

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

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

1a Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5 Lease Serial No NMLC-028731B
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 NMNM-111789X, Dodd Federal Unit
3a Address 550 W. Texas Ave., Suite 100 Midland, TX 79701		8 Lease Name and Well No DODD FEDERAL UNIT #600 <368195>
3b Phone No (include area code) 432-685-4384		9 API Well No 30-015- 40454 <229137> 7/11/2012
4 Location of Well (Report location clearly and in accordance with any State requirements *) At surface SHL: 930' FNL & 75' FWL, Unit D At proposed prod zone BHL: 660' FNL & 10' FWL, Unit D		10 Field and Pool, or Exploratory Dodd; Glorieta-Upper Yeso <97917>
14 Distance in miles and direction from nearest town or post office* 2 miles from Loco Hills, NM		11 Sec, T R M or Blk and Survey or Area Sec 14 T17S R29E
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drg unit line, if any) 75'	16 No of acres in lease 1480	12 County or Parish EDDY
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 430'	19 Proposed Depth TVD: 4550' MD: 4564'	13 State NM
21 Elevations (Show whether DF, KDB, RT, GL, etc) 3613' GL	22 Approximate date work will start* 07/31/2012	17 Spacing Unit dedicated to this well 40
23 Estimated duration 15 days		20 BLM/BIA Bond No on file NMB000740; NMB000215

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 Holly	Date 05/18/2012
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Title
Permitting Tech

Approved by (Signature)	Name (Printed/Typed) James A. Ames	Date JUL 6 2012
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 USC 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 APPROVAL

Approval Subject to General Requirements
& Special Stipulations Attached

Surface Use Plan

COG Operating, LLC

Dodd Federal Unit #600

SL: 930' FNL & 75' FWL

UL D

BHL: 660' FNL & 10' FWL

UL D

Section 14, T-17-S, R-29-E

Eddy County, New Mexico

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements made in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating, LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 14th day of May, 2012.

Signed: _____



Printed Name: Carl Bird

Position: Drilling Engineer

Address: 550 W. Texas, Suite 1300, Midland, Texas 79701

Telephone: (432) 683-7443

Field Representative (if not above signatory): Same

E-mail: cbird@concho.com

DISTRICT I
1625 N French Dr., Hobbs, NM 88240
Phone (575) 393-6161 Fax (575) 393-0720
DISTRICT II
811 S First St., Artesia, NM 88210
Phone (575) 748-1283 Fax (575) 748-9720
DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone (505) 334-6178 Fax (505) 334-6170
DISTRICT IV
1220 S St Francis Dr., Santa Fe, NM 87505
Phone (505) 476-3460 Fax (505) 476-3462

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 August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015- 40454	Pool Code 97917	Pool Name Dodd; Glorieta-Upper Yeso
Property Code 308195	Property Name DODD FEDERAL UNIT	Well Number 600
OGRID No 229137	Operator Name COG OPERATING, LLC	Elevation 3613'

Surface Location

UL or lot No	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	14	17-S	29-E		930	NORTH	75	WEST	EDDY

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
D	14	17-S	29-E		660	NORTH	10	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No
40			4564 7/6

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

		<p>OPERATOR CERTIFICATION</p> <p>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</p> <p><i>Kacie Connally</i> 5-10-12 Signature Date</p> <p>Kacie Connally Printed Name</p> <p>Kconnally@concho.com E-mail Address</p>	
<p>GEODETIC COORDINATES NAD 27 NME</p> <p>SURFACE LOCATION Y=669114 8 N X=586009 5 E</p> <p>LAT = 32 839169° N LONG = 104 053299° W</p>		<p>CORNER COORDINATES TABLE</p> <p>Ⓐ - Y=670044.6 N, X=585932.4 E Ⓑ - Y=670044.3 N, X=587252.8 E Ⓒ - Y=668724.8 N, X=585935.5 E Ⓓ - Y=668724.3 N, X=587256.0 E</p>	
<p>BOTTOM HOLE LOCATION Y=669384.8 N X=585943.9 E</p>		<p>DETAIL</p>	
		<p>SURVEYOR CERTIFICATION</p> <p>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</p> <p>APRIL 23, 2012</p> <p>Date of Survey Signature & Seal of Professional Surveyor</p> <p><i>Ronald J. Eidson</i> 05/08/2012 Certification Number Gary G. Eidson 12641 Ronald J. Eidson 3239</p> <p>DSS SCWO 12 11 0404</p>	

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Rustler	220'
Salt	360'
Base of Salt	780'
Yates	950'
Seven Rivers	1235'
Queen	1845'
Grayburg	2220'
San Andres	2540'
Glorieta	4000'
Paddock	4075'
Blinbry	4620'
Tubb	5520'

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

Water Sand	150'	Fresh Water
Grayburg	2220'	Oil/Gas
San Andres	2540'	Oil/Gas
Glorieta	4000'	Oil/Gas
Paddock	4075'	Oil/Gas
Blinbry	4620'	Oil/Gas
Tubb	5520'	Oil/Gas

See
COA

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 300' 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 850' 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 environment.

