

**RECEIVED**

**OCD-ARTESIA**

**MAY 29 2012**

Form 3160-3  
(April 2004)

**NMOC D ARTESIA**

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

**APPLICATION FOR PERMIT TO DRILL OR REENTER**

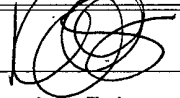
FORM APPROVED  
OMB No 1004-0137  
Expires March 31, 2007

1a Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5 Lease Serial No. <b>NMLC-028731B</b>
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 <b>COG Operating LLC</b>		7 If Unit or CA Agreement, Name and No <b>NMNM-111789X; Dodd Federal Unit</b>
3a Address <b>550 W. Texas Ave., Suite 100 Midland, TX 79701</b>		8 Lease Name and Well No <b>DODD FEDERAL UNIT 10 #4H</b>
3b. Phone No. (include area code) <b>432-685-4384</b>		9 API Well No. <b>30-015- 40344</b>
4. Location of Well (Report location clearly and in accordance with any State requirements *) At surface <b>SHL: 2455' FNL &amp; 40' FEL, Unit H</b> At proposed prod zone <b>BHL: 2435' FNL &amp; 1650' FWL, Unit F</b>		10 Field and Pool, or Exploratory <b>Dodd; Glorieta-Upper Yeso</b>
14 Distance in miles and direction from nearest town or post office* <b>2 miles from Loco Hills, NM</b>		11 Sec, T R M or Blk and Survey or Area <b>Sec 10 T17S R29E</b>
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drng. unit line, if any) <b>40'</b>	16 No. of acres in lease <b>1480</b>	12 County or Parish <b>EDDY</b>
17 Spacing Unit dedicated to this well <b>160</b>	18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft <b>170'</b>	13 State <b>NM</b>
19 Proposed Depth <b>TVD: 4700' MD: 8095'</b>	20 BLM/BIA Bond No on file <b>NMB000740; NMB000215</b>	
21 Elevations (Show whether DF, KDB, RT, GL, etc) <b>3623' GL</b>	22 Approximate date work will start* <b>06/30/2012</b>	23 Estimated duration <b>15 days</b>

**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) <b>Kelly J. Holly</b>	Date <b>04/04/2012</b>
Title <b>Permitting Tech</b>		

Approved by (Signature) <b>/s/ Don Peterson</b>	Name (Printed/Typed)	Date <b>MAY 23 2012</b>
Title <b>FOR FIELD MANAGER</b>	Office <b>CARLSBAD FIELD OFFICE</b>	

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 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**

**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL**

**Approval Subject to General Requirements  
& Special Stipulations Attached**

*Surface Use Plan*  
*COG Operating, LLC*  
*Dodd Federal Unit 10 #4H*  
*SL: 2455' FNL & 40' FEL      UL H*  
*BHL: 2435' FNL & 1650' FWL      UL F*  
*Section 10, T-17-S, R-29-E*  
*Eddy County, New Mexico*

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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 make 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 3rd day of February, 2012.

Signed: \_\_\_\_\_

*Carl Bird*

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@conchoresources.com

DISTRICT I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (505) 393-6161 Fax: (505) 393-0720  
DISTRICT II  
811 S. First St., Artesia, NM 88210  
Phone: (505) 748-1283 Fax: (505) 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- <b>46344</b>	Pool Code 97917	Pool Name Dodd; Glorieta-Upper YESo
Property Code <b>39248</b>	Property Name DODD FEDERAL UNIT 10	Well Number 4H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3623'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	10	17-S	29-E		2455	NORTH	40	EAST	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
F	10	17-S	29-E		2435	NORTH	1650	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
120			

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><b>DETAIL</b></p> <p>3617.3' 3628.7' 600' 3620.7' 3623.9'</p> <p>Project Area</p> <p>Producing Area</p> <p>GRID. AZ. = 270°12'36"</p> <p>HORIZ. DIST. = 3600.9'</p> <p>1650'</p> <p>2435'</p> <p>2455'</p> <p>40'</p> <p>SEE DETAIL</p> <p><b>GEODETIC COORDINATES</b> NAD 27 NME</p> <p><b>SURFACE LOCATION</b> Y=672875.3 N X=585879.3 E</p> <p>LAT = 32 849506" N LONG = 104 053690" W</p> <p><b>BOTTOM HOLE LOCATION</b> Y=672888.5 N X=582279.4 E</p> <p><b>CORNER COORDINATES TABLE</b></p> <p>Ⓐ - Y=674001.8 N, X=580629.2 E</p> <p>Ⓑ - Y=674009.3 N, X=585916.2 E</p> <p>Ⓒ - Y=672681.7 N, X=580629.9 E</p> <p>Ⓓ - Y=672688.7 N, X=585919.9 E</p>	<p><b>OPERATOR CERTIFICATION</b></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> 2-3-12</p> <p>Signature Date</p> <p>Kelly J. Holly</p> <p>Printed Name</p> <p>kholly@concho.com</p> <p>E-mail Address</p> <p><b>SURVEYOR CERTIFICATION</b></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>JANUARY 4, 2012</p> <p>Date of Survey</p> <p>Signature of Professional Surveyor:</p> <p></p> <p>Certificate Number: Gary J. Eidson 12641</p> <p>Professional: Ronald J. Eidson 3239</p> <p>AP JWSC W.O.: 11.11.2695</p>
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ATTACHMENT TO FORM 3160-3  
COG Operating, LLC  
DODD FEDERAL UNIT 10 #4H  
SHL: 2455' FNL & 40' FEL, Unit H  
BHL: 2435' FNL & 1650' FWL, Unit F  
Sec 10, T17S, R29E  
Eddy County, NM

