

## OCD Artesia

Form 3160-3  
(April 2004)FORM APPROVED  
OMB No. 1004-0137  
Expires March 31, 2007Split Estate  
Pad forUNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5 Lease Serial No. NMLC029415B
1b. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6 If Indian, Allottee or Tribe Name N/A
2 Name of Operator COG Operating LLC		7 If Unit or CA Agreement, Name and No N/A
3a. Address 550 W. Texas Ave., Suite 1300 Midland, TX 79701		8 Lease Name and Well No Puckett 12 Federal #5H 4388587
3b Phone No. (include area code) 432-685-4384		9 API Well No. 30-015- 39632
4 Location of Well (Report location clearly and in accordance with any State requirements *) At surface SHL: 10' FNL & 1781' FEL, UL B, SEC 13 At proposed prod zone BHL: 660' FNL & 1980' FEL, UL B, SEC 12		10 Field and Pool, or Exploratory Fren; Glorieta-Yeso, East 4267707
11 Sec, T R M or Blk and Survey or Area Sec 12 & 13 T17S R31E		12 County or Parish EDDY
13 State NM		14 Distance in miles and direction from nearest town or post office* 9 miles East of Loco Hills, NM
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drng unit line, if any) 10'	16 No. of acres in lease 1920	17 Spacing Unit dedicated to this well 200
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 565'	19. Proposed Depth TVD: 6600' MD: 11031'	20 BLM/BIA Bond No on file NMB000740; NMB000215
21 Elevations (Show whether DF, KDB, RT, GL, etc) 3964' GL	22 Approximate date work will start* 10/30/2011	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.                                                                                               | 4 Bond to cover the operations unless covered by an existing bond on file (see Item 20 above)      |
| 2 A Drilling Plan                                                                                                                             | 5 Operator certification                                                                           |
| 3 A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office) | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

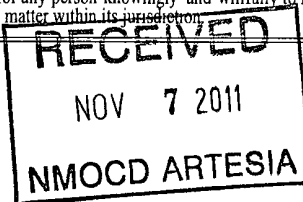
25 Signature	Name (Printed/Typed) Kelly J. Holly	Date 08/04/2011
Title Permitting Tech		
Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed) CARLSBAD FIELD OFFICE	Date OCT 28 2011
Title FIELD MANAGER		

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.

Title 18 U.S.C. Section 1001 and Title 43 USC 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

SEE ATTACHED FOR  
CONDITIONS OF APPROVALApproval Subject to General Requirements  
& Special Stipulations Attached

DISTRICT I  
1625 N FRENCH DR., HOBBS, NM 88240  
DISTRICT II  
1301 W. GRAND AVENUE, ARTESIA, NM 88210  
DISTRICT III  
1000 RIO BRAZOS RD., AZTEC, NM 87410  
DISTRICT IV  
11885 S. ST. FRANCIS DR., SANTA FE, NM 87505

State of New Mexico  
Energy, Minerals & Natural Resources Department  
**OIL CONSERVATION DIVISION**  
1220 South St. Francis Dr.  
Santa Fe, New Mexico 87505

Form C-102  
Revised July 16, 2010  
Submit to Appropriate  
District Office

☐ AMENDED REPORT

**WELL LOCATION AND ACREAGE DEDICATION PLAT**

API Number <b>30-015-</b>	Pool Code <b>26770</b>	Pool Name <b>FREN; GLORIETA-YESO</b>
Property Code <b>38858</b>	Property Name <b>PUCKETT 12 FEDERAL</b>	Well Number <b>5H</b>
OGRID No. <b>229137</b>	Operator Name <b>COG OPERATING, LLC</b>	Elevation <b>3964'</b>

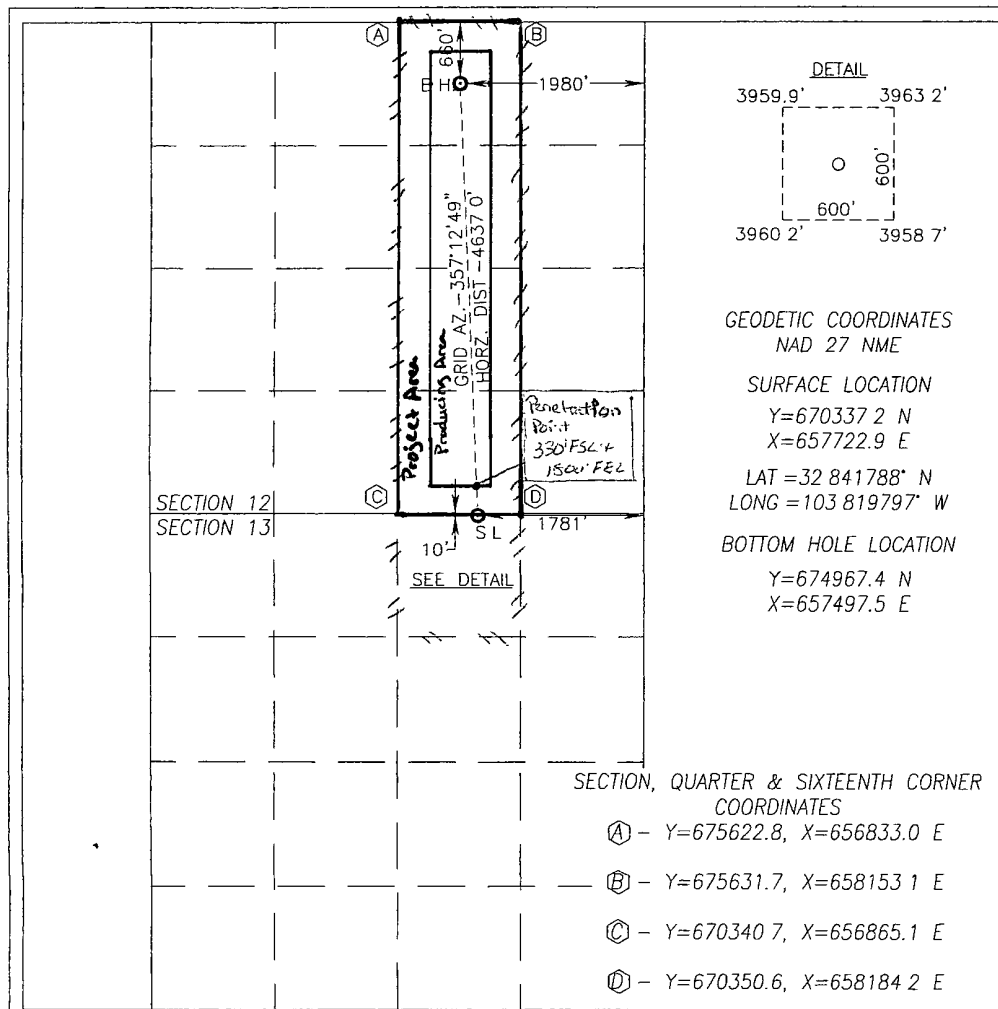
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
<b>B</b>	<b>13</b>	<b>17-S</b>	<b>31-E</b>		<b>10</b>	<b>NORTH</b>	<b>1781</b>	<b>EAST</b>	<b>EDDY</b>

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
<b>B</b>	<b>12</b>	<b>17-S</b>	<b>31-E</b>		<b>660</b>	<b>NORTH</b>	<b>1980</b>	<b>EAST</b>	<b>EDDY</b>
Dedicated Acres <b>2.00</b>	Joint or Infill	Consolidation Code	Order No.						

