

**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.  
**SHL:LC029415A BHL:LC029415B**

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

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

1a. Type of work:  DRILL  REENTER  
1b. Type of Well:  Oil Well  Gas Well  Other  Single Zone  Multiple Zone

8. Lease Name and Well No.  
**Puckett 24 Federal #2H [898]**

2. Name of Operator  
**COG Operating LLC**

9. API Well No.  
**30-015-39659**

3a. Address **550 W. Texas Ave., Suite 1300  
Midland, TX 79701**

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

10. Field and Pool, or Exploratory  
**Mar Logan; Glorieta-Yeso, East [9723] [197840] K6**

4. Location of Well (Report location clearly and in accordance with any State requirements \*)  
At surface **SHL: 10' FSL & 805' FWL, UL M, SEC 13**  
At proposed prod. zone **BHL: 330' FSL & 990' FWL, UL M, SEC 13**

11. Sec., T R M. or Blk and Survey or Area  
**Sec 13 & 24 T17S R31E**

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

**UNORTHODOX LOCATION**

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) **10'**

16. No of acres in lease  
**SHL:640 BHL:1920**

17. Spacing Unit dedicated to this well  
**160**

18. Distance from proposed location\* to nearest well, drilling, completed, applied for, on this lease, ft **150'**

19. Proposed Depth  
**TVD: 6600' MD:11357'  
PIF 6900'**

20. BLM/BIA Bond No on file  
**NMB000740; NMB000215**

21. Elevations (Show whether DF, KDB, RT, GL, etc)  
**3903' GL**

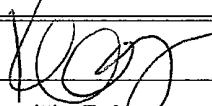
22. Approximate date work will start\*  
**10/30/2011**

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.
- 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) **Kelly J. Holly** Date **08/04/2011**  
Title **Permitting Tech**

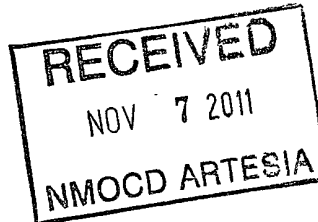
Approved by (Signature) **/s/ Don Peterson** Name (Printed/Typed) \_\_\_\_\_ Date **OCT 28 2011**  
Title **FIELD MANAGER** Office **CARLSBAD FIELD OFFICE**

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.  
Conditions of approval, if any, are attached

**APPROVAL FOR TWO YEARS**

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

\*(Instructions on page 2)



Roswell Controlled Water Basin

Approval Subject to General Requirements  
& Special Stipulations Attached

SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

*WJH*

ATTACHMENT TO FORM 3160-3  
 COG Operating, LLC  
 Puckett 24 Federal #2H  
 SHL: 10' FSL & 805' FWL, Unit M  
 BHL: 330' FSL & 990' FWL, Unit M  
 Sec 24, T17S, R31E  
 Eddy County, NM

1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 3903'
3. Proposed Depths: Horizontal TVD = 6,600', MD = 11,357' Pilot Hole = 6,900'
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'
Blinebry	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
Blinebry	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 24 Federal #2H  
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**6. Casing Program - Proposed**

Hole size	Interval	OD of Casing	Weight	Cond.	Collar	Grade
17-1/2" Collapse sf - 3.87, Burst sf - 8.70, Tension sf - 14.91	0' - +/- 700' <sup>610</sup>	13-3/8"	48#	New	STC	H-40 or J/K-55
12-1/4" Collapse sf - 2.88, Burst sf - 5.01, Tension sf - 8.11	0' - +/- 2000' <sup>1900</sup>	9-5/8"	36#	New	STC	J/K-55
8-3/4" Collapse sf - 1.87, Burst sf - 2.48, Tension sf - 2.08	0' - 11357'	7" x 5-1/2"	26#/17#	New	LTC	L-80

**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.

**Pilot Hole Cement:** 7-7/8" hole +/- 6000'-6900', 350sx Class C, 16.8 ppg, 1.02 yd, 17% excess, ~~calculated to surface.~~ Cement volume to be adjusted proportionally with pilot hole td.