1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 3623'
3. Proposed Depths: Horizontal TVD = 4700', MD = 8095'
4. Estimated tops of geological markers:

Quaternary	Surface
Rustler	300'
Top of Salt	450'
Base of Salt	800'
Yates	958'
Seven Rivers	1232'
Queen	1824'
Grayburg	2236'
San Andres	2530'
Glorieta	3948'
Paddock	4008'
Blinbry	4410'
Tubb	5355'

5. Possible mineral bearing formations:

Water Sand	150'	Fresh Water
Grayburg	2236'	Oil/Gas
San Andres	2530'	Oil/Gas
Glorieta	3948'	Oil/Gas
Paddock	4008'	Oil/Gas
Blinebry	4410'	Oil/Gas
Tubb	5355'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 400' 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 1350' 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 7" x 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  
DODD FEDERAL UNIT 10 #4H  
Page 2 of 4

6. Casing Program - Proposed

Hole size	Interval	OD of Casing	Weight	Cond.	Collar	Grade
<i>See COA</i> 17-1/2"	0' - +/-400' <i>240</i>	13-3/8"	48#	New	STC	H-40 or Hybrid J-55
Collapse sf - 4.36, Burst sf - 9.79, Tension sf - 16.77						
12-1/4"	0' - +/-1350'	9-5/8"	36#	New	STC	J/K-55
Collapse sf - 3.16, Burst sf - 5.51, Tension sf - 9.32						
8-3/4" x 7 7/8"	0' - 8095'	7" x 5-1/2"	26#/17#	New	LTC	L-80
7" Csg - Collapse sf - 2.71, Burst sf - 2.07, Tension sf - 4.73						
5 1/2" Csg - Collapse sf - 2.82, Burst sf - 2.08, Tension sf - 4.36						

**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 +/- 400'MD, Lead Slurry: 400sx Class "C" w/ 2% CaCl<sub>2</sub> & .25 pps CF, 1.32 yield. 190% excess, calculated to surface.

**9 5/8" Intrmd. Csg:** Set at +/- 1350'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. 185% excess, calculated to surface.

**Multi Stage:** Stage 1: 200 sx Class "C" w/ 2% CaCl<sub>2</sub>, 1.32 yield. 45% 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, 185% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 450' (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 +/- 8095'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. Tail 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. DV Tool and ECP to be set at kick off point with 7" cemented to surface and 5 1/2" run with +/- 18 isolation packers and sliding sleeves in uncemented lateral. 129% excess in open hole, from kick off point, calculated to surface. **This is a minimum volume and will be adjusted up after caliper is run.**

**Multi Stage:** Stage 1: (From assumed KOP of 4223' MD to DV at 3000') Lead Slurry: 200 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. 49% excess. **This is a minimum volume and will be adjusted up after caliper is run.** Stage 2: Lead Slurry: 400 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: 300 sx Class C w/ 0.3% R-3 + 1.5% CD-32, 1.02 yield. 154% excess calculated back to surface (no need for excess in casing overlap). DV tool to be set at 3000'. DV Tool depth will be adjusted depending on hole conditions. Stage packer to be set at kick off point at 4223', with 7" casing cemented from kick off point to surface and 5 1/2" casing run from kick off point to TD with +/- 18 isolation packers and sliding sleeves in uncemented lateral. **This is a minimum volume and will be adjusted up after caliper is run.**

Multi stage tool to be set at approximately 3000', depending on hole conditions. 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  
DODD FEDERAL UNIT 10 #4H  
Page 3 of 4

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 Hydral 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" BOP will be used during the drilling of the well. A 13 5/8" permanent casing head will be installed on the 13 3/8" casing. The BOP will be nipped up on the 13 5/8" permanent casing head and tested to 2000 psi. After setting 9-5/8", permanent "B section" well head will be installed and the BOP will then be nipped up on the permanent B section well head 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' - 400' <sup>240</sup>	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
400' - 1350'	10	30	NC	Brine mud, lime for PH and paper for seepage and sweeps.
1350' - 8095'	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 +/- 4223', building curve over +/- 750' to horizontal at 4700' TVD. Drill 7 7/8" lateral section in a westerly direction for +/-3123' lateral to TD at +/-8095' MD, 4700' TVD. Run 7" x 5-1/2" production casing. 7" to be ran from surface to kickoff point and changed over to 5 1/2" with DV Tool and ECP at kickoff point. 5 1/2" casing will be ran from kickoff point to td and isolation packers set throughout lateral. 7" to be cemented from kickoff point 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

DODD FEDERAL UNIT 10 #4H

Page 4 of 4

12. Logging, Testing and Coring Program: *See COA*

- A. No electric logs to be run.
- 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 temperature at TD of pilot hole is 90 degrees and estimated maximum bottom hole pressure is 2000 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 May 15, 2012 with drilling and completion operations lasting approximately 90 days.