} see
COA

4. Casing Program

See
COA

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	brst/clps/ten
17 1/2"	0-300'	13 3/8"	48#	H-40/J-55 hybrid	ST&C/New	ST&C	9.22/3.943/15.8
11"	0-850'	8 5/8"	24or32#	J-55	ST&C/New	ST&C	3.03/2.029/7.82
7 7/8"	0-TD	5 1/2"	15.5or17#	J-55orL-80	LT&C/New	LT&C	1.88/1.731/2.42

5. Cement Program

13 3/8" Surface Casing:

Class C w/ 2% CaCl₂ + 0.25 pps CF, 400 sx, yield 1.32, back to surface. 154% excess

8 5/8" Intermediate Casing:

11" Hole:

Single Stage: 50:50:10 C:Poz:Gel w/ 5% Salt + 0.25% CF, 300 sx lead, yield 2.45 + Class C w/ 2% CaCl₂, 200 sx tail, yield 1.32, back to surface. 363% excess

Multi-Stage: Stage 1: Class C w/ 2% CaCl₂, 200 sx, yield 1.32, 108% excess. Stage 2: 50:50:10 C:Poz:Gel w/ 5% Salt + 0.25% CF, 300 sx, yield 2.45, back to surface, 726% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 350' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

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. 76.8% open hole excess, cement calculated back to surface.

Multi-Stage: Stage 1: (Assumed TD of 4550') 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, 34% excess; 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 - 1.02 148% open hole excess, cement calculated back to surface. Multi stage tool to be set at approximately, depending on hole conditions, 2500'. 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 nipped 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 nipped 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
0-300' 255	Fresh Water	8.5	28	N.C.
300-850' 970	Brine	10	30	N.C.
850'-TD'	Cut Brine	8.7-9.2	30	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 Surface.
- B. Drill Stem test is not anticipated.
- C. No conventional coring is anticipated.
- D. Further testing procedures will be determined after the 5 1/2" 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 hole 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 10 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. Completion is planned in the Paddock formation.



COG Operating LLC

Eddy County, NM (NAN27 NME)
Dodd Federal Unit #600

OH

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

SHL = 930' FNL & 75' FWL

BHL = 660' FNL & 10' FWL

Top of Paddock Top = 660' FNL & 10' FWL @ 4000' TVD

Standard Planning Report

17 May, 2012





Database	EDM 5000-1 Single User Db	Local Co-ordinate Reference	Site Dodd Federal Unit #600
Company	COG Operating LLC	TVD Reference	GL @ 3613.00usft
Project	Eddy County NM (NAN27 NME)	MD Reference	GL @ 3613.00usft
Site	Dodd Federal Unit #600	North Reference	Grid
Well	Dodd Federal Unit #600	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	Dodd Federal Unit #600			
Site Position		Northing:	669,114.80 usft	Latitude: 32° 50' 21.008 N
From	Map	Easting	586,009.50 usft	Longitude: 104° 3' 11.875 W
Position Uncertainty:	0.00 usft	Slot Radius	13-3/16"	Grid Convergence: 0.15°

Well	Dodd Federal Unit #600			
Well Position	+N/-S	0.00 usft	Northing:	669,114.80 usft
	+E/-W	0.00 usft	Easting:	586,009.50 usft
Position Uncertainty	0.00 usft	Wellhead Elevation		Ground Level: 3,613.00 usft

Wellbore	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	05/17/12	7.74	60.65	48,840

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	346.34

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	
1,150.00	0.00	0.00	1,150.00	0.00	0.00	0.00	0.00	0.00	0.00	
1,449.23	5.98	346.34	1,448.68	15.17	-3.69	2.00	2.00	0.00	346.34	
3,814.75	5.98	346.34	3,801.32	254.83	-61.91	0.00	0.00	0.00	0.00	
4,113.98	0.00	0.00	4,100.00	270.00	-65.60	2.00	-2.00	0.00	180.00	T1-Dodd #600
4,563.98	0.00	0.00	4,550.00	270.00	-65.60	0.00	0.00	0.00	0.00	PBHL-Dodd #600