**7 x 5 1/2" Production Csg:** Set at +/- 11357'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 53% 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 11357'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; 3% 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 24 Federal #2H  
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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' <i>610</i>	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
700' - 2000' <i>1900</i>	10	30	NC	Brine mud, lime for PH and paper for seepage and sweeps.
2000' - 11357'	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:

**Reduce hole size at 6000' to 7 7/8", drill pilot hole to 6900'. After evaluation, plug back pilot hole to 6,000'. 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 +/-4484' lateral to TD at +/-11357' MD, 6600' TVD. Run 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 24 Federal #2H  
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12. Logging, Testing and Coring Program: *See CoA*

- A. The evaluation program will consist of PEX, LDT-CNL-GR, HRLA\_GR, FMI, Rotary Cores and will be ran from T.D. in vertical pilot hole to 9 5/8" casing shoe.
- 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 1800 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 24 Federal #2H**

**Puckett 24 Federal #2H**

**OH**

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

**SHL = 10' FSL & 805' FWL, Sec 13**

**BHL = 330' FSL & 990' FWL , Sec 24**

## **Standard Planning Report**

**12 July, 2011**



**Scientific Drilling**  
Directional Drilling Operations



Scientific Drilling  
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site-Puckett 24 #2H
Company:	COG Operating,LLC	TVD Reference:	GL Elev @ 3903.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3903.00usft
Site:	Puckett 24 #2H	North Reference:	Grid
Well:	Puckett 24 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 8-3/4" 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	Puckett 24 #2H				
Site Position:	Northing:	665,058.80 usft	Latitude:	32° 49' 38.336 N	
From:	Map	Easting:	655,055.40 usft	Longitude:	103° 49' 42.831 W
Position Uncertainty:	0.00 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.27 °

Well	Puckett 24 #2H					
Well Position	+N/-S	0.00 usft	Northing:	665,058.80 usft	Latitude:	32° 49' 38.336 N
	+E/-W	0.00 usft	Easting:	655,055.40 usft	Longitude:	103° 49' 42.831 W
Position Uncertainty	0.00 usft		Wellhead Elevation:	Ground Level: 3,903.00 usft		

Wellbore	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	2011/07/12	(°) 7.74	(°) 60.70	(nT) 48,941

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	Direction
	(usft)	(usft)	(usft)	(°)
	0.00	0.00	0.00	177.58

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	
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	177.58	6,600.00	-477.04	20.12	12.00	12.00	0.00	177.58	
11,356.98	90.00	177.58	6,600.00	-4,957.50	209.10	0.00	0.00	0.00	0.00	PBHL-Puckett 24 #2F