## **COG Operating LLC**

Eddy County, NM (NAN27 NME)

Dodd Federal Unit 10 #4H

Dodd Federal Unit 10 #4H

OH

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

SHL = 2455' FNL & 40' FEL

PP = 2455' FNL & 330' FEL

BHL = 2435' FNL & 1650' FWL

## **Standard Planning Report**

08 February, 2012





Database:	EDM 5000 1 Single User Db.	Local Co-ordinate Reference:	Site Dodd Federal Unit 10 #4H
Company:	COG Operating LLC	TVD Reference:	GL @ 3623 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL @ 3623 00usft
Site:	Dodd Federal Unit 10 #4H	North Reference:	Grid
Well:	Dodd Federal Unit 10 #4H	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						Dodd Federal Unit 10 #4H					
Site Position:		Northing:		672,875 30 usft		Latitude:		32° 50' 58 223 N			
From:		Map		Easting:		585,879 30 usft		Longitude:		104° 3' 13 285 W	
Position Uncertainty:		0 00 usft		Slot Radius:		13-3/16 "		Grid Convergence:		0.15	

Well		Dodd Federal Unit 10 #4H				
Well Position	+N/-S	0 00 usft	Northings:	672,875 30 usft	Latitude:	32° 50' 58 223 N
	+E/-W	0 00 usft	Easting:	585,879 30 usft	Longitude:	104° 3' 13 285 W
Position Uncertainty	0 00 usft	Wellhead Elevation:		Ground Level:	3,623 00 usft	

Wellbore	OH
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Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	02/08/12	7.78	60.67	48,873

Design	Plan #1 - 8-3/4" 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	270 21

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	
4,222.54	0 00	0 00	4,222.54	0 00	0 00	0 00	0 00	0 00	0 00	
4,972.54	90 00	270 21	4,700 00	1 75	-477 46	12 00	12 00	0 00	270 21	
8,094.99	90 00	270 21	4,700 00	13 20	-3,599 90	0 00	0 00	0 00	0 00	PBHL-Dodd Fed 10 #



SDI  
Planning Report



Database:	EDM 5000.1 Single User Dp	Local Co-ordinate Reference:	Site Dodd Federal Unit 10 #4H
Company:	CQG Operating LLC	TVD Reference:	GL @ 3623.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL @ 3623.00usft
Site:	Dodd Federal Unit 10 #4H	North Reference:	Grid
Well:	Dodd Federal Unit 10 #4H	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
4,222.54	0 00	0 00	4,222.54	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start Build 12.00°/100'									
4,300.00	9 30	270 21	4,299.66	0 02	-6 27	6 27	12 00	12 00	0 00
4,400.00	21 30	270 21	4,395.94	0 12	-32 60	32 60	12 00	12 00	0 00
4,500.00	33 30	270 21	4,484.64	0 29	-78 38	78 38	12 00	12 00	0 00
4,600.00	45 30	270 21	4,561.89	0 52	-141 59	141 59	12 00	12 00	0 00
4,700.00	57 30	270 21	4,624.31	0 80	-219 49	219 49	12 00	12 00	0 00
4,779.93	66 89	270 21	4,661.67	1 06	-290 03	290 04	12 00	12 00	0 00
PP-330' FEL Dodd Fed 10 #4H									
4,800.00	69 30	270 21	4,669.16	1.13	-308.66	308.66	12 00	12 00	0 00
4,900.00	81 30	270 21	4,694.50	1.49	-405.21	405.21	12 00	12 00	0 00
4,972.54	90 00	270 21	4,700.00	1.75	-477.47	477.47	12 00	12 00	0 00
Land hold 90.00°									
5,000.00	90 00	270 21	4,700.00	1.85	-504.93	504.93	0 00	0 00	0 00
5,100.00	90 00	270 21	4,700.00	2.22	-604.93	604.93	0 00	0 00	0 00
5,200.00	90 00	270 21	4,700.00	2.58	-704.92	704.93	0 00	0 00	0 00
5,300.00	90 00	270 21	4,700.00	2.95	-804.92	804.93	0 00	0 00	0 00
5,400.00	90 00	270 21	4,700.00	3.32	-904.92	904.93	0 00	0 00	0 00
5,500.00	90 00	270 21	4,700.00	3.68	-1,004.92	1,004.93	0 00	0 00	0 00
5,600.00	90 00	270 21	4,700.00	4.05	-1,104.92	1,104.93	0 00	0 00	0 00
5,700.00	90 00	270 21	4,700.00	4.42	-1,204.92	1,204.93	0 00	0 00	0 00
5,800.00	90 00	270 21	4,700.00	4.78	-1,304.92	1,304.93	0 00	0 00	0 00
5,900.00	90 00	270 21	4,700.00	5.15	-1,404.92	1,404.93	0 00	0 00	0 00
6,000.00	90 00	270 21	4,700.00	5.52	-1,504.92	1,504.93	0 00	0 00	0 00
6,100.00	90 00	270 21	4,700.00	5.88	-1,604.92	1,604.93	0 00	0 00	0 00
6,200.00	90 00	270 21	4,700.00	6.25	-1,704.92	1,704.93	0 00	0 00	0 00
6,300.00	90 00	270 21	4,700.00	6.62	-1,804.92	1,804.93	0 00	0 00	0 00
6,400.00	90 00	270 21	4,700.00	6.98	-1,904.92	1,904.93	0 00	0 00	0 00
6,500.00	90 00	270 21	4,700.00	7.35	-2,004.92	2,004.93	0 00	0 00	0 00
6,600.00	90 00	270 21	4,700.00	7.72	-2,104.92	2,104.93	0 00	0 00	0 00
6,700.00	90 00	270 21	4,700.00	8.08	-2,204.91	2,204.93	0 00	0 00	0 00
6,800.00	90 00	270 21	4,700.00	8.45	-2,304.91	2,304.93	0 00	0 00	0 00
6,900.00	90 00	270 21	4,700.00	8.82	-2,404.91	2,404.93	0 00	0 00	0 00
7,000.00	90 00	270 21	4,700.00	9.18	-2,504.91	2,504.93	0 00	0 00	0 00
7,100.00	90 00	270 21	4,700.00	9.55	-2,604.91	2,604.93	0 00	0 00	0 00
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8,000.00	90 00	270 21	4,700.00	12.85	-3,504.91	3,504.93	0 00	0 00	0 00
8,094.99	90 00	270 21	4,700.00	13.20	-3,599.90	3,599.92	0 00	0 00	0 00
PBHL-Dodd Fed 10 #4H									