Database:	EDM 5000-1 Single User Db	Local Co-ordinate Reference	Site: Dodd Federal Unit #600
Company:	COG Operating LLC	TVD Reference:	GL @ 3613 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	CL @ 3613 00usft
Site:	Dodd Federal Unit #600	North Reference:	Grid
Well:	Dodd Federal Unit #600	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
1,050 00	0 00	0 00	1,050 00	0 00	0 00	0 00	0 00	0 00	0 00
8 5/8"									
1,150 00	0 00	0 00	1,150 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start 2'00"/100'									
1,200 00	1 00	346 34	1,200 00	0 42	-0 10	0 44	2 00	2 00	0 00
1,300 00	3 00	346 34	1,299 93	3 82	-0 93	3 93	2 00	2 00	0 00
1,400 00	5 00	346 34	1,399 68	10 59	-2 57	10 90	2 00	2 00	0 00
1,449 23	5 98	346 34	1,448 68	15 17	-3 69	15 61	2 00	2 00	0 00
Hold 5'98"									
1,500 00	5 98	346 34	1,499 18	20 32	-4 94	20 91	0 00	0 00	0 00
1,600 00	5 98	346 34	1,598 63	30 45	-7 40	31 33	0 00	0 00	0 00
1,700 00	5 98	346 34	1,698 09	40 58	-9 86	41 76	0 00	0 00	0 00
1,800 00	5 98	346 34	1,797 54	50 71	-12 32	52 18	0 00	0 00	0 00
1,900 00	5 98	346 34	1,897 00	60 84	-14 78	62 61	0 00	0 00	0 00
2,000 00	5 98	346 34	1,996 45	70 97	-17 24	73 04	0 00	0 00	0 00
2,100 00	5 98	346 34	2,095 91	81 10	-19 70	83 46	0 00	0 00	0 00
2,200 00	5 98	346 34	2,195 36	91 23	-22 17	93 89	0 00	0 00	0 00
2,300 00	5 98	346 34	2,294 82	101 37	-24 63	104 31	0 00	0 00	0 00
2,400 00	5 98	346 34	2,394 27	111 50	-27 09	114 74	0 00	0 00	0 00
2,500 00	5 98	346 34	2,493 73	121 63	-29 55	125 17	0 00	0 00	0 00
2,600 00	5 98	346 34	2,593 18	131 76	-32 01	135 59	0 00	0 00	0 00
2,700 00	5 98	346 34	2,692 64	141 89	-34 47	146 02	0 00	0 00	0 00
2,800 00	5 98	346 34	2,792 09	152 02	-36 94	156 44	0 00	0 00	0 00
2,900 00	5 98	346 34	2,891 55	162 15	-39 40	166 87	0 00	0 00	0 00
3,000 00	5 98	346 34	2,991 00	172 28	-41 86	177 30	0 00	0 00	0 00
3,100 00	5 98	346 34	3,090 46	182 42	-44 32	187 72	0 00	0 00	0 00
3,200 00	5 98	346 34	3,189 91	192 55	-46 78	198 15	0 00	0 00	0 00
3,300 00	5 98	346 34	3,289 37	202 68	-49 24	208 57	0 00	0 00	0 00
3,400 00	5 98	346 34	3,388 82	212 81	-51 70	219 00	0 00	0 00	0 00
3,500 00	5 98	346 34	3,488 28	222 94	-54 17	229 43	0 00	0 00	0 00
3,600 00	5 98	346 34	3,587 73	233 07	-56 63	239 85	0 00	0 00	0 00
3,700 00	5 98	346 34	3,687 19	243 20	-59 09	250 28	0 00	0 00	0 00
3,800 00	5 98	346 34	3,786 64	253 33	-61 55	260 70	0 00	0 00	0 00
3,814 75	5 98	346 34	3,801 32	254 83	-61 91	262 24	0 00	0 00	0 00
Start Drop 2'00"/100'									
3,900 00	4 28	346 34	3,886 22	262 24	-63 71	269 87	2 00	-2 00	0 00
4,000 00	2 28	346 34	3,986 05	267 80	-65 06	275 59	2 00	-2 00	0 00
4,100 00	0 28	346 34	4,086 02	269 97	-65 59	277 82	2 00	-2 00	0 00
4,113 98	0 00	0 00	4,100 00	270 00	-65 60	277 85	2 00	-2 00	0 00
Hold 0'00" Top of Paddock T1: Dodd #600									
4,563 98	0 00	0 00	4,550 00	270 00	-65 60	277 85	0 00	0 00	0 00
PBHL: Dodd #600									



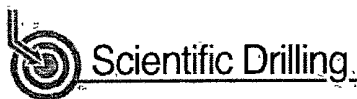
Database	EDM 5000-1 Single User Db	Local Co-ordinate Reference	Site: Dodd Federal Unit #600
Company	COG Operating LLC	TVD Reference	GL @ 3613'00usft
Project	Eddy County, NM (NAN27 NME)	MD Reference	GL @ 3613'00usft
Site	Dodd Federal Unit #600	North Reference	Grid
Well	Dodd Federal Unit #600	Survey Calculation Method	Minimum Curvature
Wellbore	OH		
Design	Plan #1 - 7/8" Hole		

Design Targets									
Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude Longitude
T1-Dodd #600	- plan hits target center - Circle (radius 10 00)	0 00	0 00	4,100 00	270 00	-65 60	669,384 80	585,943 90	32° 50' 23 681 N 104° 3' 12 636 W
PBHL-Dodd #600	- plan hits target center - Circle (radius 10 00)	0 00	0 00	4,550 00	270 00	-65 60	669,384 80	585,943 90	32° 50' 23 681 N 104° 3' 12 636 W

Casing Points					
Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")	
1,050 00	1,050 00	8 5/8"	8-5/8	12-1/4	

Formations					
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
4,113 98	4,100 00	Top of Paddock		0 00	

Plan Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
1,150 00	1,150 00	0 00	0 00	KOP Start 2 00"/100'	
1,449 23	1,448 68	15 17	-3 69	Hold 5 98°	
3,814 75	3,801 32	254 83	-61 91	Start Drop 2 00"/100'	
4,113 98	4,100 00	270 00	-65 60	Hold 0 00°	

