipated start date. Once commenced, drilling operations should be finished in approximately 12 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.

CONCHO

COG Operating LLC

Eddy County, NM (NAN27 NME)
Tex Mack 11 Federal #21
Tex Mack 11 Fed #21

OH

Plan: Plan #1 - 7-7/8" Hole
SHL = 985' FSL & 2005' FEL
BHL = 380' FSL & 1700' FEL
Top of Paddock = 381' South of Surface & 195' East of Surface @ 5220' TVD

Standard Planning Report

18 August, 2011

Scientific Drilling
Directional Drilling Operations

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Tex Mack 11 Federal #21
Company:	COG Operating LLC	**TVD Reference:**	Ground Elev @ 3940 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	Ground Elev @ 3940 00usft
Site:	Tex Mack 11 Federal #21	**North Reference:**	Grid
Well:	Tex Mack 11 Fed #21	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

Project Eddy County, NM (NAN27 NME)

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 Tex Mack 11 Federal #21

Site Position:		**Northing:**	671,295 10 usft	**Latitude:**	32° 50' 40 178 N
From:	Map	**Easting:**	652,210 80 usft	**Longitude:**	103° 50' 15 824 W
Position Uncertainty:	0 00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0 27 °

Well Tex Mack 11 Fed #21

Well Position	**+N/-S**	0 00 usft	**Northing:**	671,295 10 usft	**Latitude:**	32° 50' 40 178 N
	+E/-W	0 00 usft	**Easting:**	652,210 80 usft	**Longitude:**	103° 50' 15 824 W
Position Uncertainty		0 00 usft	**Wellhead Elevation:**		**Ground Level:**	3,940 00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/08/18	7 73	60 71	48,940

Design Plan #1 - 7-7/8" Hole

Audit Notes:					
Version:		**Phase:**	PLAN	**Tie On Depth:**	0 00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0 00	0 00	0 00	152 88

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 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,950 00	0 00	0 00	1,950 00	0 00	0 00	0 00	0 00	0 00	0.00	
2,347 20	7 94	152 88	2,345 92	-24 47	12 53	2 00	2 00	38 49	152 88	
7,046 37	7 94	152 88	7,000 00	-602 50	308 60	0 00	0 00	0 00	0 00	PBHL-Tex Mack 11 #:

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Tex Mack 11 Federal #21
Company:	COG Operating LLC	**TVD Reference:**	Ground Elev @ 3940 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	Ground Elev @ 3940 00usft
Site:	Tex Mack 11 Federal #21	**North Reference:**	Grid
Well:	Tex Mack 11 Fed #21	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