Database:	EDM 5000 1 Single User.Db	Local Co-ordinate Reference:	Site Dodd Federal Unit 10 #4H
Company:	COG Operating LLC	TVD Reference:	GL @ 3623 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL @ 3623 00usft
Site:	Dodd Federal Unit 10 #4H	North Reference:	Grid
Well:	Dodd Federal Unit 10 #4H	Survey Calculation Method:	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 8-3/4" Hole		

Design Targets										
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)			
- Shape										
PP-330' FEL Dodd Fed	0 00	0 01	4,661 66	1.06	-290.00	672,876 36	585,589 30	32° 50' 58 241 N	104° 3' 16 684 W	
- plan hits target center										
- Point										
PBHL-Dodd Fed 10 #4H	0 00	0 01	4,700 00	13 20	-3,599 90	672,888 50	582,279 40	32° 50' 58 446 N	104° 3' 55 483 W	
- plan hits target center										
- Point										

Plan Annotations					
Measured Depth	Vertical Depth	Local Coordinates			
(usft)	(usft)	+N/-S	+E/-W	Comment	
(usft)	(usft)	(usft)	(usft)		
4,222 54	4,222.54	0 00	0.00	KOP Start Build 12.00°/100'	
4,972 54	4,700 00	87 75	-469 34	Land hold 90 00°	



Dodd Federal Unit 10 #4H  
Eddy County, NM (NAN27 NME)  
Northing (Y) 672875.30  
Easting (X) 585879.30  
Plan #1 - 8-3/4" Hole



Azimuth to Grid North  
True North -01° 15'  
Magnetic North 7° 62'  
Magnetic Field  
Strength 48572.7 nT  
Dip Angle 60.61°  
Date 02/08/2012  
Model IGRF2010

To convert a Magnetic Direction to a Grid Direction, Add 7.62°  
To convert a True Direction to a Grid Direction, Subtract 0.15°

#### WELL DETAILS Dodd Federal Unit 10 #4H

	+N/-S	+E/-W	Northing	Ground Level	Latitude	Longitude	Spot
	0.00	0.00	672875.30	3623.00	32° 50' 58.223 N	-104° 3' 13.285 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	4222.54	0.00	0.00	4222.54	0.00	0.00	0.00	0.00	0.00	
3	4972.54	98.00	270.21	4700.00	1.75	-477.46	13.00	270.21	477.46	
4	5054.98	90.00	270.21	4700.00	13.20	-3599.90	0.00	0.00	3599.92	PBHL-Dodd Fed 10 #4H

#### DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP-330 FEL Dodd Fed 10 #4H-661.66	1.05	-290.00	672876.36	585589	3032° 50' 58.241 N	104° 3' 16.684 W	Point	
plan hits target center								
PBHL-Dodd Fed 10 #4H	4700.00	13.20	-3599.90	672885.50	582279	4032° 50' 58.446 N	104° 3' 55.483 W	Point
plan hits target center								

#### PROJECT DETAILS Eddy County, NM (NAN27 NME)

Geodetic System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone Name: North America East 3001  
System Datum: Mean Sea Level

#### SITE DETAILS Dodd Federal Unit 10 #4H

Site Centre Northing: 672875.30  
Easting: 585879.30  
Positional Uncertainty: 0.00  
Convergence: 0.15  
Local North: Grid