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



**OPERATOR CERTIFICATION**

I hereby certify that the information herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division

*Robyn Odom* 8/3/2011  
Signature Date

Robyn Odom

Printed Name

Rodom@concho.com

E-mail Address

**SURVEYOR CERTIFICATION**

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

JUNE 22, 2011

Date of Survey

Signature & Seal of Professional Surveyor:

*Ronald J. Eidson*  
NEW MEXICO  
3239  
Certificate Number... Gary G. Eidson 12641  
Ronald J. Eidson 3239  
LA Rev 7/26/11 JWSC W O 11.11 1398

ATTACHMENT TO FORM 3160-3  
COG Operating, LLC  
Puckett 12 Federal #5H  
SHL: 10' FNL & 1781' FEL, Unit B  
BHL: 660' FNL & 1980' FEL, Unit B  
Sec 12, T17S, R31E  
Eddy County, NM

1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 3964'
3. Proposed Depths: Horizontal TVD = 6,600', MD = 11031'
4. Estimated tops of geological markers:

Quaternary	Surface
Rustler	682'
Top of Salt	900'
Base of Salt	1923'
Yates	2028'
Seven Rivers	2356'
Queen	2980'
Grayburg	3415'
San Andres	3739'
Glorieta	5247'
Paddock	5317'
Blaine	5745'
Tubb	6700'

5. Possible mineral bearing formations:

Water Sand	150'	Fresh Water
Grayburg	3415'	Oil/Gas
San Andres	3739'	Oil/Gas
Glorieta	5247'	Oil/Gas
Paddock	5317'	Oil/Gas
Blaine	5745'	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 700' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 9 5/8" casing to 2000' 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 (although cement volume is actually 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 environment.

see COA

see COA

## ATTACHMENT TO FORM 3160-3

COG Operating, LLC

Puckett 12 Federal #5H

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6. Casing Program - Proposed

Hole size	Interval	OD of Casing	Weight	Cond.	Collar	Grade
<i>See COA</i> 17-1/2"	0' - +/- 700' <sup>740</sup>	13-3/8"	48#	New	STC	H-40 or J/K-55
Collapse sf - 3.87, Burst sf - 8.70, Tension sf - 14.91						
12-1/4"	0' - +/- 2000'	9-5/8"	36#	New	STC	J/K-55
Collapse sf - 2.88, Burst sf - 5.01, Tension sf - 8.11						
8-3/4"	0' - 11031'	7" x 5-1/2"	26#/17#	New	LTC	L-80
Collapse sf - 1.87, Burst sf - 2.48, Tension sf - 2.08						

Production string will be a tapered string with 7" 26# L-80 LTC ran from surface to kick off point and then crossed over to 5 1/2" 17# L-80 LTC.

7. Cement Program *See COA*

**13 3/8" Surface Csg:** Set at +/- 700'MD, Lead Slurry: 450sx Class "C" w/ 2% CaCl<sub>2</sub> & .25 pps CF, 1.32 yield. 45% excess, calculated to surface.

**9 5/8" Intrmd. Csg:** Set at +/- 2000'MD. Single Stage: Lead Slurry: 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1 .25 pps CF, 2.45 yield. Tail Slurry: 200 sx Class "C" w/ 2% CaCl<sub>2</sub>, 1.32 yield. 76% excess, calculated to surface.

**Multi Stage:** Stage 1: 200 sx Class "C" w/ 2% CaCl<sub>2</sub>, 1.32 yield. 80% excess. Stage 2: 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1 .25 pps CF, 2.45 yield, back to surface, 166% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 750' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

**7 x 5 1/2" Production Csg:** Set at +/- 11031'MD. Single Stage: Lead Slurry: 400 sx 35:65:6:C:Poz:Gel w/ 5% salt, 5 pps LCM, .2% SMS, .3% FL-52A, .125 pps CF, 2.01 yd. Inter. Slurry: 300 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield Tail Slurry: 450 sx Class "H" SOLUCEM-H w/ .7% HR-601, 2.62 yield 66% excess in open hole, calculated to surface. **This is a minimum volume and will be adjusted up after caliper is run.**

**Multi Stage:** Stage 1: (Assumed TD of 11031'MD to DV at 3550') Lead Slurry: 450 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield Tail Slurry: 450 sx Class "H" SOLUCEM-H w/ .7% HR-601, 2.62 yield; 10% excess. **This is a minimum volume and will be adjusted up after caliper is run.** Stage 2: Lead Slurry: 350 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, .6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, .3% FL-52A; 1.37 yield. Tail Slurry: 150 sx Class C w/ 0.3% R-3 + 1.5% CD-32, 1.02 yield. 28% excess calculated back to surface (no need for excess in casing overlap). **This is a minimum volume and will be adjusted up after caliper is run.**

Multi stage tool to be set at approximately, depending on hole conditions, 3550'. Cement volumes will be adjusted proportionately for depth changes of multi stage tool; assumption for use of tool is water flow.

## ATTACHMENT TO FORM 3160-3

COG Operating, LLC

Puckett 12 Federal #5H

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8. Pressure Control Equipment:

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" will be used during the drilling of the well. The BOP will be nipped up on the 13 3/8" surface casing with BOP equipment and tested to 2000 psi. After setting 9-5/8" the BOP will then be nipped up on the 9-5/8" 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.

9. Proposed Mud Circulating System

Interval	Mud Wt.	Visc.	FL	Type Mud System
0' - 700' 740	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
700' - 2000'	10	30	NC	Brine mud, lime for PH and paper for seepage and sweeps.
2000' - 11031'	9.1	29	NC	Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal.

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

10. Production Hole Drilling Summary:

**Drill 8 3/4" hole and kick off at +/- 6123', building curve over +/- 750' to horizontal at 6600' TVD. Drill horizontal section in a Easterly direction for +/-4158' lateral to TD at +/-11031' MD, 6600' TVD. Run 7" x 5-1/2" production casing in Open hole lateral and cement to surface.**

11. 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.

ATTACHMENT TO FORM 3160-3  
COG Operating, LLC  
Puckett 12 Federal #5H  
Page 4 of 4

12. Logging, Testing and Coring Program:

- A. No electric logging to be performed on this well. *See CO1A*
- B. The mud logging program will consist of lagged 10' samples from intermediate casing point to T.D. in vertical pilot hole and from Kick off point to TD in Horizontal hole.
- C. Drill Stem test is not anticipated.
- D. No conventional coring is anticipated.
- E. Further testing procedures will be determined after the 7" x 5 1/2" production casing has been cemented at TD based on drill shows and log evaluation.

13. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 90 degrees and estimated maximum bottom hole pressure is 2500 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, however an H2S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells.

14. Anticipated Starting Date

Drilling operations will commence approximately on October 30, 2011 with drilling and completion operations lasting approximately 90 days.