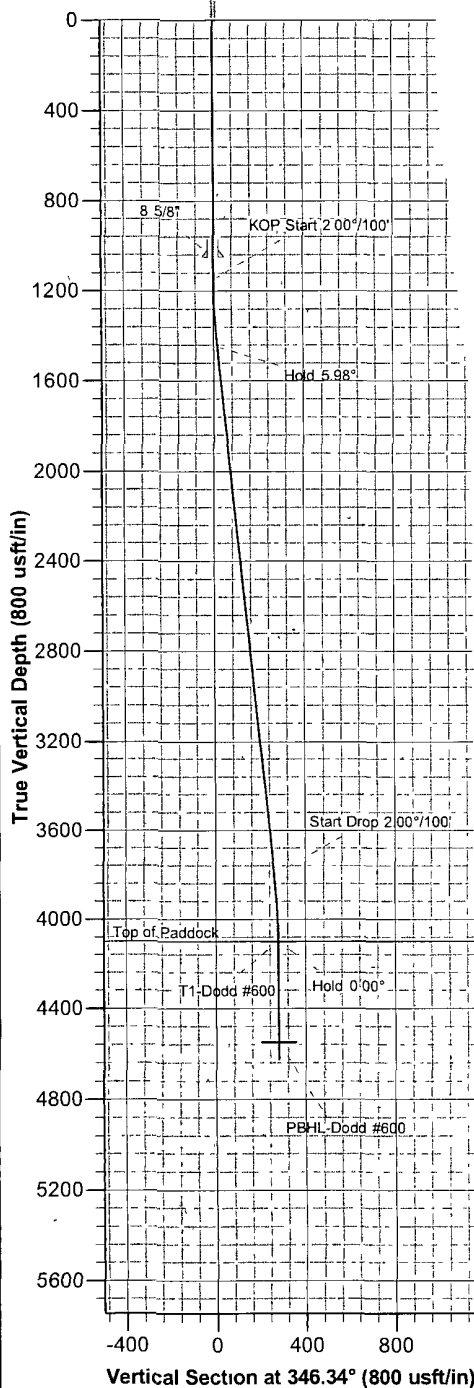
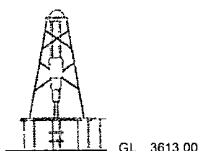


Azimuths to Grid North
True North -0 15°
Magnetic North 7 59°

Magnetic Field
Strength 48839 6snT
Dip Angle 60 65°
Date 05/17/2012
Model IGRF2010

To convert Magnetic North to Grid, Add 7 59°
To convert True North to Grid, Subtract 0 15°

Dodd Federal Unit #600
Eddy County, NM (NAN27 NME)
Northing. (Y) 669114 80
Easting (X) 586009 50
Plan #1 - 7-7/8" Hole



WELL DETAILS Dodd Federal Unit #600

+N/-S	+E/-W	Northing	Ground Level	3613 00	Latitude	Longitude
0 00	0 00	669114 80	Easting	586009 50	21 008 N	104° 3' 11 875 W

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSec	Target
1	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
2	1150 00	0 00	0 00	1150 00	0 00	0 00	0 00	0 00	0 00	
3	1449 23	5 98	346 34	1448 68	15 17	-3 69	2 00	346 34	15 61	
4	3814 75	5 98	346 34	3801 32	254 83	-61 91	0 00	0 00	262 24	
5	4113 98	0 00	0 00	4100 00	270 00	-65 60	2 00	180 00	277 85	T1-Dodd #600
6	4563 98	0 00	0 00	4550 00	270 00	-65 60	0 00	0 00	277 85	PBHL-Dodd #600

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
T1-Dodd #600	4100 00	270 00	-65 60	669384 80	585943 982° 50'	23 681 N	104° 3' 12 636 W
- plan hits target center							
PBHL-Dodd #600	4550 00	270 00	-65 60	669384 80	585943 982° 50'	23 681 N	104° 3' 12 636 W
- plan hits target center							