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 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
East HL-Tex Mack 11 #21 - South HL-Tex Mack 11 #21									
1,950 00	0 00	0 00	1,950 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start Build 2.00°/100' - 8-5/8" Casing									
2,000 00	1 00	152 88	2,000 00	-0 39	0 20	0 44	2 00	2 00	0 00
2,100 00	3 00	152 88	2,099 93	-3 49	1 79	3 93	2 00	2 00	0 00
2,200 00	5 00	152 88	2,199 68	-9 70	4 97	10 90	2 00	2 00	0 00
2,300 00	7 00	152 88	2,299 13	-19 01	9 73	21 35	2 00	2 00	0 00
2,347 20	7 94	152 88	2,345 93	-24 47	12 53	27 49	2 00	2 00	0 00
EOC hold 7.94°									
2,400 00	7 94	152 88	2,398 22	-30 96	15 86	34 79	0 00	0 00	0 00
2,500 00	7 94	152 88	2,497 26	-43 26	22 16	48 61	0 00	0 00	0 00
2,600 00	7 94	152 88	2,596 30	-55 56	28 46	62 43	0 00	0 00	0 00
2,700 00	7 94	152 88	2,695 34	-67 87	34 76	76 25	0 00	0 00	0 00
2,800 00	7 94	152 88	2,794 38	-80 17	41 06	90 07	0 00	0 00	0 00
2,900 00	7 94	152 88	2,893.42	-92 47	47 36	103 89	0 00	0 00	0 00
3,000 00	7 94	152 88	2,992 46	-104 77	53 66	117 71	0 00	0 00	0 00
3,100 00	7 94	152 88	3,091 50	-117 07	59 96	131 53	0 00	0 00	0 00
3,200 00	7 94	152 88	3,190 55	-129 37	66 26	145 35	0 00	0 00	0 00
3,300.00	7 94	152 88	3,289 59	-141 67	72 56	159 17	0 00	0 00	0 00
3,400 00	7 94	152 88	3,388 63	-153 97	78 86	172 99	0 00	0 00	0 00
3,500 00	7 94	152 88	3,487 67	-166 27	85 16	186 81	0 00	0 00	0 00
3,600 00	7 94	152 88	3,586 71	-178 57	91 46	200 63	0 00	0 00	0 00
3,700 00	7 94	152 88	3,685 75	-190 87	97 76	214 45	0 00	0 00	0 00
3,800 00	7 94	152 88	3,784 79	-203 17	104 07	228 27	0 00	0 00	0 00
3,900 00	7 94	152 88	3,883 83	-215 47	110 37	242 09	0 00	0 00	0 00
4,000 00	7 94	152 88	3,982 87	-227 78	116 67	255 91	0 00	0 00	0 00
4,100 00	7 94	152 88	4,081 91	-240 08	122 97	269 74	0 00	0 00	0 00
4,200 00	7 94	152 88	4,180 95	-252 38	129 27	283 56	0 00	0 00	0 00
4,300 00	7 94	152 88	4,279 99	-264 68	135 57	297 38	0 00	0 00	0 00
4,400 00	7 94	152 88	4,379 03	-276 98	141 87	311 20	0 00	0 00	0 00
4,500 00	7 94	152 88	4,478 07	-289 28	148 17	325 02	0 00	0 00	0 00
4,600 00	7 94	152 88	4,577 11	-301 58	154 47	338 84	0 00	0 00	0 00
4,700 00	7 94	152 88	4,676 15	-313 88	160 77	352 66	0 00	0 00	0 00
4,800 00	7 94	152 88	4,775 19	-326 18	167 07	366 48	0 00	0 00	0 00
4,900 00	7 94	152 88	4,874 23	-338.48	173 37	380 30	0 00	0 00	0 00
5,000 00	7 94	152 88	4,973 27	-350 78	179 67	394 12	0 00	0 00	0 00
5,100 00	7 94	152 88	5,072 31	-363 08	185 97	407 94	0 00	0 00	0 00
5,200 00	7 94	152 88	5,171 35	-375 38	192 27	421 76	0 00	0 00	0 00
5,249 12	7 94	152 88	5,220 00	-381 43	195 37	428 55	0 00	0 00	0 00
Top of Paddock									
5,300 00	7 94	152 88	5,270 39	-387 68	198 57	435 58	0 00	0 00	0 00
5,400 00	7 94	152 88	5,369 43	-399 99	204 87	449 40	0 00	0 00	0 00
5,500 00	7 94	152 88	5,468 47	-412 29	211 17	463 22	0 00	0 00	0 00
5,600 00	7 94	152 88	5,567 51	-424 59	217 47	477 04	0 00	0 00	0 00
5,700 00	7 94	152 88	5,666 55	-436 89	223 77	490 86	0 00	0 00	0 00
5,800 00	7 94	152 88	5,765 60	-449 19	230 07	504 68	0 00	0 00	0 00
5,900 00	7 94	152 88	5,864 64	-461 49	236 37	518 50	0 00	0 00	0 00
6,000 00	7 94	152 88	5,963 68	-473 79	242 67	532 32	0 00	0 00	0 00
6,100 00	7 94	152 88	6,062 72	-486 09	248 98	546 14	0 00	0 00	0 00
6,200 00	7 94	152 88	6,161 76	-498 39	255 28	559 96	0 00	0 00	0 00
6,300 00	7 94	152 88	6,260 80	-510 69	261 58	573.78	0 00	0 00	0 00
6,400 00	7 94	152 88	6,359 84	-522 99	267 88	587 60	0 00	0.00	0 00
6,500 00	7 94	152 88	6,458 88	-535 29	274 18	601 42	0 00	0 00	0 00

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Tex Mack 11 Federal #21
Company:	COG Operating LLC	**TVD Reference:**	Ground Elev @ 3940 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	Ground Elev @ 3940 00usft
Site:	Tex Mack 11 Federal #21	**North Reference:**	Grid
Well:	Tex Mack 11 Fed #21	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 7-7/8" Hole		