Scientific Drilling  
Planning Report



Database:	EDM-Julio	Local Co-ordinate/Reference:	Site Puckett 24 #2H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3903.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3903.00usft
Site:	Puckett 24 #2H	North Reference:	Grid
Well:	Puckett 24 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 8-3/4" 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
6,122.54	0 00	0 00	6,122.54	0 00	0 00	0 00	0 00	0 00	0 00
<b>KOP Start Build: 12.00°/100'</b>									
6,200 00	9 30	177 58	6,199.66	-6 26	0 26	6 27	12 00	12 00	0 00
6,300 00	21 30	177 58	6,295.94	-32 57	1 37	32 60	12 00	12 00	0 00
6,400 00	33 30	177 58	6,384.65	-78 31	3 30	78 38	12 00	12 00	0 00
6,500 00	45 30	177 58	6,461.89	-141 47	5 97	141 59	12 00	12 00	0 00
6,600 00	57 30	177 58	6,524.31	-219 29	9 25	219 49	12 00	12 00	0 00
6,700 00	69 30	177 58	6,569.16	-308 39	13.01	308 66	12 00	12 00	0 00
6,800 00	81 30	177 58	6,594.50	-404 85	17.08	405.21	12 00	12 00	0 00
6,872.54	90 00	177 58	6,600 00	-477 05	20 12	477 47	12.00	12 00	0 00
<b>Land EOC hold 90.00°</b>									
6,900 00	90 00	177 58	6,600 00	-504 48	21 28	504 93	0 00	0 00	0 00
7,000 00	90 00	177 58	6,600.00	-604 39	25.49	604 93	0 00	0 00	0 00
7,100 00	90 00	177 58	6,600 00	-704 30	29.71	704 93	0 00	0 00	0 00
7,200 00	90 00	177 58	6,600 00	-804.21	33 92	804 93	0 00	0 00	0 00
7,300 00	90 00	177 58	6,600 00	-904.13	38 13	904 93	0 00	0 00	0 00
7,400 00	90.00	177 58	6,600.00	-1,004.04	42 35	1,004 93	0 00	0 00	0 00
7,500 00	90 00	177 58	6,600 00	-1,103.95	46.56	1,104 93	0 00	0 00	0 00
7,600 00	90 00	177 58	6,600 00	-1,203 86	50.78	1,204 93	0 00	0 00	0 00
7,700 00	90 00	177 58	6,600 00	-1,303 77	54 99	1,304 93	0 00	0 00	0 00
7,800 00	90.00	177 58	6,600.00	-1,403 68	59 21	1,404 93	0 00	0 00	0 00
7,900 00	90 00	177 58	6,600 00	-1,503 59	63 42	1,504 93	0 00	0 00	0 00
8,000 00	90 00	177 58	6,600 00	-1,603 50	67 63	1,604 93	0 00	0 00	0 00
8,100 00	90 00	177 58	6,600 00	-1,703 42	71.85	1,704 93	0 00	0 00	0 00
8,200 00	90 00	177 58	6,600 00	-1,803.33	76.06	1,804.93	0 00	0 00	0 00
8,300 00	90 00	177 58	6,600 00	-1,903 24	80 28	1,904 93	0 00	0 00	0 00
8,400 00	90 00	177 58	6,600 00	-2,003 15	84 49	2,004 93	0 00	0 00	0 00
8,500 00	90 00	177 58	6,600 00	-2,103 06	88 70	2,104 93	0 00	0 00	0 00
8,600 00	90 00	177 58	6,600 00	-2,202 97	92 92	2,204 93	0 00	0 00	0 00
8,700 00	90 00	177 58	6,600 00	-2,302.88	97.13	2,304 93	0 00	0 00	0 00
8,800 00	90 00	177 58	6,600 00	-2,402 79	101 35	2,404 93	0 00	0 00	0 00
8,900 00	90 00	177 58	6,600 00	-2,502.70	105.56	2,504.93	0 00	0 00	0 00
9,000 00	90 00	177 58	6,600.00	-2,602 62	109 77	2,604 93	0 00	0 00	0 00
9,100 00	90 00	177 58	6,600 00	-2,702 53	113.99	2,704.93	0 00	0 00	0 00
9,200 00	90 00	177 58	6,600 00	-2,802 44	118 20	2,804 93	0 00	0 00	0 00
9,300 00	90 00	177 58	6,600 00	-2,902 35	122 42	2,904 93	0 00	0 00	0 00
9,400 00	90 00	177 58	6,600 00	-3,002 26	126 63	3,004 93	0 00	0 00	0 00
9,500 00	90 00	177 58	6,600 00	-3,102 17	130 84	3,104 93	0 00	0 00	0 00
9,600 00	90 00	177 58	6,600 00	-3,202 08	135 06	3,204 93	0 00	0 00	0 00
9,700 00	90 00	177 58	6,600 00	-3,301 99	139 27	3,304 93	0 00	0 00	0 00
9,800 00	90 00	177 58	6,600 00	-3,401 91	143 49	3,404.93	0 00	0 00	0 00
9,900 00	90 00	177 58	6,600 00	-3,501 82	147 70	3,504 93	0 00	0 00	0 00
10,000 00	90 00	177 58	6,600 00	-3,601 73	151 92	3,604 93	0 00	0 00	0 00
10,100 00	90 00	177 58	6,600 00	-3,701 64	156 13	3,704 93	0 00	0 00	0 00
10,200 00	90 00	177 58	6,600 00	-3,801 55	160 34	3,804 93	0 00	0 00	0 00
10,300 00	90 00	177 58	6,600 00	-3,901 46	164 56	3,904 93	0 00	0 00	0 00
10,400 00	90 00	177 58	6,600 00	-4,001 37	168 77	4,004 93	0 00	0 00	0 00
10,500 00	90 00	177 58	6,600 00	-4,101 28	172 99	4,104 93	0 00	0 00	0 00
10,600 00	90 00	177 58	6,600 00	-4,201 19	177 20	4,204 93	0 00	0 00	0 00
10,700 00	90 00	177 58	6,600 00	-4,301 11	181 41	4,304 93	0 00	0 00	0 00
10,800 00	90 00	177 58	6,600 00	-4,401 02	185 63	4,404 93	0 00	0 00	0 00
10,900 00	90 00	177 58	6,600 00	-4,500 93	189 84	4,504 93	0 00	0 00	0 00
11,000 00	90 00	177 58	6,600 00	-4,600 84	194 06	4,604 93	0 00	0 00	0 00