SITE DETAILS Dodd Federal Unit #600

Site Centre Northing 669114 80
Easting 586009 50

Positional Uncertainty 0 00
Convergence 0 15
Local North Grid

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

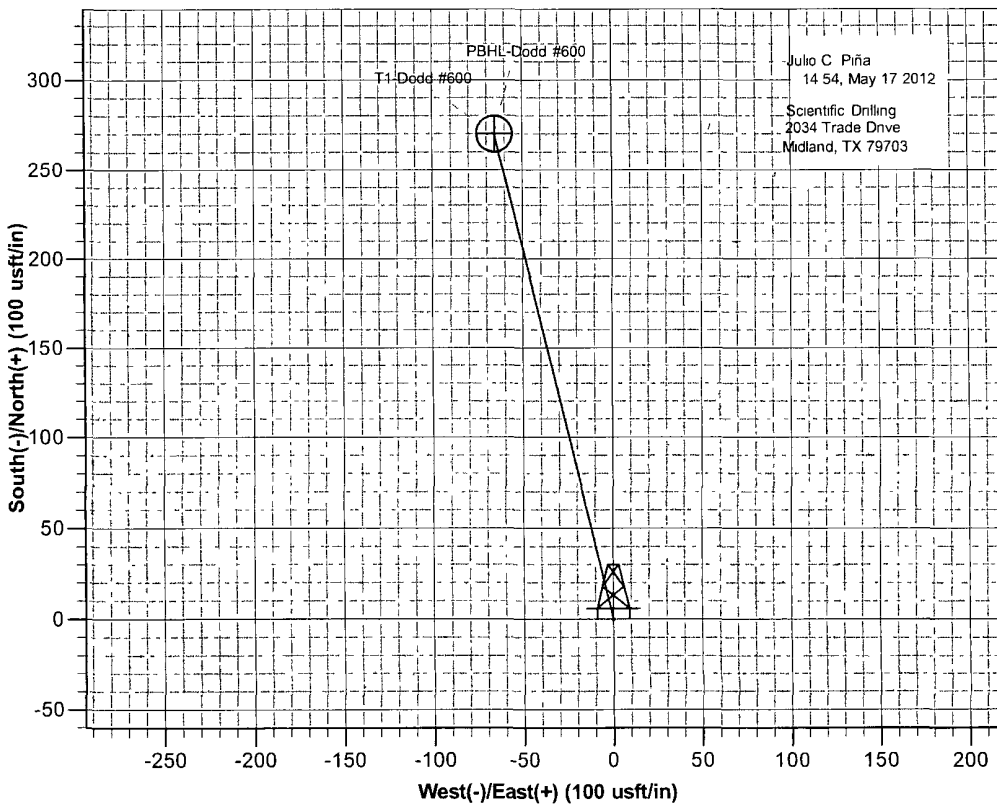
System Datum Mean Sea Level

FORMATION TOP DETAILS

TVDPath	MDPath	Formation	DipAngle	DipDir
4100 00	4113 98	Top of Paddock	0 00	

LEGEND

— Plan #1 - 7-7/8" Hole



COG OPERATING LLC

550 West Texas, Suite 100
Midland, TX 79701

DIRECTIONAL PLAN VARIANCE REQUEST

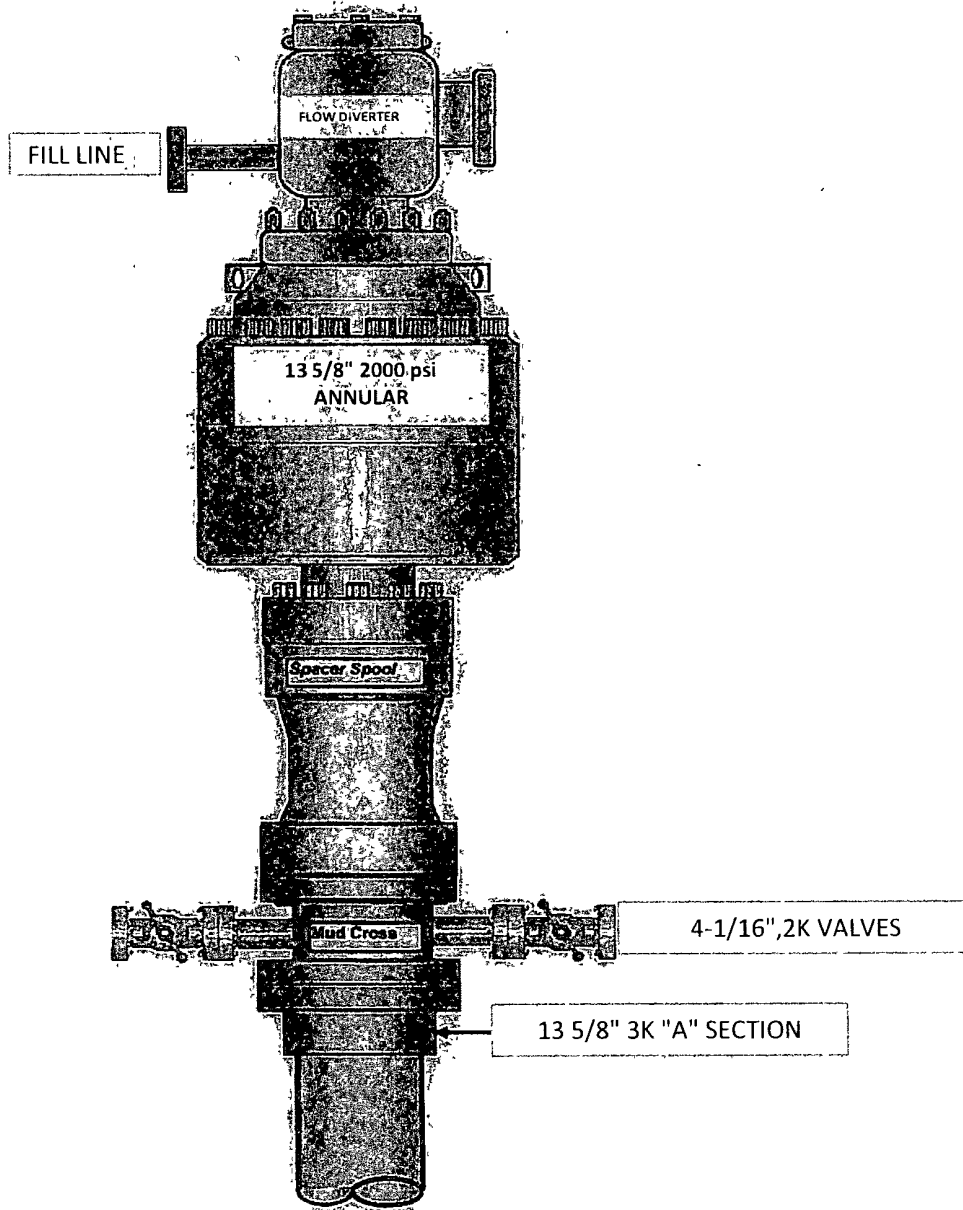
**Dodd Federal Unit #600
EDDY, NM**

SHL	930 FNL, 75 FWL	Sec 14, T17S, R29E, Unit D
BHL	660 FNL, 10 FWL	Sec 14, T17S, R29E, Unit D

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.

Well is non-standard.