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)
6,600 00	7 94	152 88	6,557 92	-547 59	280 48	615 24	0 00	0 00	0 00
6,700 00	7 94	152 88	6,656 96	-559 89	286 78	629 07	0 00	0 00	0 00
6,800 00	7 94	152 88	6,756 00	-572 20	293 08	642 89	0 00	0 00	0 00
6,900 00	7 94	152 88	6,855 04	-584 50	299 38	656 71	0 00	0 00	0 00
7,000 00	7 94	152 88	6,954 08	-596 80	305 68	670 53	0 00	0 00	0 00
7,046 37	7 94	152 88	7,000 00	-602 50	308 60	676 93	0 00	0 00	0 00
PBHL-Tex Mack 11 #21									

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
East HL-Tex Mack 11 #2	0 00	0 01	0 00	-652.50	358 60	670,642 60	652,569 40	32° 50' 33 705 N	103° 50' 11 657 W
- plan misses target center by 744 55usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E)									
- Rectangle (sides W0 00 H200 00 D0 00)									
South HL-Tex Mack 11 #	0 00	0.01	0 00	-652.50	358 60	670,642 60	652,569.40	32° 50' 33 705 N	103° 50' 11 657 W
- plan misses target center by 744 55usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E)									
- Rectangle (sides W200 00 H0 00 D0 00)									
PBHL-Tex Mack 11 #21	0 00	0 01	7,000 00	-602 50	308 60	670,692 60	652,519 40	32° 50' 34 202 N	103° 50' 12 240 W
- plan hits target center									
- Circle (radius 50 00)									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
1,950 00	1,950 00	8-5/8" Casing	8-5/8	12-1/4

Formations

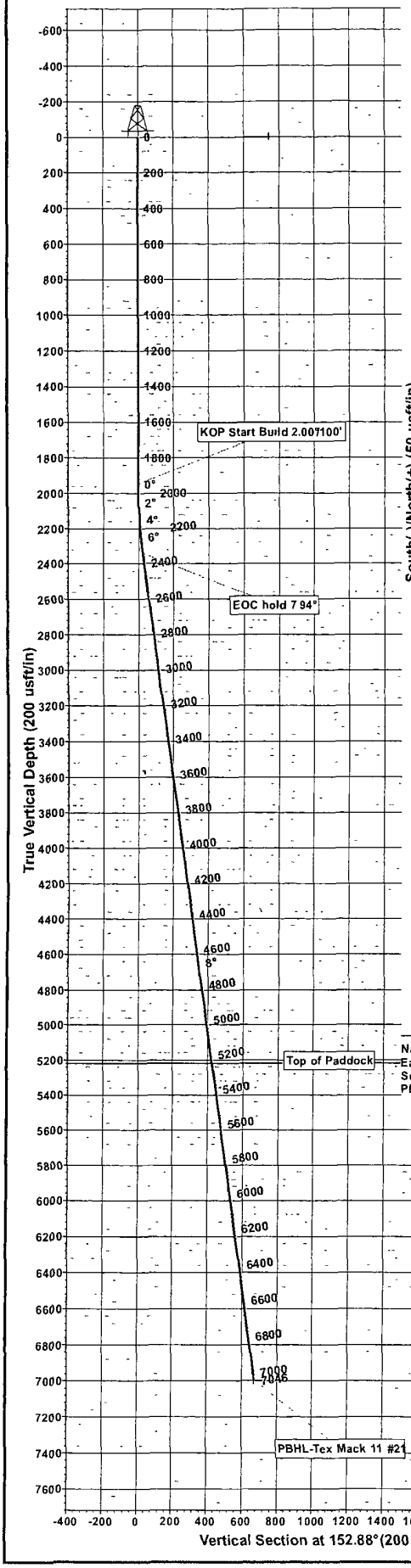
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
5,249 12	5,220 00	Top of Paddock		0 00	