## **COG Operating LLC**

Eddy County, NM (NAN27 NME)

Puckett 12 Federal #5H

Puckett 12 Federal #5H

OH

Plan: Plan #1 8-3/4" Hole

SHL = 10' FNL & 1781' FEL of Section 13

PP = 330' FSL & 1798' FEL of Section 12

BHL = 660' FNL & 1980' FEL of Section 12

## **Standard Planning Report**

03 August, 2011





# Scientific Drilling Planning Report



Database: EDM-Julio  
Company: COG Operating LLC  
Project: Eddy County, NM (NAN27 NME)  
Site: Puckett 12 Federal #5H  
Well: Puckett 12 Federal #5H  
Wellbore: OH  
Design: Plan #1 8-3/4" Hole

Local Co-ordinate Reference: Site Puckett 12 Federal #5H  
TVD Reference: GL Elev @ 3964 00usft  
MD Reference: GL Elev @ 3964 00usft  
North Reference: Grid  
Survey Calculation Method: Minimum Curvature

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	Puckett 12 Federal #5H		
Site Position:		Northing:	670,337 20 usft
From:	Map	Easting:	657,722 90 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 50' 30 439 N
		Longitude:	103° 49' 11 269 W
		Grid Convergence:	0 28 °

Well	Puckett 12 Federal #5H		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level:
			3,964 00 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	2011/08/03	7 73
			60 71
			48,944

Design	Plan #1 8-3/4" Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0 00	0 00	0 00
			357 21

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
6,122 54	0 00	0 00	6,122 54	0 00	0 00	0 00	0 00	0 00	0 00	
6,872 54	90 00	357 21	6,600 00	476 90	-23 22	12 00	12 00	0 00	357 21	
11,030 75	90 00	357 21	6,600 00	4,630 20	-225 40	0 00	0 00	0 00	0 00	PBHL-Puckett 12 #5H





Scientific Drilling  
Planning Report



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Design: Plan #1 8-3/4" Hole

Local Co-ordinate Reference:  
TVD Reference:  
MD Reference:  
North Reference:  
Survey Calculation Method:

Site Puckett 12 Federal #5H  
GL Elev @ 3964 00usft  
GL Elev @ 3964 00usft  
Grid  
Minimum Curvature

Planned Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
6,122 54	0 00	0 00	6,122 54	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start Build 12.00°/100'									
6,200 00	9 30	357 21	6,199 66	6.26	-0 30	6 27	12 00	12 00	0 00
6,300 00	21 30	357 21	6,295 94	32 56	-1 59	32 60	12 00	12 00	0 00
6,400 00	33 30	357 21	6,384 65	78.28	-3 81	78 38	12 00	12 00	0 00
6,500 00	45 30	357 21	6,461 89	141 43	-6 88	141 59	12 00	12 00	0 00
6,600 00	57 30	357 21	6,524 31	219 23	-10 67	219.49	12 00	12 00	0 00
6,700 00	69 30	357.21	6,569 16	308 30	-15 01	308 66	12 00	12 00	0 00
6,733 13	73 27	357 21	6,579 79	339 63	-16 53	340 03	12 00	12 00	0 00
PP=330' FSL, Puckett 12 #5H									
6,800 00	81 30	357 21	6,594 50	404 73	-19 70	405 21	12 00	12 00	0 00
6,872 54	90 00	357 21	6,600 00	476 90	-23 22	477 47	12 00	12 00	0 00
Land EOC hold 90.00°									
6,900 00	90 00	357 21	6,600 00	504 33	-24.55	504 93	0 00	0 00	0 00
7,000 00	90 00	357 21	6,600 00	604 21	-29 41	604 93	0 00	0 00	0 00
7,100 00	90 00	357 21	6,600 00	704 10	-34 28	704 93	0 00	0 00	0 00
7,200 00	90 00	357.21	6,600 00	803 98	-39 14	804 93	0 00	0 00	0 00
7,300 00	90 00	357 21	6,600 00	903 86	-44 00	904 93	0 00	0 00	0 00
7,400 00	90 00	357 21	6,600 00	1,003 74	-48 86	1,004 93	0 00	0 00	0 00
7,500 00	90 00	357 21	6,600 00	1,103.62	-53.72	1,104 93	0 00	0 00	0 00
7,600 00	90 00	357 21	6,600 00	1,203 50	-58 59	1,204 93	0 00	0 00	0 00
7,700 00	90 00	357 21	6,600 00	1,303 39	-63 45	1,304.93	0 00	0 00	0 00
7,800 00	90 00	357 21	6,600 00	1,403 27	-68.31	1,404 93	0 00	0 00	0 00
7,900 00	90 00	357 21	6,600 00	1,503 15	-73 17	1,504 93	0 00	0 00	0 00
8,000 00	90 00	357 21	6,600 00	1,603 03	-78 04	1,604 93	0 00	0 00	0 00
8,100 00	90 00	357 21	6,600 00	1,702 91	-82 90	1,704.93	0 00	0 00	0 00
8,200 00	90 00	357 21	6,600 00	1,802 79	-87 76	1,804.93	0 00	0 00	0 00
8,300 00	90 00	357.21	6,600 00	1,902 68	-92.62	1,904 93	0 00	0 00	0 00
8,400 00	90 00	357 21	6,600 00	2,002 56	-97 49	2,004 93	0 00	0 00	0 00
8,500 00	90 00	357 21	6,600 00	2,102 44	-102.35	2,104 93	0 00	0 00	0 00
8,600 00	90 00	357 21	6,600 00	2,202 32	-107 21	2,204 93	0 00	0 00	0 00
8,700 00	90 00	357 21	6,600 00	2,302 20	-112 07	2,304 93	0 00	0 00	0 00
8,800 00	90 00	357 21	6,600 00	2,402 09	-116 93	2,404 93	0 00	0 00	0 00
8,900 00	90 00	357 21	6,600 00	2,501 97	-121 80	2,504 93	0 00	0 00	0 00
9,000 00	90 00	357 21	6,600 00	2,601 85	-126 66	2,604 93	0 00	0 00	0 00
9,100 00	90 00	357 21	6,600 00	2,701 73	-131 52	2,704 93	0 00	0 00	0 00
9,200 00	90 00	357 21	6,600 00	2,801 61	-136 38	2,804 93	0 00	0 00	0 00
9,300 00	90 00	357 21	6,600 00	2,901 49	-141 25	2,904 93	0 00	0 00	0 00
9,400 00	90 00	357 21	6,600 00	3,001 38	-146 11	3,004 93	0 00	0 00	0 00
9,500 00	90 00	357 21	6,600 00	3,101 26	-150 97	3,104 93	0 00	0 00	0 00
9,600 00	90 00	357 21	6,600 00	3,201 14	-155 83	3,204 93	0 00	0 00	0 00
9,700 00	90 00	357 21	6,600 00	3,301 02	-160 70	3,304 93	0 00	0 00	0 00
9,800 00	90 00	357 21	6,600 00	3,400 90	-165 56	3,404 93	0 00	0 00	0 00
9,900 00	90 00	357 21	6,600 00	3,500 78	-170 42	3,504.93	0 00	0 00	0 00
10,000 00	90 00	357 21	6,600 00	3,600 67	-175 28	3,604 93	0 00	0 00	0 00
10,100 00	90 00	357 21	6,600 00	3,700 55	-180 14	3,704 93	0 00	0 00	0 00
10,200 00	90 00	357 21	6,600 00	3,800 43	-185 01	3,804 93	0 00	0 00	0 00
10,300 00	90 00	357 21	6,600 00	3,900 31	-189.87	3,904 93	0 00	0 00	0 00
10,400 00	90 00	357 21	6,600 00	4,000 19	-194 73	4,004 93	0 00	0 00	0 00
10,500 00	90 00	357 21	6,600 00	4,100 07	-199 59	4,104 93	0 00	0 00	0 00
10,600 00	90 00	357 21	6,600 00	4,199 96	-204 46	4,204 93	0 00	0 00	0 00
10,700 00	90 00	357 21	6,600 00	4,299 84	-209 32	4,304 93	0 00	0 00	0 00