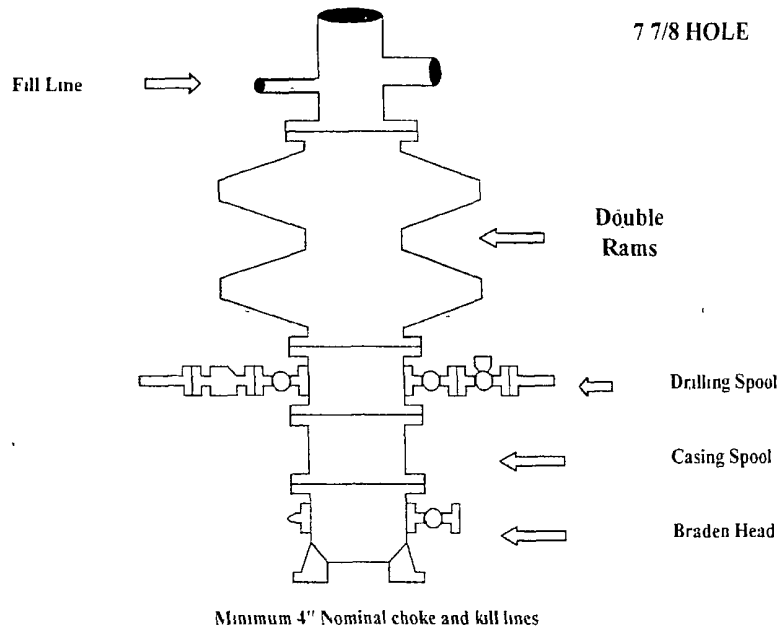
13 5/8" 2K ANNULAR



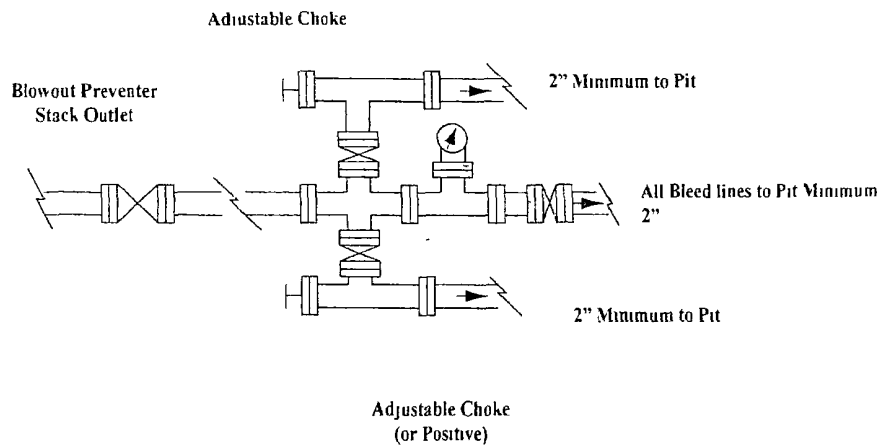
COG Operating LLC

Exhibit #9

BOPE and Choke Schematic



Choke Manifold Requirement (2000 psi WP)
No Annular Required

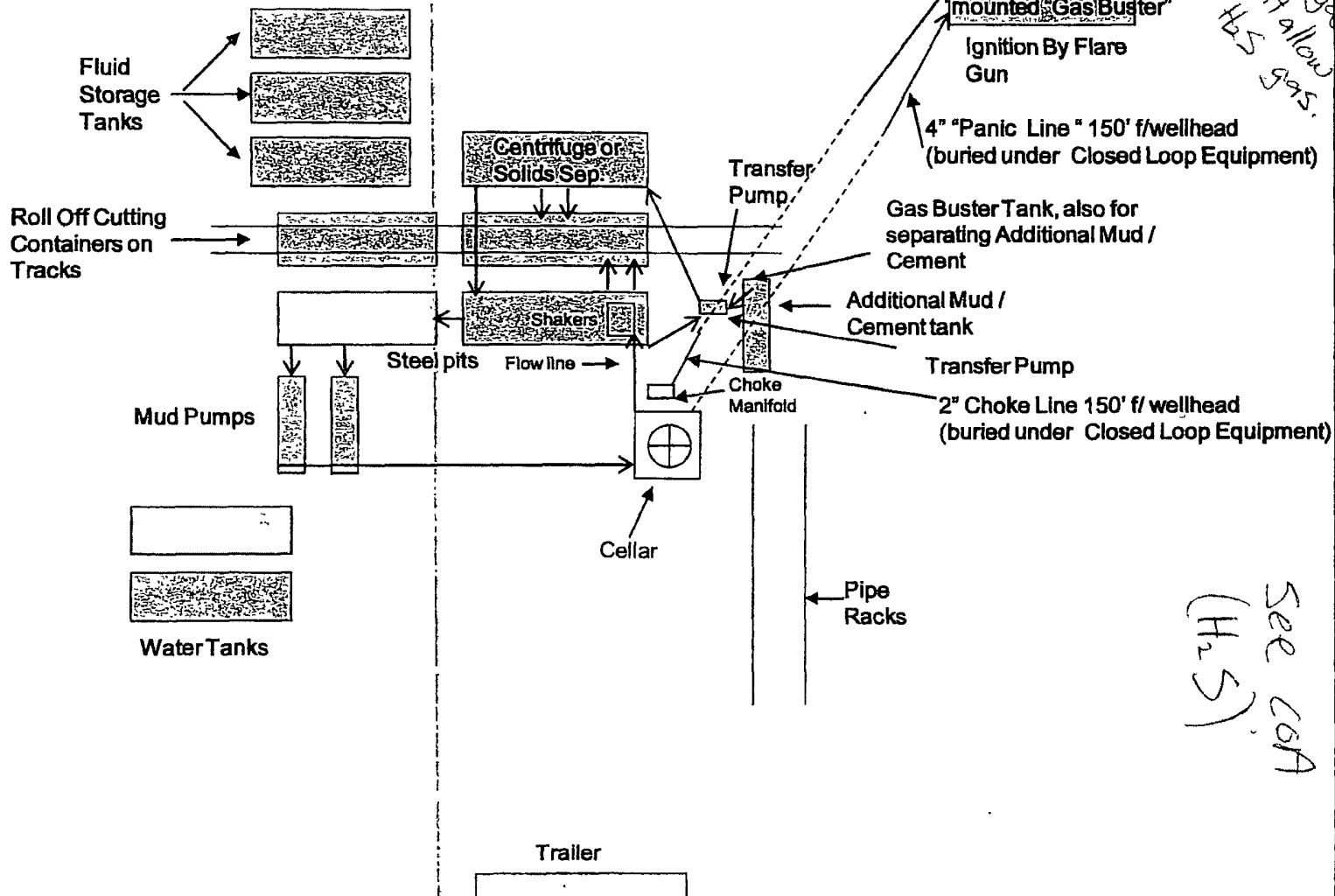


NOTES REGARDING THE BLOWOUT PREVENTERS

**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



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 (H₂S)
2. The proper use and maintenance of personal protective equipment and life support systems.
3. The proper use of H₂S 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 H₂S 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 H₂S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H₂S zone (within 3 days or 500 feet) and weekly H₂S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H₂S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H₂S 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 H₂S service.
- B. All elastomers used for packing and seals shall be H₂S 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 H₂S environment will use the closed chamber method of testing.
- B. There will be no drill stem testing.