#### LEGEND

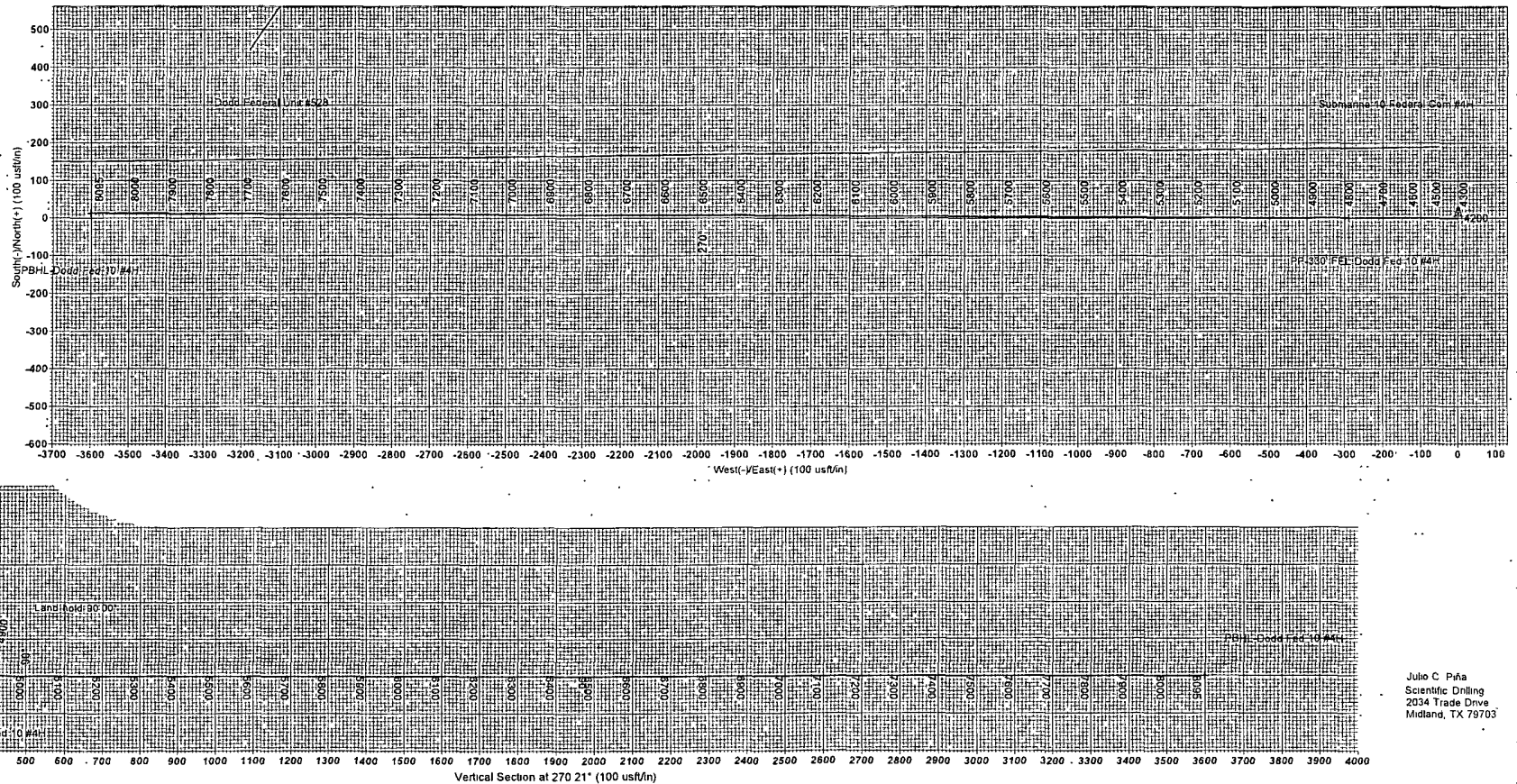
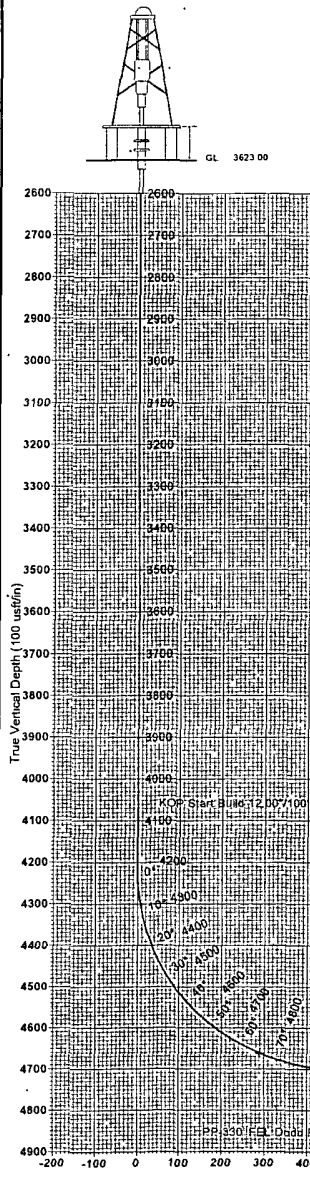
- Submarine 10 Federal Com #4H OH Plan #2 8-3/4" Hole V0
- Dodd Federal Unit #528 OH Plan #1 7-7/8" Hole V0
- Plan #1 - 8-3/4" Hole

Map System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone Name: North America East 3001