Scientific Drilling  
Planning Report



Database:	EDM-Julio	Local Co-ordinate Reference:	Site Puckett 24 #2H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3903.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3903.00usft
Site:	Puckett 24 #2H	North Reference:	Grid
Well:	Puckett 24 #2H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 8-3/4" 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)
11,100 00	90 00	177 58	6,600 00	-4,700 75	198 27	4,704.93	0 00	0 00	0 00
11,200 00	90 00	177 58	6,600 00	-4,800 66	202.48	4,804.93	0 00	0 00	0 00
11,300 00	90.00	177 58	6,600 00	-4,900 57	206 70	4,904 93	0 00	0 00	0 00
11,356 98	90 00	177 58	6,600 00	-4,957.50	209 10	4,961 91	0 00	0 00	0 00

PBHL-Puckett 24 #2H

Design Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PBHL-Puckett 24 #2H	0 00	0 00	6,600 00	-4,957 50	209 10	660,101 30	655,264 50	32° 48' 49 272 N	103° 49' 40 658 W

- hit/miss target  
- Shape  
- plan hits target center  
- Point

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
6,122 54	6,122 54	0 00	0 00	KOP Start Build 12 00°/100'
6,872 54	6,600 00	-477 05	20 12	Land EOC hold 90 00°



Scientific Drilling for COG Operating LLC  
 Site: Eddy County, NM (NAN27 NME)  
 Well: Puckett 24 #2H  
 Wellbore: OH  
 Design: Plan #1 8-3/4" Hole



SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	V Sect	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	177.58	6600.00	-477.04	20.12	12.00	177.58	477.46	
4	11356.98	90.00	177.58	6600.00	-4957.50	209.10	0.00	0.00	4961.91	PBHL-Puckett 24 #2H

Puckett 24 #2H

Created By: Julio Pina Date: 12-Jul-11  
 Checked: \_\_\_\_\_ Date: \_\_\_\_\_  
 Reviewed: \_\_\_\_\_ Date: \_\_\_\_\_

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-Puckett 24 #2H	6600.00	-4957.50	209.10	660101.30	655264.50	32°48' 49.272 N	103°49' 40.658 W	Point