# Scientific Drilling Planning Report



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Design: Plan #1 8-3/4" Hole

Local Co-ordinate Reference:  
TVD Reference:  
MD Reference:  
North Reference:  
Survey Calculation Method:

Site Puckett 12 Federal #5H  
GL Elev @ 3964 00usft  
GL Elev @ 3964 00usft  
Grid  
Minimum Curvature

## Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
10,800 00	90 00	357 21	6,600 00	4,399 72	-214 18	4,404 93	0 00	0 00	0 00
10,900 00	90 00	357 21	6,600 00	4,499 60	-219 04	4,504 93	0 00	0 00	0 00
11,000 00	90 00	357 21	6,600 00	4,599 48	-223 90	4,604 93	0 00	0 00	0 00
11,030 75	90 00	357 21	6,600 00	4,630 20	-225 40	4,635 68	0 00	0 00	0 00

PBHL-Puckett 12 #5H

## 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
PP=330' FSL, Puckett 1: - plan hits target center - Point	0 00	0 00	6,579 80	339 65	-16 53	670,676 86	657,706 37	32° 50' 33 800 N	103° 49' 11 444 W
PBHL-Puckett 12 #5H - plan hits target center - Point	0.00	0 00	6,600 00	4,630.20	-225 40	674,967 40	657,497 50	32° 51' 16 265 N	103° 49' 13 648 W

## Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
6,122 54	6,122 54	0 00	0 00	KOP Start Build 12 00°/100°
6,872 54	6,600 00	476 90	-23 22	Land EOC hold 90 00°



Scientific Drilling for COG Operating LLC  
Site: Eddy County, NM (NAN27 NME)  
Well: Puckett 12 Federal #5H  
Wellbore: OH  
Design: Plan #1 8-3/4" Hole



#### 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	6122.54	0.00	0.00	6122.54	0.00	0.00	0.00	0.00	0.00	
3	6872.54	90.00	357.21	6600.00	476.90	-23.22	12.00	357.21	477.46	
4	11030.75	90.00	357.21	6600.00	4630.20	-225.40	0.00	0.00	4635.68	PBHL-Puckett 12 #5H

#### WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP=330° FSL, Puckett 12 #5H	6579.80	339.65	-16.53	670676.85	657706.37	32°50'33.800 N 103°49'11.444 W	Point	
PBHL-Puckett 12 #5H	6600.00	4630.20	-225.40	674967.40	657497.50	32°51'16.265 N 103°49'13.648 W	Point	

#### WELL DETAILS Puckett 12 Federal #5H

+N/-S	+E/-W	Ground Level	3964.00
0.00	0.00	Northing	670337.20
		Easting	657722.90
		Latitude	32°50'30.439 N
		Longitude	103°49'11.269 W

#### Puckett 12 Federal #5H

Created By: Julio Pina Date: 03-Aug-11

Checked: Date:

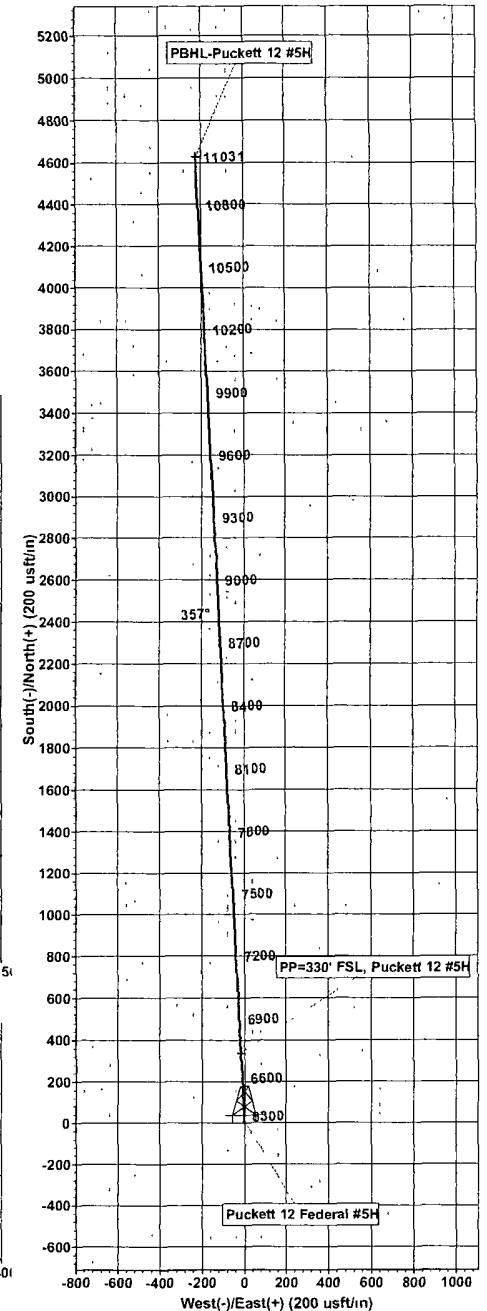
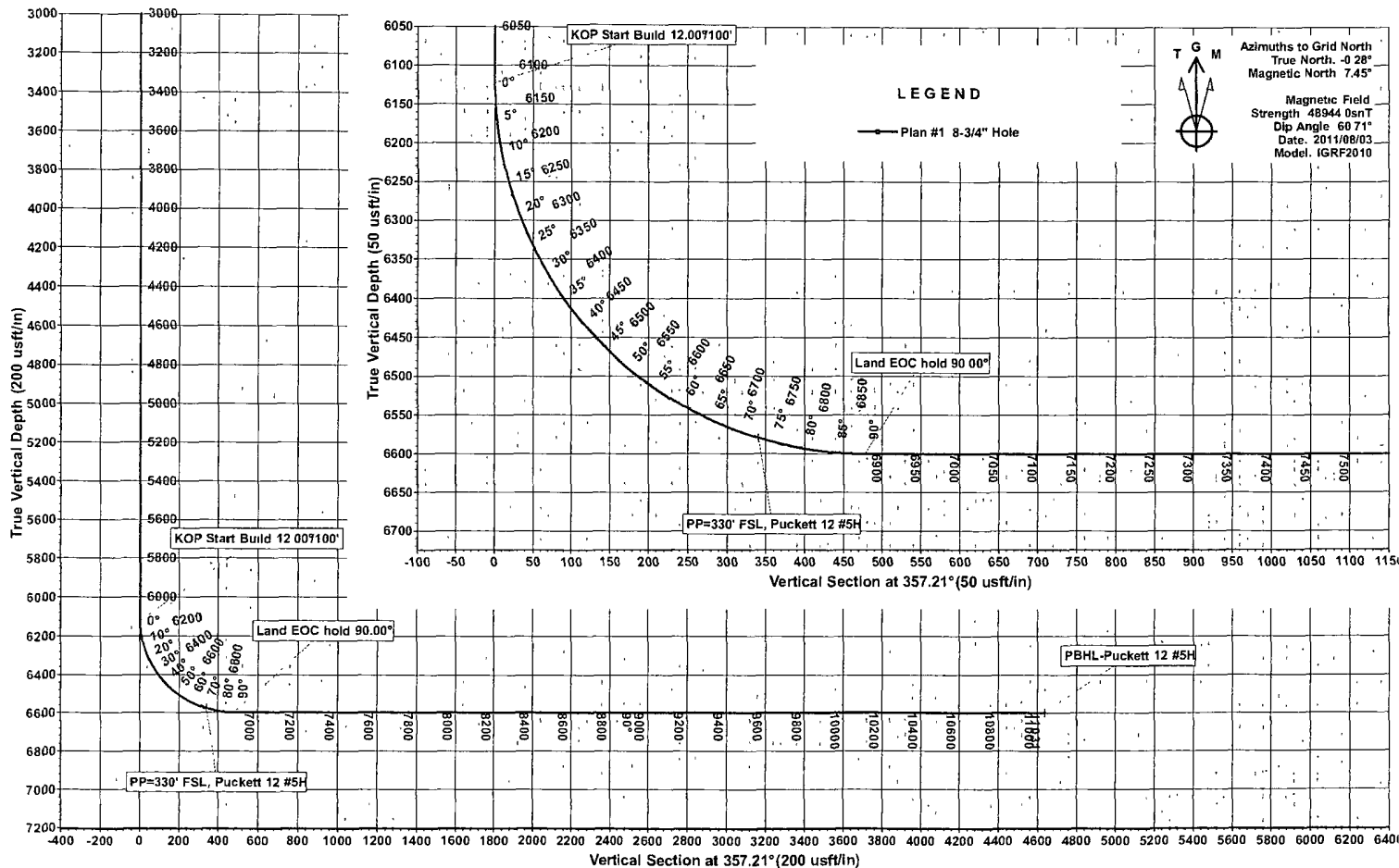
Reviewed: Date:

#### 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

#### AZIMUTH CORRECTIONS

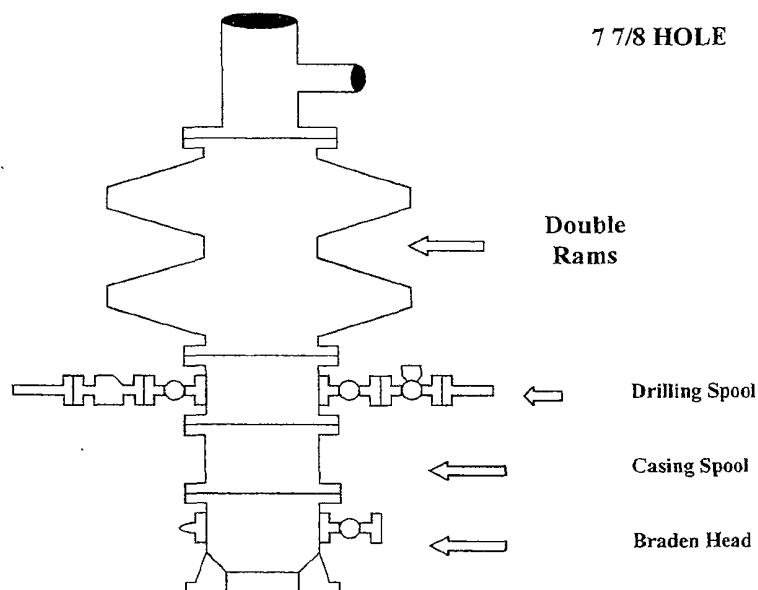
ALL AZIMUTHS MUST BE CORRECTED TO GRID  
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING  
To convert a Magnetic Direction to a Grid Direction, Add 7.45°  
To convert a True Direction to a Grid Direction, Subtract 0.28°



# COG Operating LLC

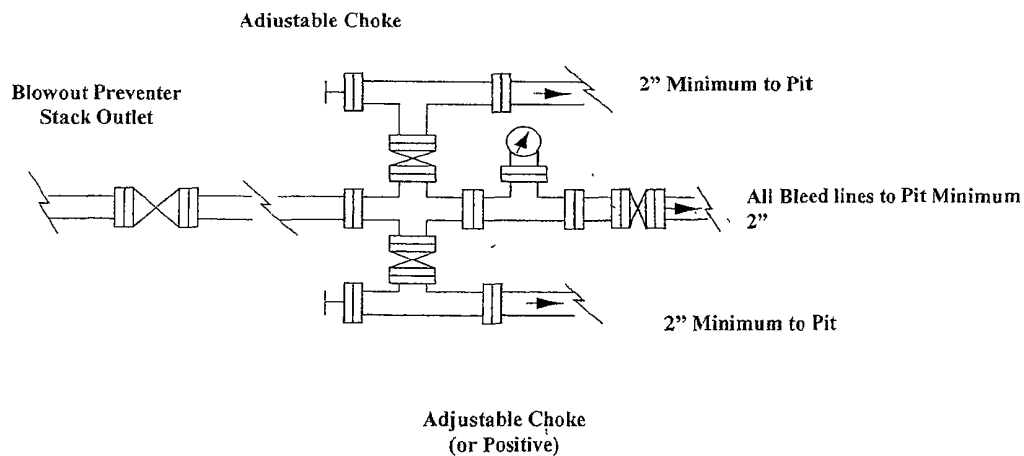
## Exhibit #9

### BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)  
No Annular Required



**RECEIVED**

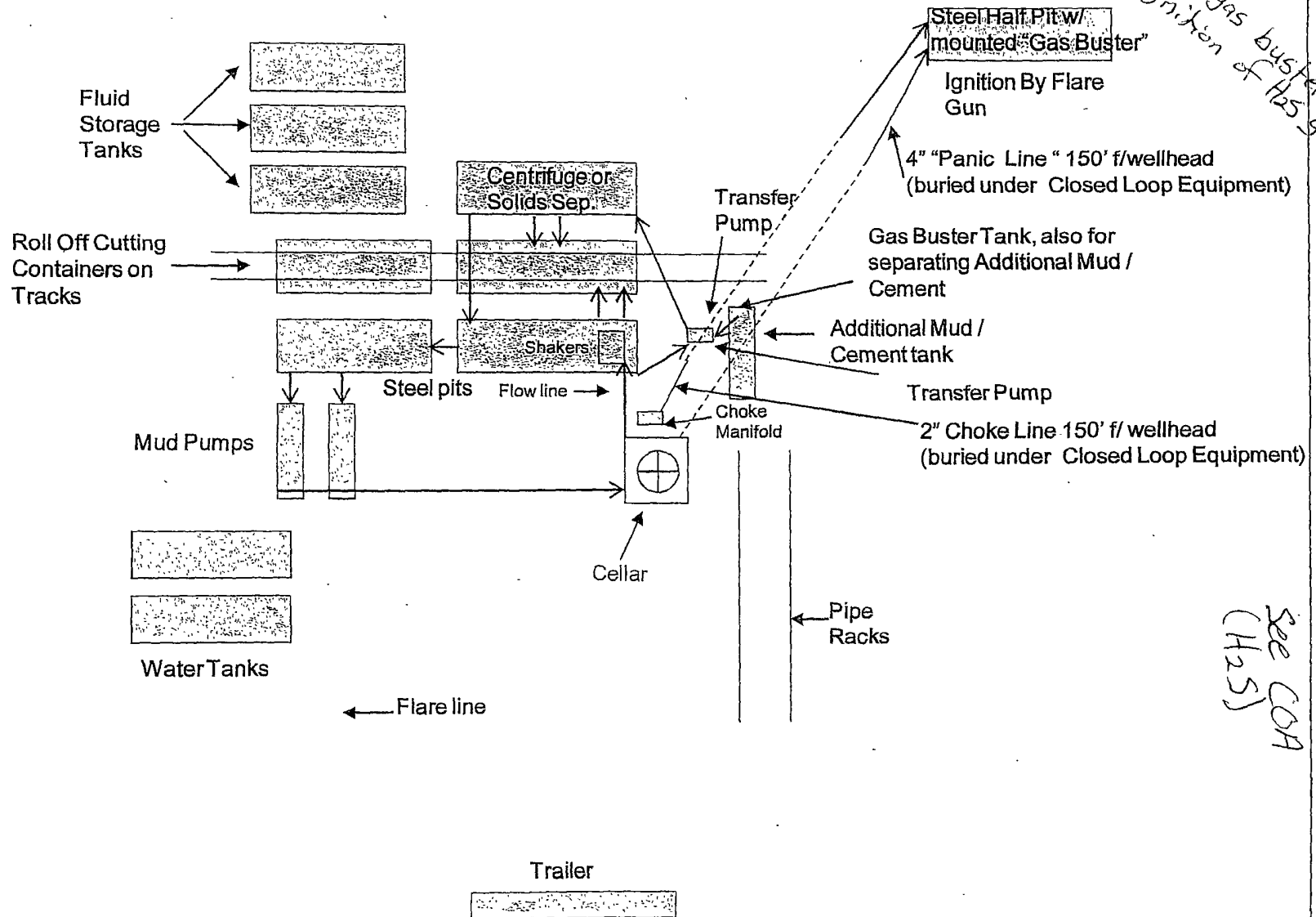
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NMOC D ARTESIA