Local Origin: See Dodd Federal Unit 10 #4H Grid North  
Latitude: 32° 50' 58.223 N  
Longitude: 104° 3' 13.285 W  
Grid North: 672875.30  
Scale Factor: 1.000

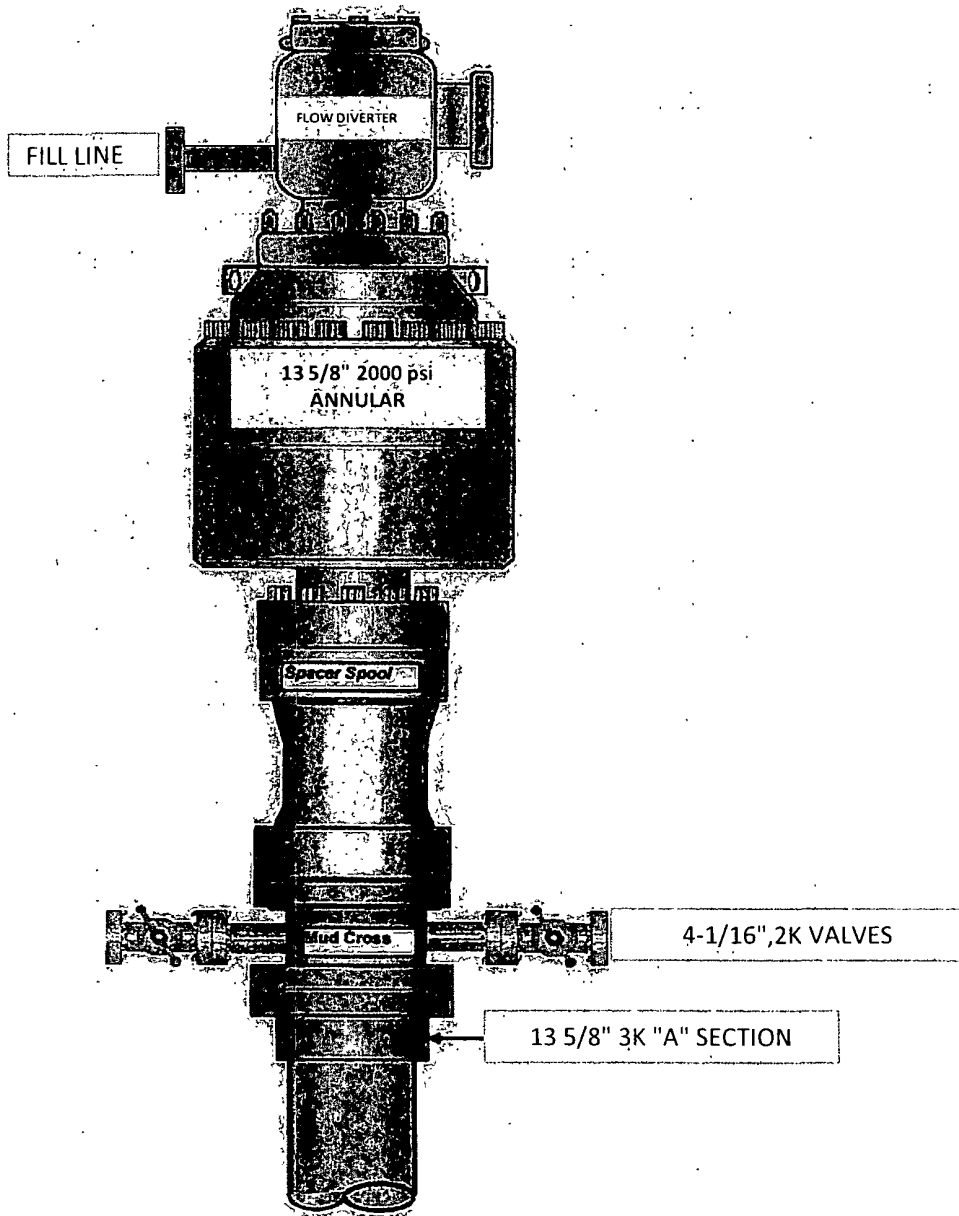
Geomagnetic Model: IGRF2010  
Sample Date: 08-Feb-12  
Magnetic Declination: 7.78°  
Dip Angle from Horizontal: 60.61°  
Magnetic Field Strength: 48573

To convert a Magnetic Direction to a Grid Direction, Add 7.62°  
To convert a Magnetic Direction to a True Direction, Add 7.78° East  
To convert a True Direction to a Grid Direction, Subtract 0.15