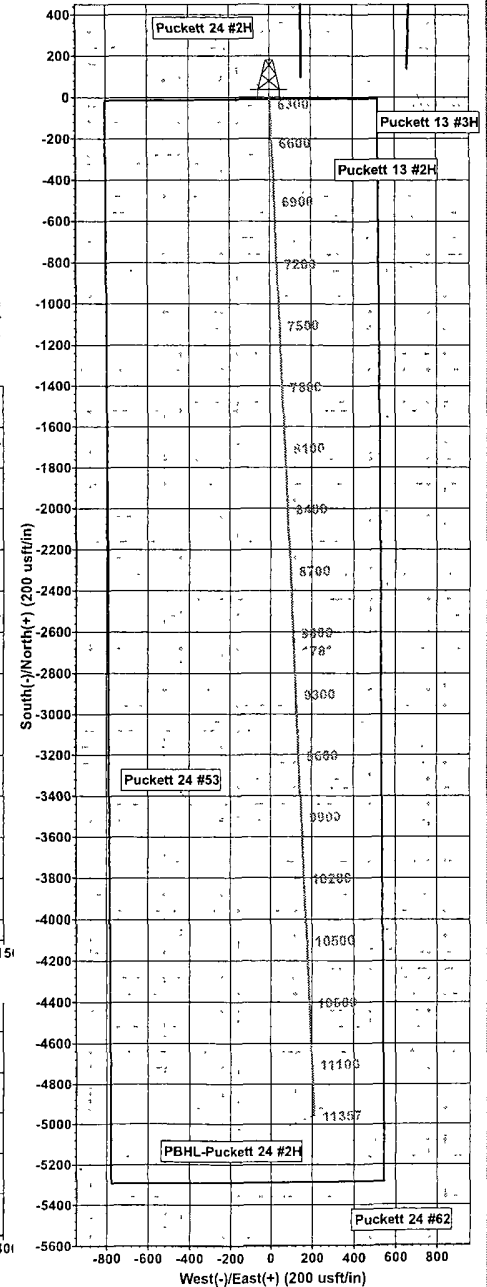
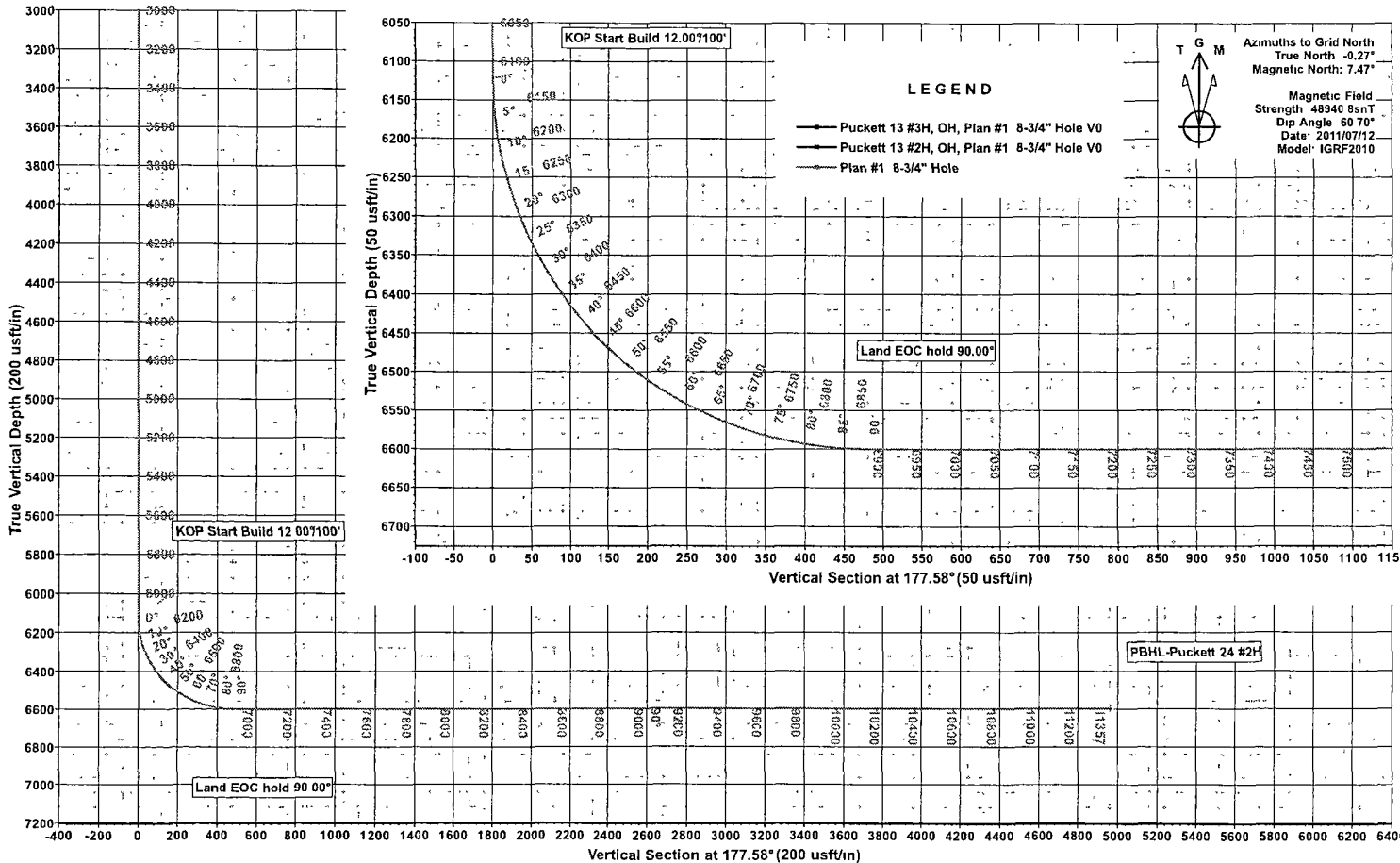
PROJECT DETAILS: Eddy County, NM (NAN27 NME)

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

WELL DETAIL S: Puckett 24 #2H

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
0.00	0.00	665058.80	655055.40	32°49' 38.336 N	103°49' 42.831 W