**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.

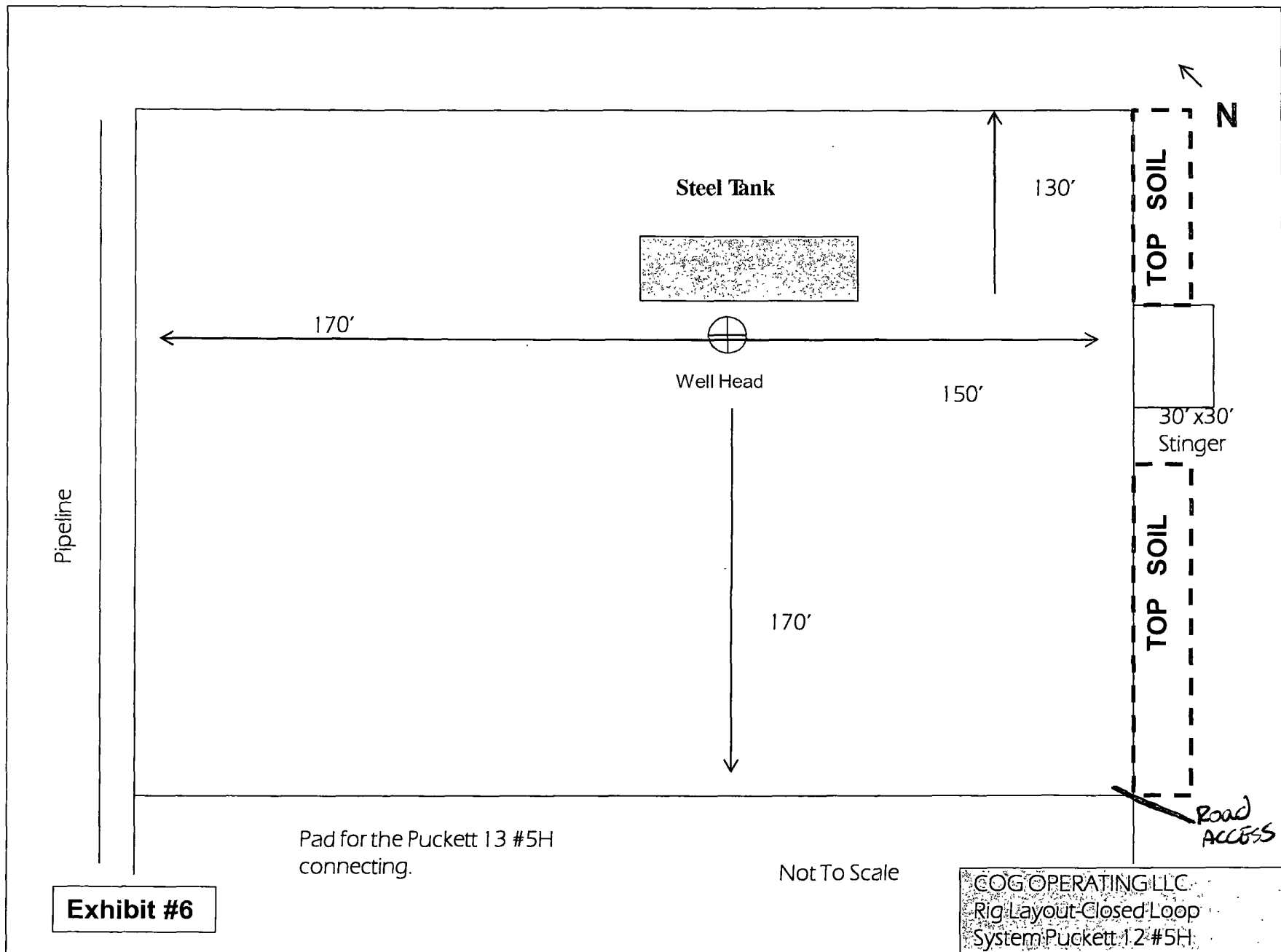
Cuttings will be hauled to either:

CRI (permit number R9166)

or

GMI (permit number 711-019-001)

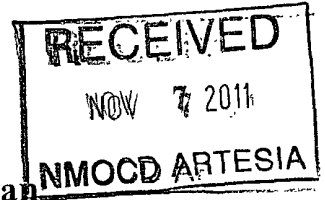
dependent upon which rig is available to drill this well.





## COG Operating LLC

## Hydrogen Sulfide Drilling Operation Plan

**I. HYDROGEN SULFIDE TRAINING**

All personnel, whether regularly assigned, contracted, or employed on an unscheduled basis, will receive training from a qualified instructor in the following areas prior to commencing drilling operations on this well:

1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures, and prevailing winds.
4. The proper techniques for first aid and rescue procedures.

In addition, supervisory personnel will be trained in the following areas:

1. The effects of H<sub>2</sub>S on metal components. If high tensile tubular are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H<sub>2</sub>S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

## II. H2S SAFETY EQUIPMENT AND SYSTEMS

Note: All H2S safety equipment and systems will be installed, tested, and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonable expected to contain H2S.

### 1. Well Control Equipment:

- A. Flare line.
- B. Choke manifold.
- C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.
- D. Auxiliary equipment may include if applicable: annular preventer & rotating head.

### 2. Protective equipment for essential personnel:

- A. Mark II Survive air 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

### 3. H2S detection and monitoring equipment:

- A. 1 portable H2S monitors positioned on location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 PPM are reached.

### 4. Visual warning systems:

- A. Wind direction indicators as shown on well site diagram (Exhibit #8).
- B. Caution/Danger signs (Exhibit #7) shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow with black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used, when appropriate. See example attached.

### 5. Mud program:

- A. The mud program has been designed to minimize the volume of H2S circulated to surface. Proper mud weight, safe drilling practices, and the use of H2S scavengers will minimize hazards when penetrating H2S bearing zones.