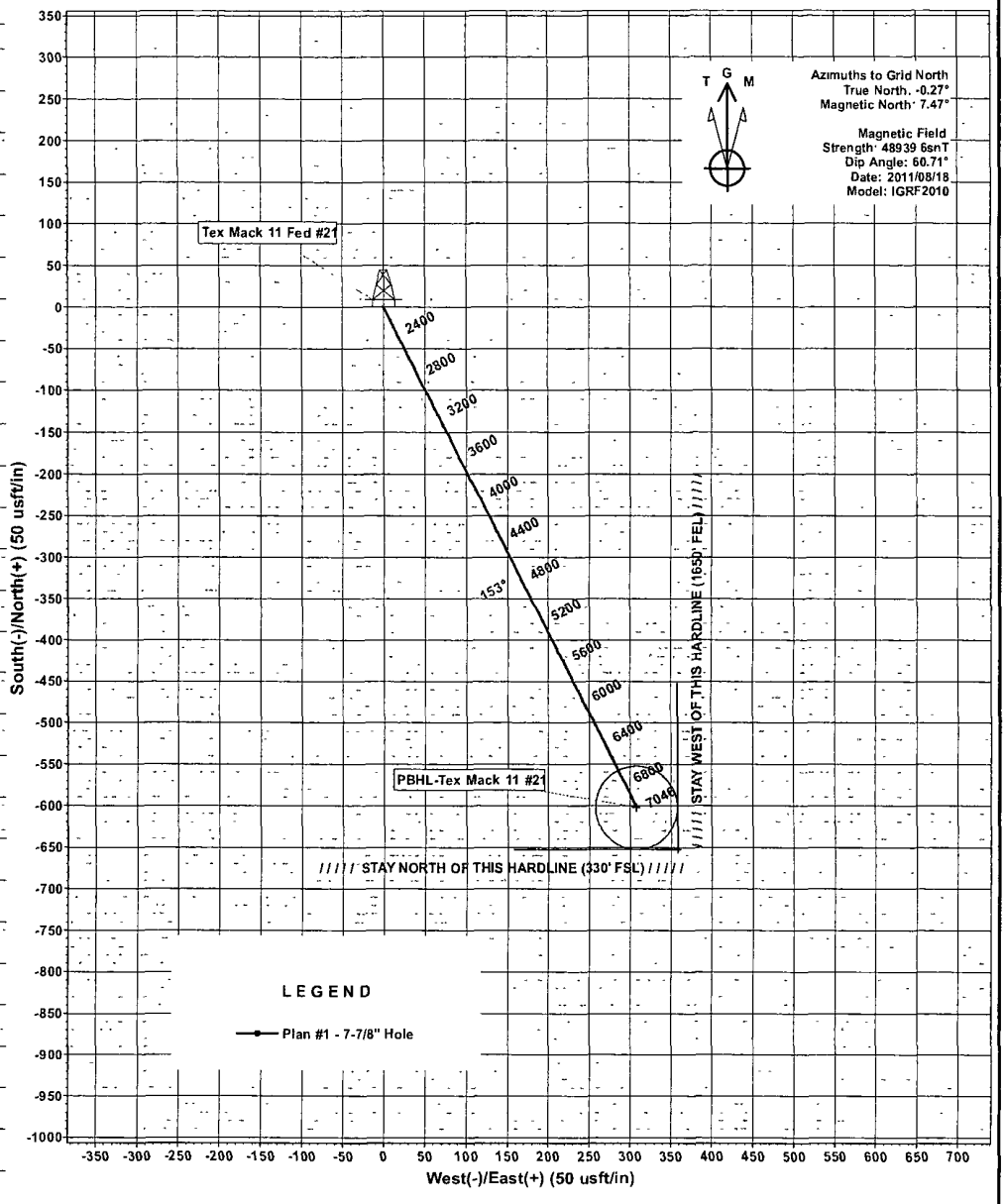
Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
1,950 00	1,950 00	0 00	0 00	KOP Start Build 2 00°/100'
2,347 20	2,345 93	-24 47	12.53	EOC hold 7 94°

Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Tex Mack 11 Fed #21
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole

Scientific Drilling
Directional Drilling Operations





WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
East HL-Tex Mack 11 #21	0.00	-652.50	358.60	670642.60	652569.40	32° 50' 33.705 N	103° 50' 11.657 W	Rectangle (Sides L200.00 W0.00)
South HL-Tex Mack 11 #21	0.00	-652.50	358.60	670642.60	652569.40	32° 50' 33.705 N	103° 50' 11.657 W	Rectangle (Sides L0.00 W200.00)
PBHL-Tex Mack 11 #21	7000.00	-602.50	308.60	670692.60	652519.40	32° 50' 34.202 N	103° 50' 12.240 W	Circle (Radius 50.00)

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	1950.00	0.00	0.00	1950.00	0.00	0.00	0.00	0.00	0.00	
3	2347.20	7.94	152.88	2345.92	-24.47	12.53	2.00	152.88	27.49	
4	7046.37	7.94	152.88	7000.00	-602.50	308.60	0.00	0.00	676.93	PBHL-Tex Mack 11 #21

WELL DETAILS: Tex Mack 11 Fed #21

Ground Level: 3940.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	671295.10	652210.80	32° 50' 40.178 N	103° 50' 15.824 W	

PROJECT DETAILS: Eddy County, NM (NAN27 NME)

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

Plan: Plan #1 - 7-7/8" Hole (Tex Mack 11 Fed #21/OH)

Created By: Julio Pina — Date: 18-Aug-11
Checked: _____ Date: _____
Reviewed: _____ Date: _____
Approved: _____ Date: _____

COG OPERATING LLC
550 West Texas, Suite 1300
Midland, TX 79701

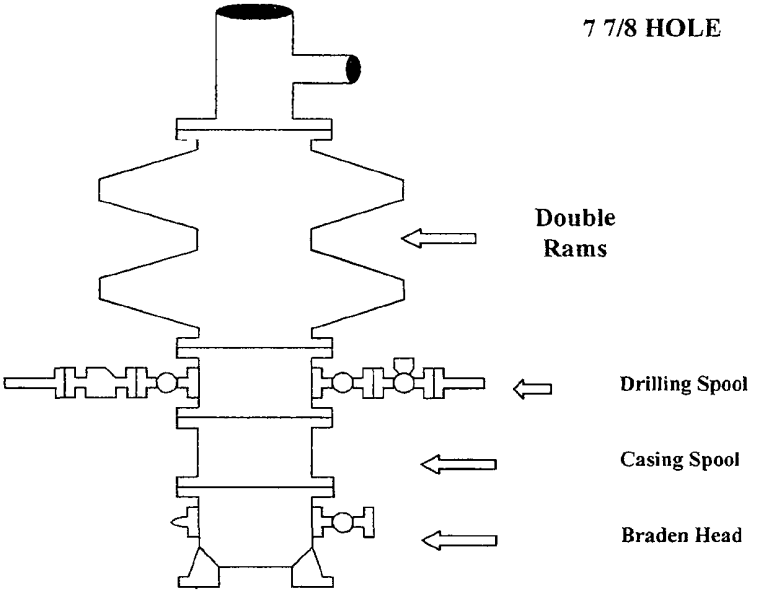
DIRECTIONAL PLAN VARIANCE REQUEST

Tex Mack 11 Federal #21
EDDY, NM

SHL	985 FSL, 2005 FEL	Sec 11, T17S, R31E, Unit O
BHL	330 FSL, 1650 FEL	Sec 11, T17S, R31E, Unit O

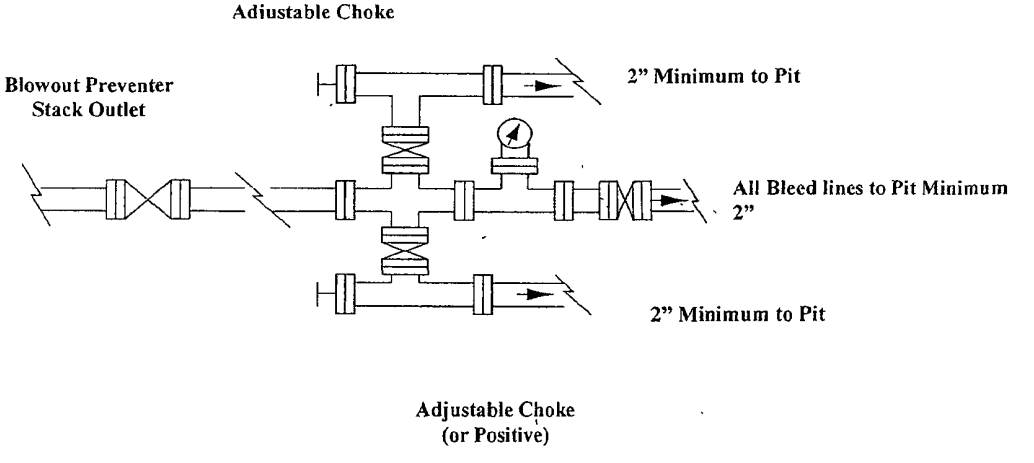
COG Operating LLC, as Operator, desires that the APD reflect the footages as stated on the surveyor's plat. However, Operator also desires to avoid inadvertently drilling the well to a non-standard location. Therefore, due to the proximity of the plat bottom hole location to the pro-ration unit hard line(s), the attached directional plan is designed to avoid the hard lines by as much as fifty feet; said fifty feet being in either (or both) the north-south and/or east-west directions as applicable.