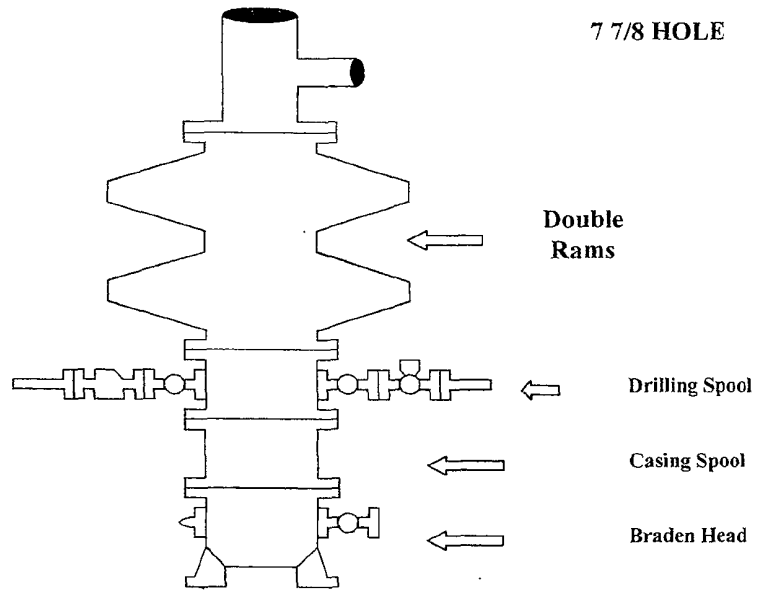
AZIMUTH CORRECTIONS  
 ALL AZIMUTHS MUST BE CORRECTED TO GRID  
 GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING  
 To convert a Magnetic Direction to a Grid Direction: Add 7.47°  
 To convert a True Direction to a Grid Direction: Subtract 0.27°