EXHIBIT #7

**WARNING
YOU ARE ENTERING AN H₂S
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

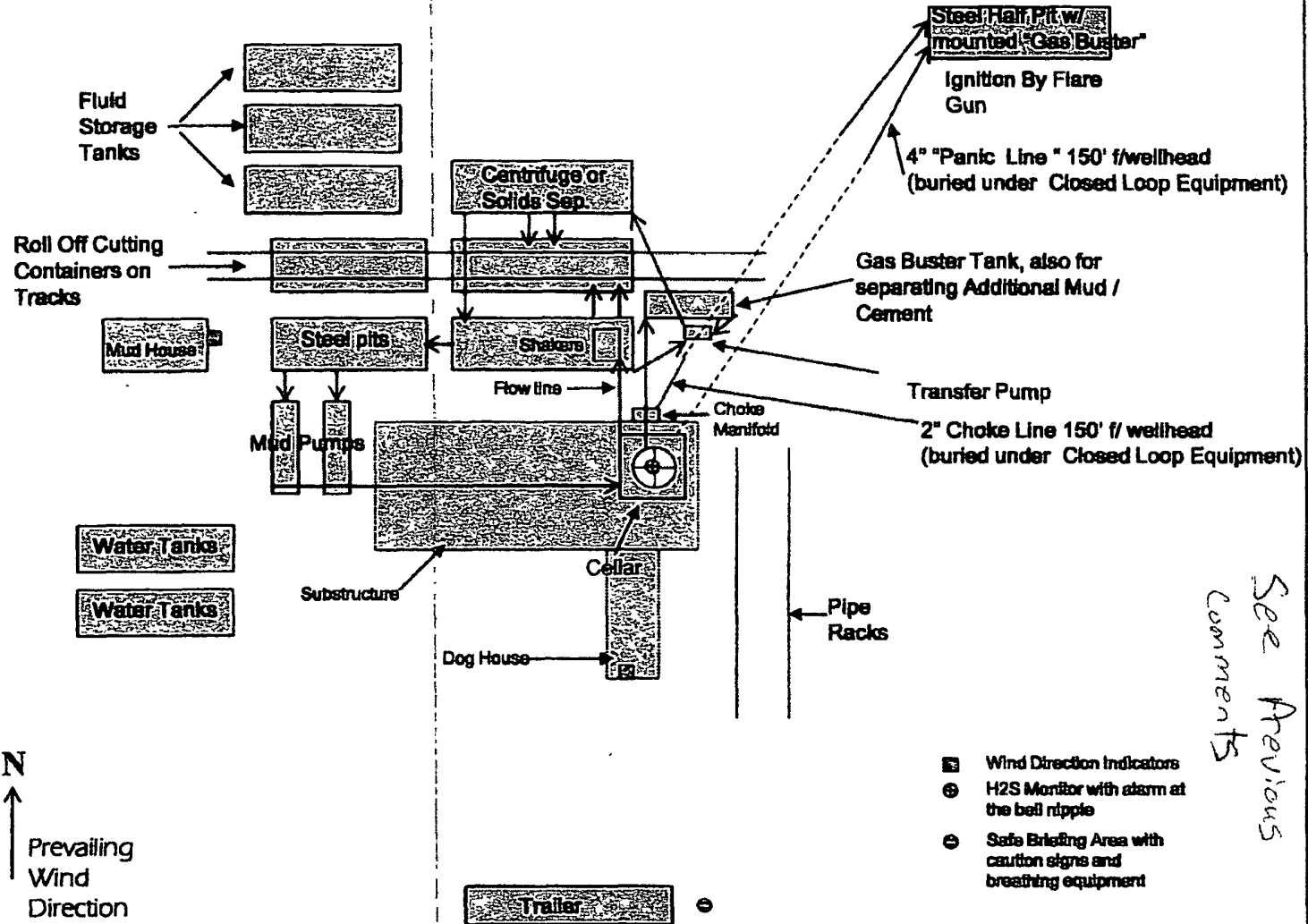
LEA COUNTY EMERGENCY NUMBERS

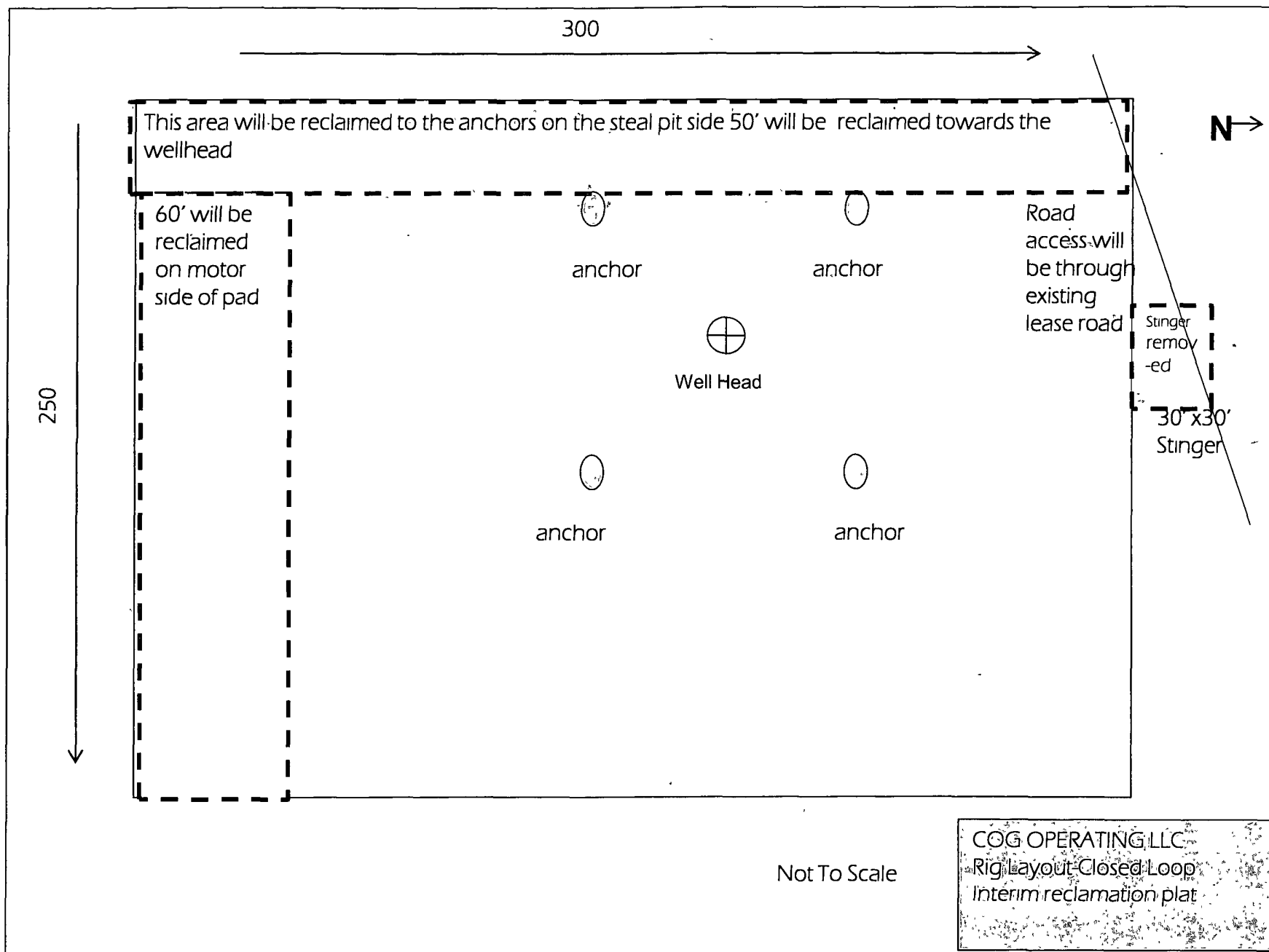
HOBBS FIRE DEPT. 575-397-9308
HOBBS POLICE DEPT. 575-397-9285
LEA CO. SHERIFF DEPT. 575-396-1196

COG Operating LLC

Drilling Location - H2S Safety Equipment Diagram

EXHIBIT 8





PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	LC028731B
WELL NAME & NO.:	600 Dodd Federal Unit
SURFACE HOLE FOOTAGE:	930' FNL & 75' FWL
BOTTOM HOLE FOOTAGE:	660' FNL & 10' FWL
LOCATION:	Section 14, T.17 S., R.29 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Lesser Prairie-Chicken Timing Stipulations
 - Ground-level Abandoned Well Marker
- ☐ **Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
 - H2S requirement
 - Logging requirement
 - Waste Material and Fluids
- ☐ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
 - Electric Lines
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**