COG Operating LLC
Exhibit #9
BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required

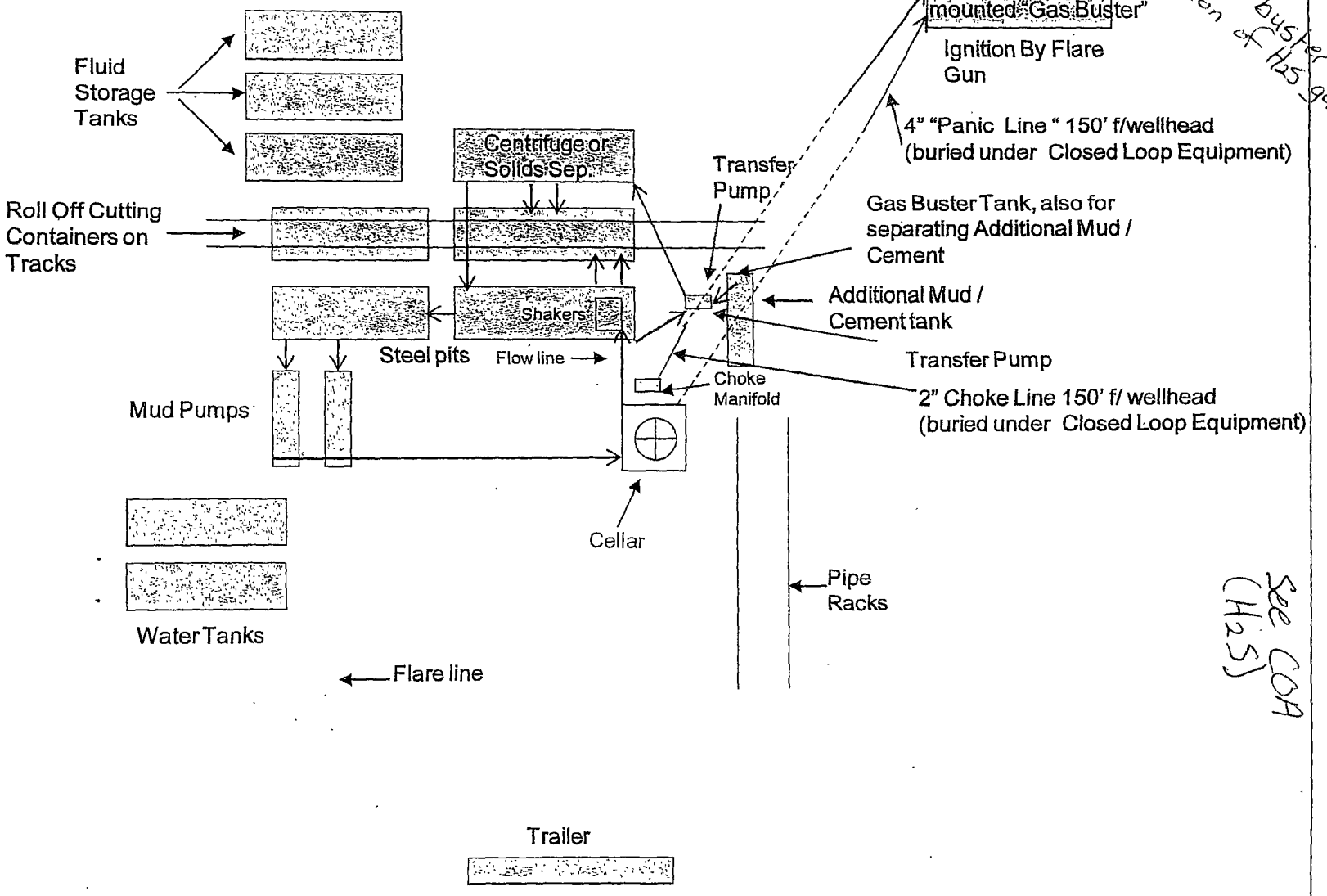


NOTES REGARDING THE BLOWOUT PREVENTERS
Master Drilling Plan
Eddy County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged.
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines.
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed.
10. Blow out preventer control to be located as close to driller's position as feasible.
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications.

COG Operating LLC

Closed Loop Equipment Diagram



Closed Loop Operation & Maintenance Procedure