**6. Metallurgy:**

- A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H<sub>2</sub>S service.
- B. All elastomers used for packing and seals shall be H<sub>2</sub>S trim.

**7. Communication:**

- A. Radio communications in company vehicles including cellular telephone and 2-way radio.
- B. Land line (telephone) communication at Office.

**8. Well testing:**

- A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H<sub>2</sub>S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

**EXHIBIT #7**

**WARNING**  
**YOU ARE ENTERING AN H<sub>2</sub>S**  
**AUTHORIZED PERSONNEL ONLY**

- 1. BEARDS OR CONTACT LENSES NOT ALLOWED
- 2. HARD HATS REQUIRED
- 3. SMOKING IN DESIGNATED AREAS ONLY
- 4. BE WIND CONSCIOUS AT ALL TIMES
- 5. CHECK WITH COG OPERATING FOREMAN AT

**COG OPERATING LLC**  
**1-432-683-7443**  
**1-575-746-2010**

**EDDY COUNTY EMERGENCY NUMBERS**

ARTESIA FIRE DEPT. 575-746-5050  
ARTESIA POLICE DEPT. 575-746-5000  
EDDY CO. SHERIFF DEPT. 575-746-9888

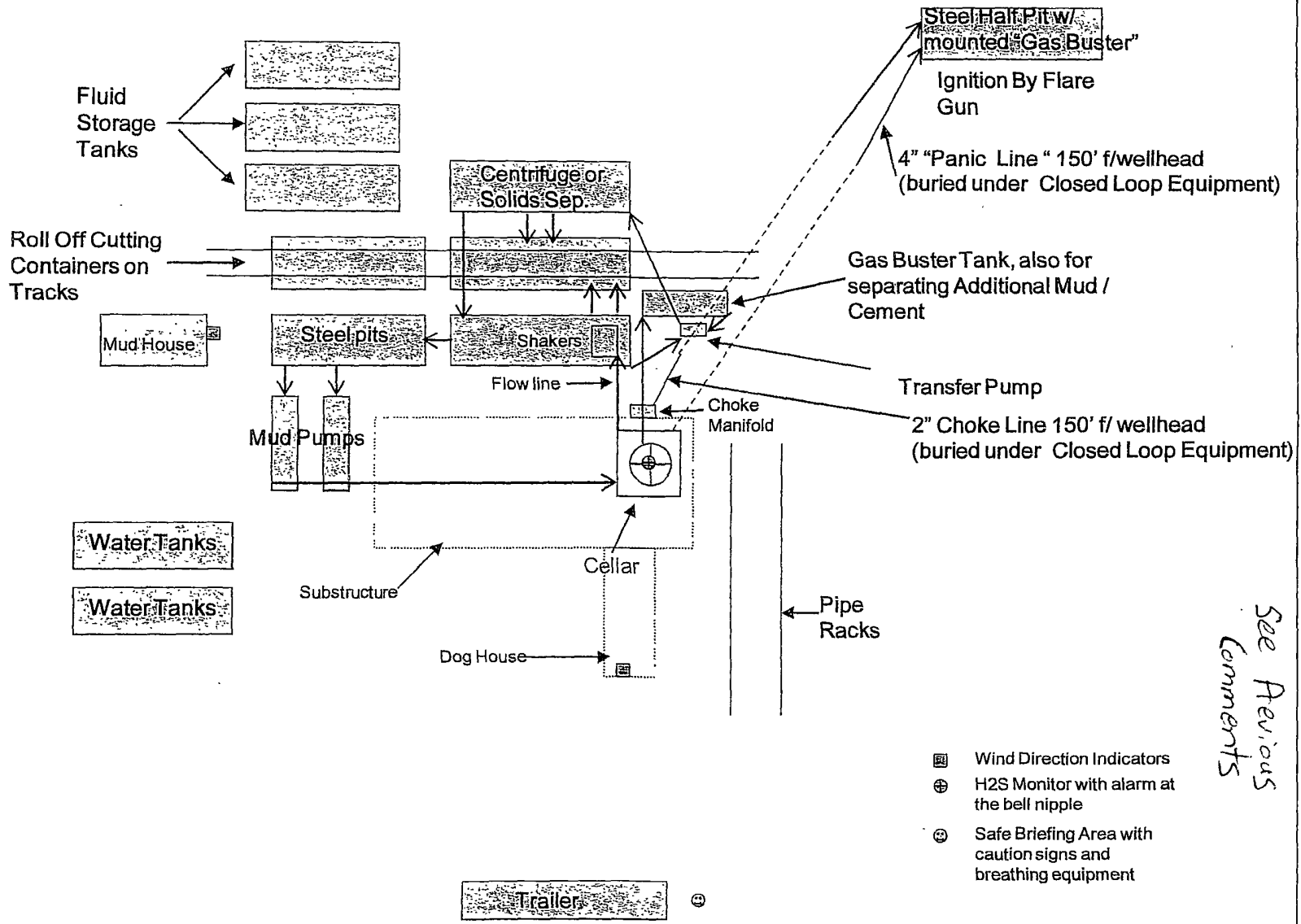
**LEA COUNTY EMERGENCY NUMBERS**

HOBBS FIRE DEPT. 575-397-9308  
HOBBS POLICE DEPT. 575-397-9285  
LEA CO. SHERIFF DEPT. 575-396-1196

COG Operating LLC

# EXHIBIT 8

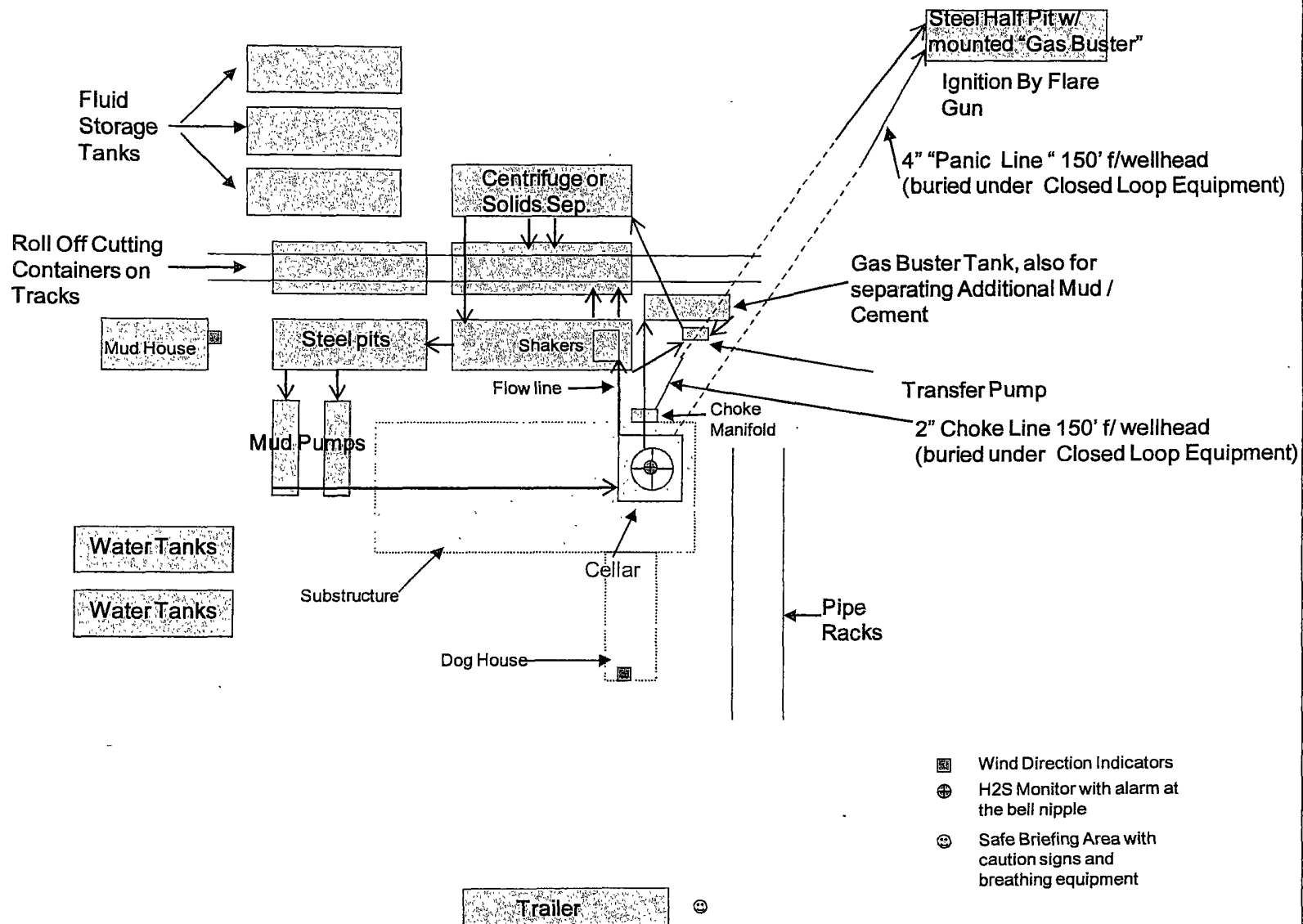
Drilling Location - H2S Safety Equipment Diagram