# COG Operating LLC

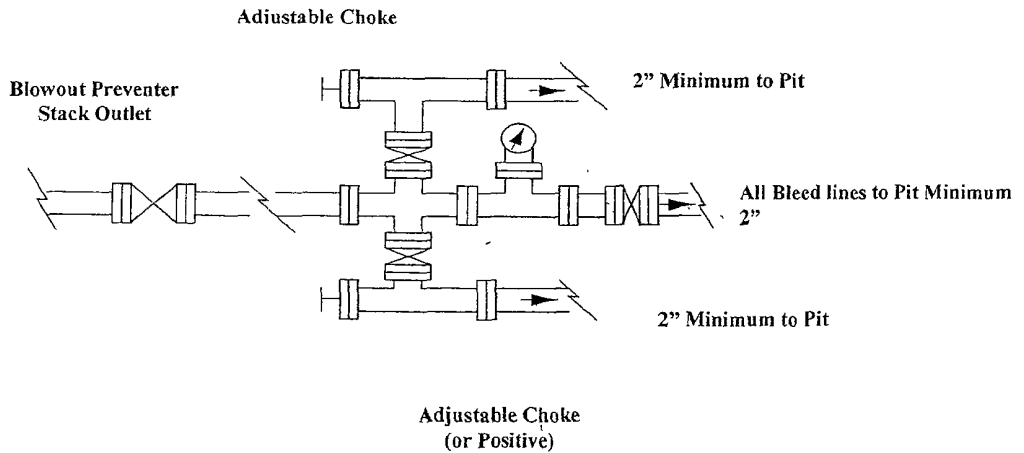
## Exhibit #9

### BOPE and Choke Schematic

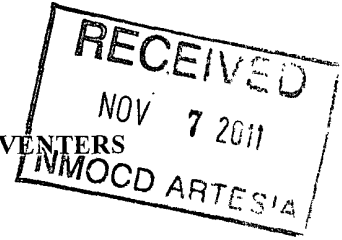


Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)  
No Annular Required

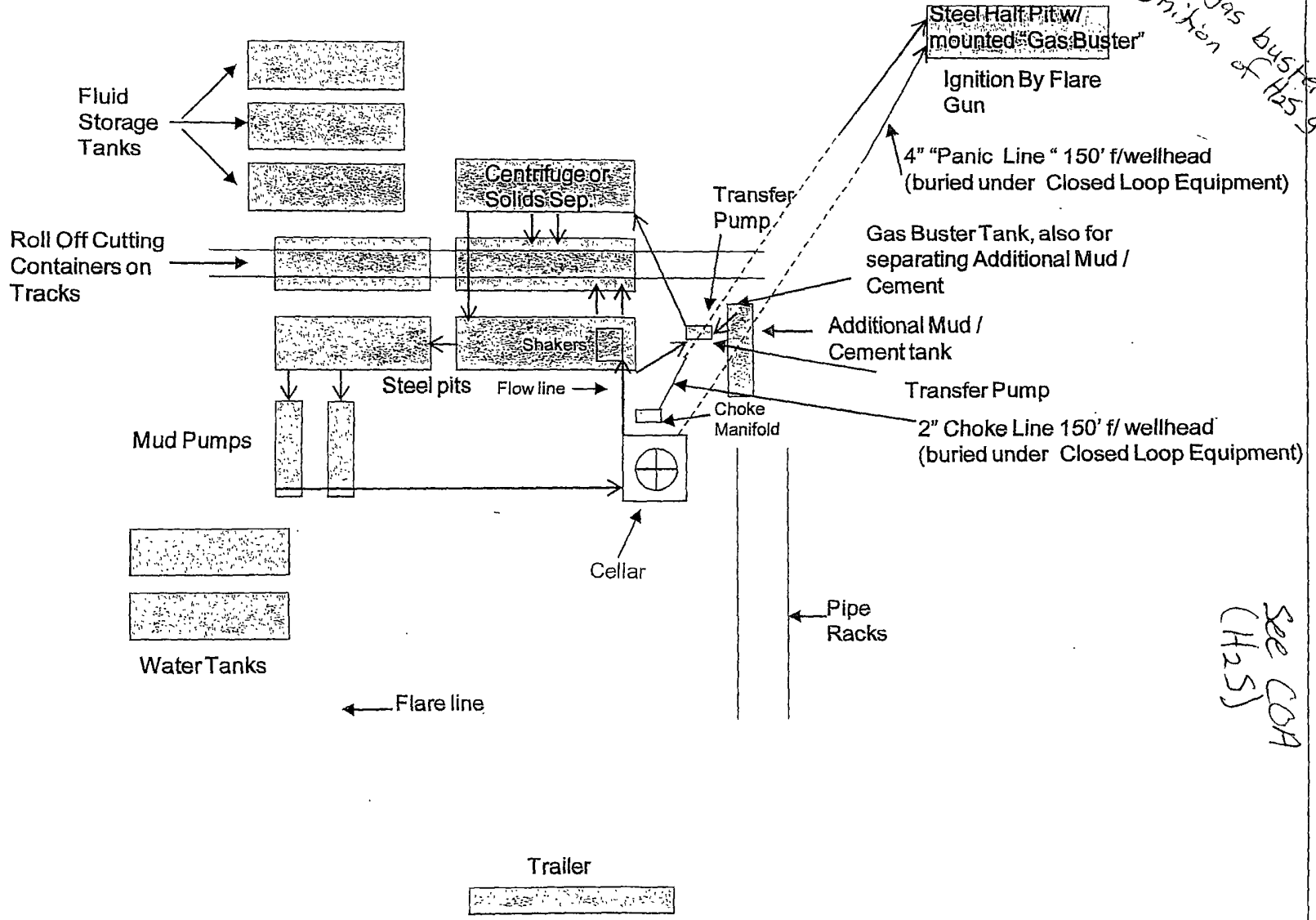


**NOTES REGARDING THE BLOWOUT PREVENTERS  
Master Drilling Plan  
Eddy County, New Mexico**



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



See COA  
 (H<sub>2</sub>S)

## 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.

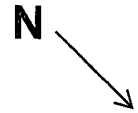
Cuttings will be hauled to either:

CRI (permit number R9166)