All drilling fluid circulated over shaker(s) with cuttings discharged into roll off container.

Fluid and fines below shaker(s) are circulated with transfer pump through centrifuge(s) or solids separator with cuttings and fines discharged into roll off container.

Fluid is continuously re-circulated through equipment with polymer added to aid separation of cutting fines.

Roll off containers are lined and de-watered with fluids re-circulated into system.

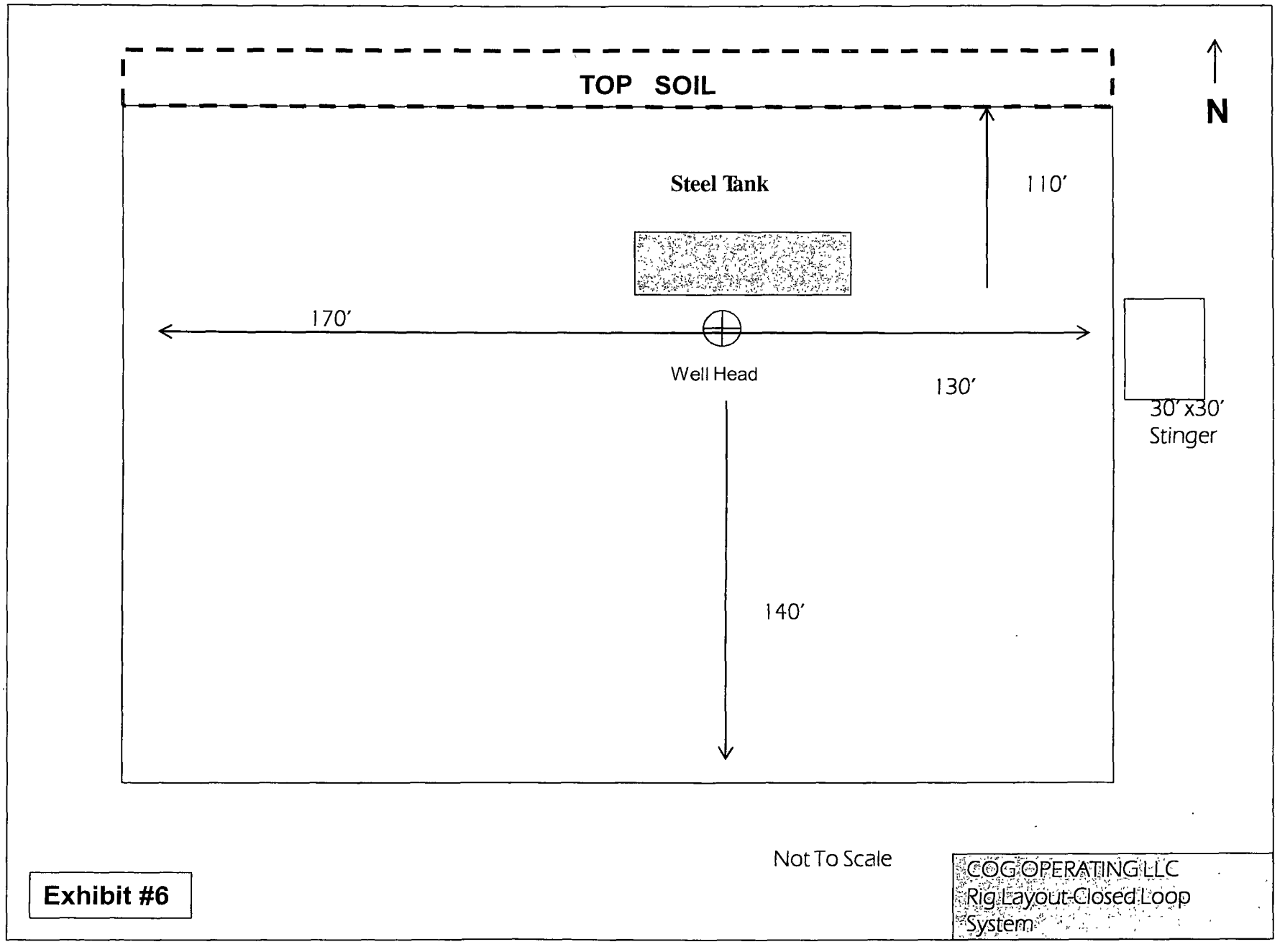
Additional tank is used to capture unused drilling fluid or cement returns from casing jobs.