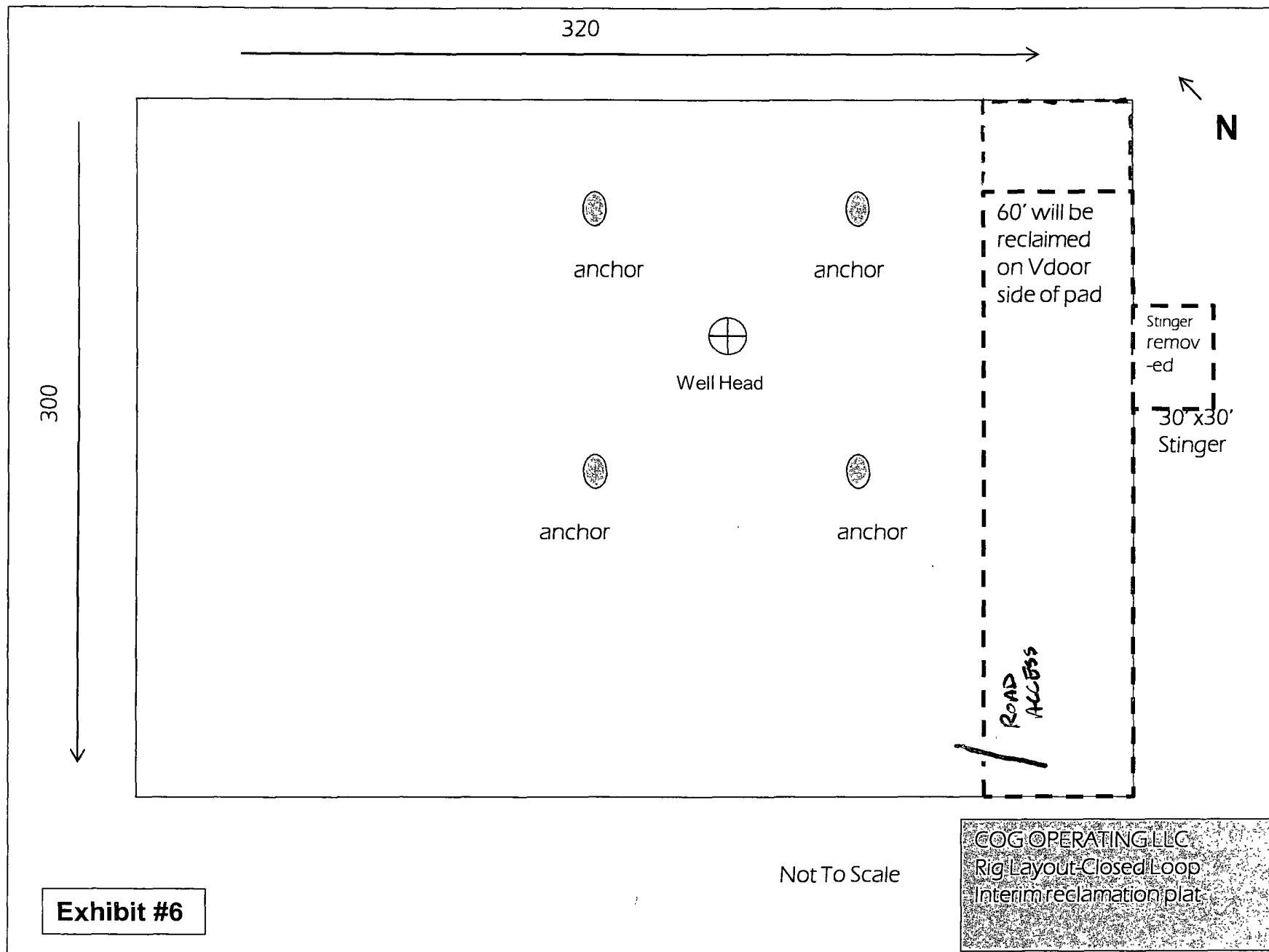


COG Operating LLC

# Drilling Location - H2S Safety Equipment Diagram

## EXHIBIT 8





DISTRICT 2 -- CHECKLIST FOR INTENTS TO DRILL

38858

Operator COE-OP2 OGRID # 229134  
Well Name & # Puckett 1 Federal #5H Surface Type (F) (S) (P)  
Location: UL \_\_\_\_\_, Sect \_\_\_\_\_, Township \_\_\_\_\_, s, RNG \_\_\_\_\_, e, Sub-surface Type (F) (S) (P)

- A. Date C101 rec'd 11/07/2011 C101 reviewed 11/14/2011
- B. 1. Check mark, Information is OK on Forms:  
OGRID ☒, BONDING ☒, PROP CODE ☒, WELL # ☒, SIGNATURE ☒  
2. Inactive Well list as of: 11/14/2011 # wells \_\_\_\_\_, # Inactive wells \_\_\_\_\_  
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: 11/14/2011  
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 FERN; GLORIA YESO, Code 26770  
a. Dedicated acreage 200, What Units B-G-  
b. SUR. Location Standard ✓; Non-Standard Location ☒  
c. Well shares acres: Yes \_\_\_\_\_, No \_\_\_\_\_, # of wells \_\_\_\_\_ plus this well # \_\_\_\_\_  
2. 2<sup>nd</sup>. Operator in same acreage, Yes \_\_\_\_\_, No \_\_\_\_\_  
Agreement Letter \_\_\_\_\_, Disagreement letter \_\_\_\_\_  
3. Intent to Directional Drill Yes ☒, No \_\_\_\_\_  
a. Dedicated acreage 260, What Units B-G-J-O-B  
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 11/14/2011 API #30-015 -- 39632  
8. Reviewers TCS