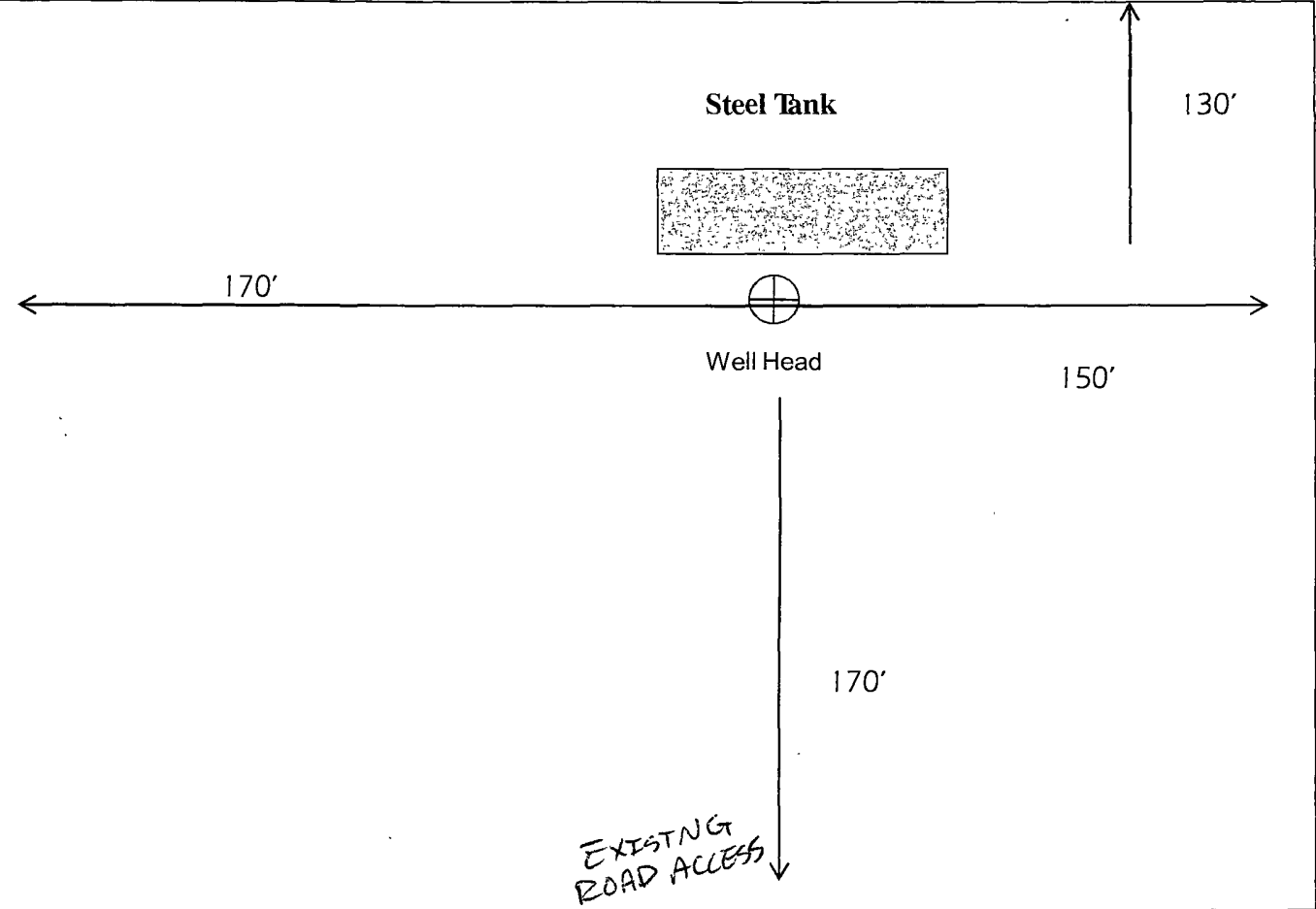
or

GMI (permit number 711-019-001)

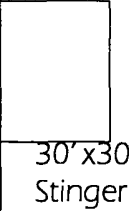
dependent upon which rig is available to drill this well.



TOP SOIL



Connecting to  
Puckett 13 #2H  
well pad



Not To Scale

Exhibit #6

COG OPERATING LLC  
Rig Layout-Closed Loop  
System: Puckett 24 #2H

DISTRICT 2 -- CHECKLIST FOR INTENTS TO DRILL

38931

Operator COG-OP2 OGRID # 229134  
Well Name & # POCKET # 24 Federal Surface Type (F) (S) (P)  
Location: UI M, Sect 13, Township 17 s, RNG 31 e, Sub-surface Type (F) (S) (P)

A. Date C101 rec'd 11 / 7 / 2011 C101 reviewed 11 / 21 / 2011

- B. 1. Check mark, Information is OK on Forms:  
OGRID , BONDING , PROP CODE , WELL # , SIGNATURE
- 2. Inactive Well list as of: 11 / 21 / 2011 # wells 3011, # 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 / 21 / 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. ~~Max Pool~~ Pool Clarieta - YES Code 9773 97866
  - a. Dedicated acreage \_\_\_\_\_, What Units M
  - 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 200, 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 / 21 / 2011

API #30-015 -- 39659

8. Reviewers TCS