Julio C. Peña  
Scientific Drilling  
2034 Trade Drive  
Midland, TX 79703

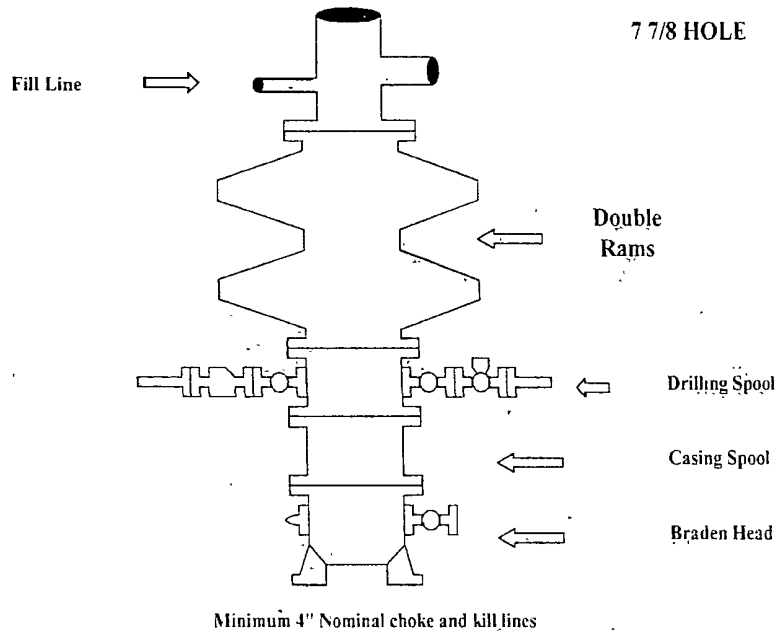
13 5/8" 2K ANNULAR



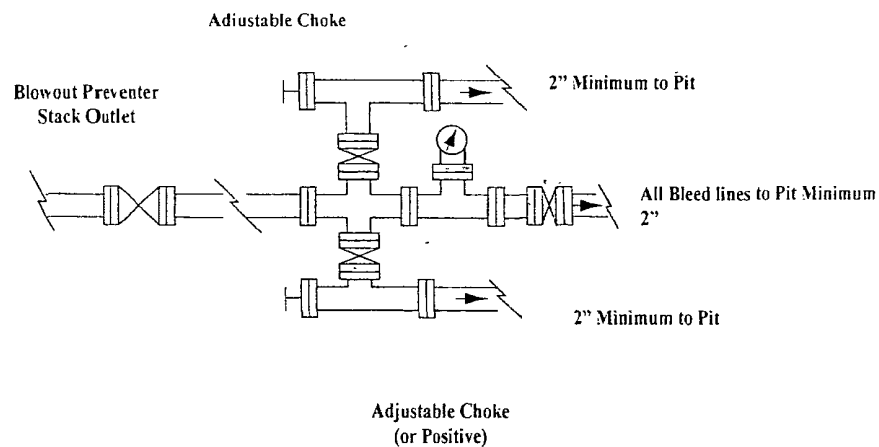
# COG Operating LLC

## Exhibit #9

### BOPE and Choke Schematic



Choke Manifold Requirement (2000 psi WP)  
No Annular Required

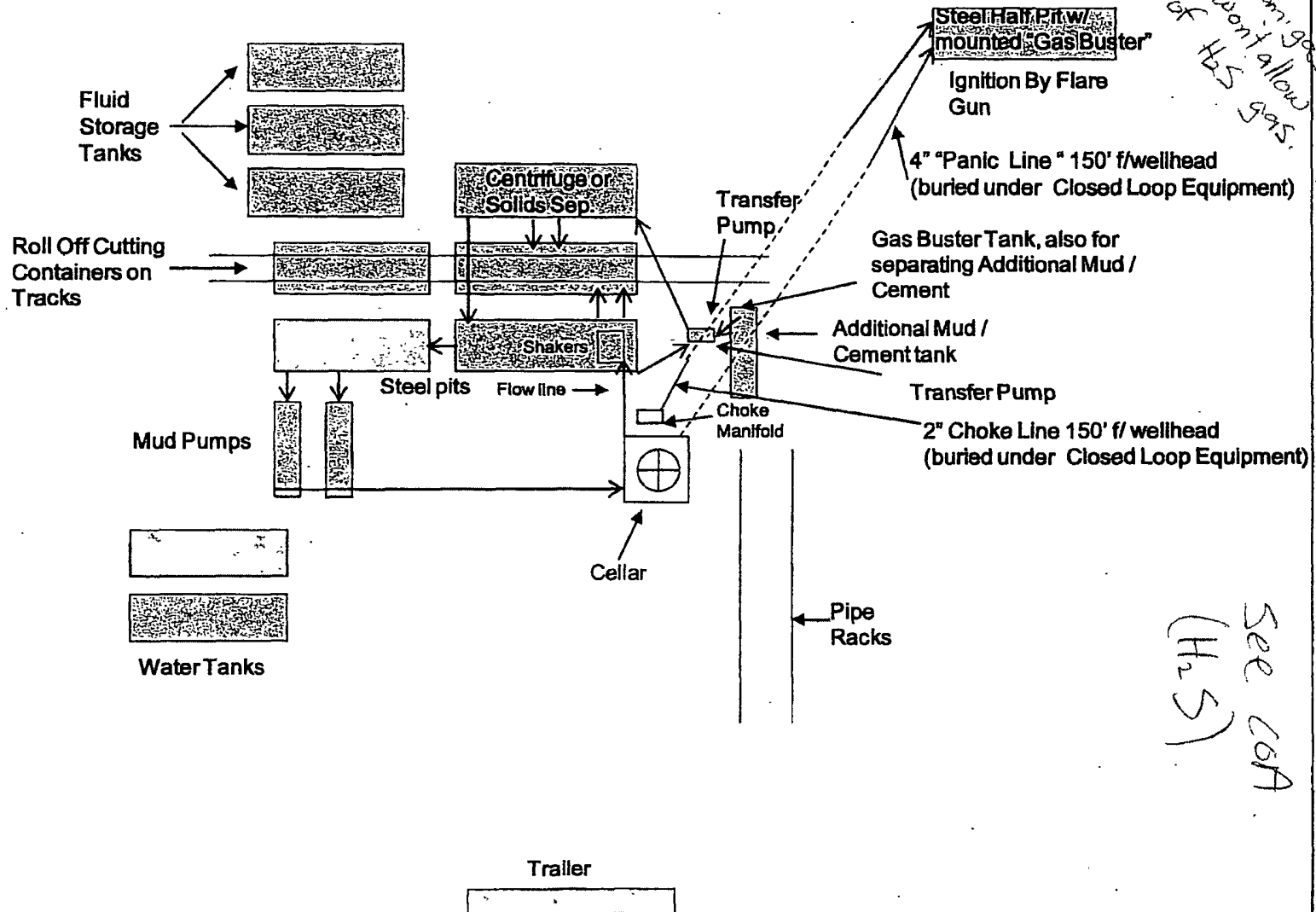