This equipment will be maintained 24 hrs./day by solids control personnel and or rig crews that stay on location.

Cuttings will be hauled to either:

CRI (permit number R9166)
or
GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.



Not To Scale

Exhibit #6

COG OPERATING LLC
Rig Layout-Closed Loop System

37516

DISTRICT 2 -- CHECKLIST FOR INTENTS TO DRILL

Operator COG Opr OGRID # 229137

Well Name & # TGX MAGIC 11 FEDERAL 21 Surface Type (F) (S) (P)

Location: UL O, Sect 11, Twnship 17 s, RNG 31 e, Sub-surface Type (F) (S) (P)

A. Date C101 rec'd 11/18/2011 C101 reviewed 11/23/2011

B. 1. Check mark, Information is OK on Forms:
OGRID ✓, BONDING ✓, PROP CODE ✓, WELL # ✓, SIGNATURE ✓

2. Inactive Well list as of: 11/28/2011 # wells 3079, # Inactive wells 8

a. District Grant APD but see number of inactive wells:
No letter required ✓; Sent Letter to Operator ____, to Santa Fe ____

3. Additional Bonding as of: 11/28/2011

a. District Denial because operator needs addition bonding:
No Letter required ✓; Sent Letter to Operator ____, To Santa Fe ____

b. District Denial because of Inactive well list and Financial Assurance:
No Letter required ✓; Sent Letter to Operator ____, To Santa Fe ____

C. C102 YES ✓, NO ____, Signature ✓

1. Pool Loco Hills; Glorieta - Yeso Code 96718 97866

a. Dedicated acreage 40, What Units O

b. SUR. Location Standard •: Non-Standard Location ____

c. Well shares acres: Yes ____, No ____, # of wells ____ plus this well # ____

2. 2nd. Operator in same acreage, Yes ____, No ____
Agreement Letter ____, Disagreement letter ____

3. Intent to Directional Drill Yes ____, No ____

a. Dedicated acreage ____, What Units ____

b. Bottomhole Location Standard ____, Non-Standard Bottomhole ____

4. Downhole Commingle: Yes ____, No ____

a. Pool #2 ____, Code ____, Acres ____
Pool #3 ____, Code ____, Acres ____
Pool #4 ____, Code ____, Acres ____

5. POTASH Area Yes ____, No ✓,

D. Blowout Preventer Yes ✓, No ____,

E. H2S Yes ✓, No ____,

F. C144 Pit Registration Yes ✓, No ____,

G. Does APD require Santa Fe Approval:

1. Non-Standard Location: Yes ____, No ✓, NSL # ____

2. Non-Standard Proration: Yes ____, No ✓, NSP # ____

3. Simultaneous Dedication: Yes ____, No ✓, SD # ____
Number of wells ____ Plus # ____

4. Injection order Yes ____, No ✓; PMX # ____ or WFX # ____

5. SWD order Yes ____, NO ✓; SWD # ____

6. DHC from SF ____; DHC-HOB ____; Holding ____

7. OCD Approval Date 11/28/2011 API #30-015-39703

8. Reviewers TCS