**NOTES REGARDING THE BLOWOUT PREVENTERS**

**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 (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 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 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

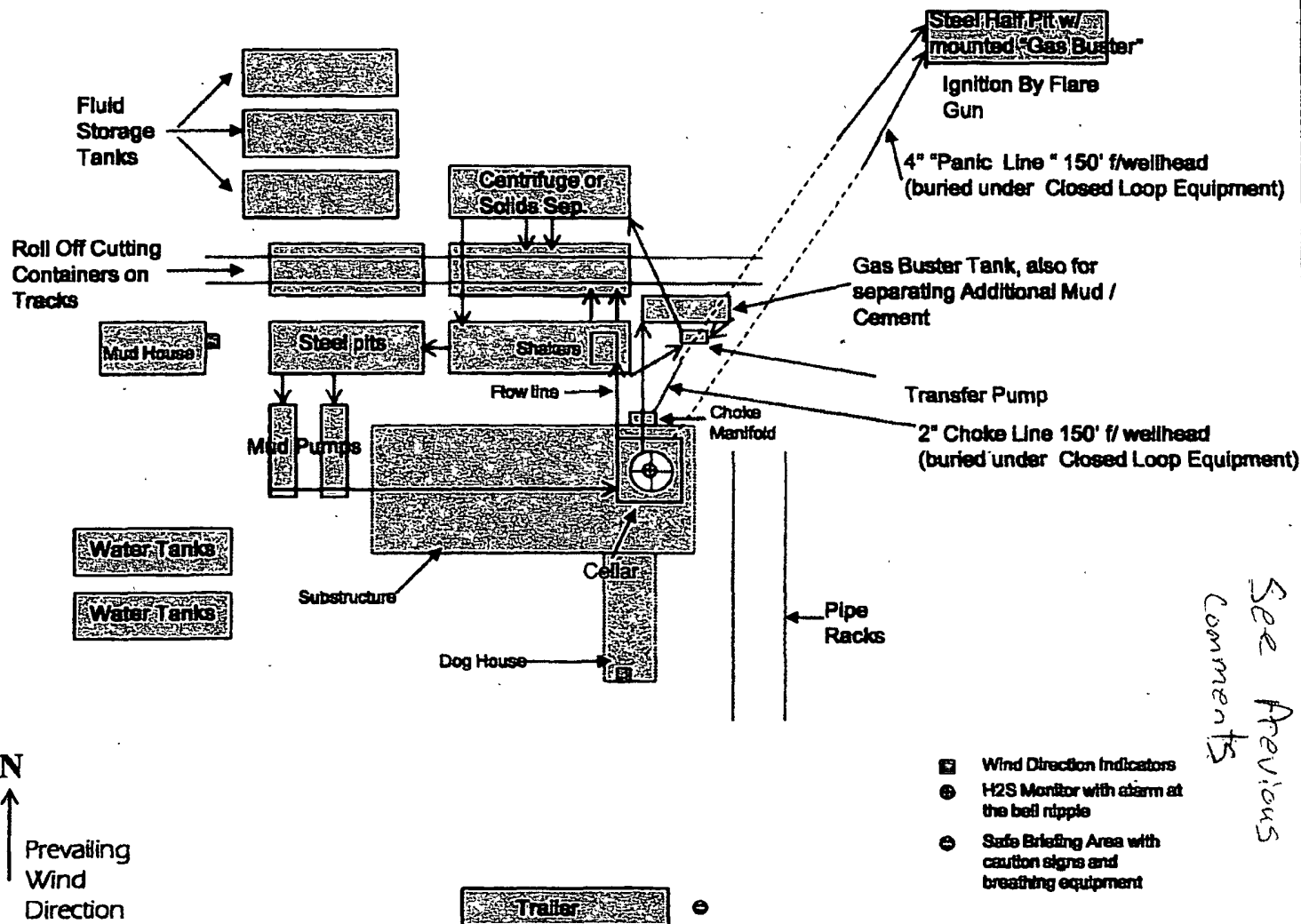
**LEA COUNTY EMERGENCY NUMBERS**

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

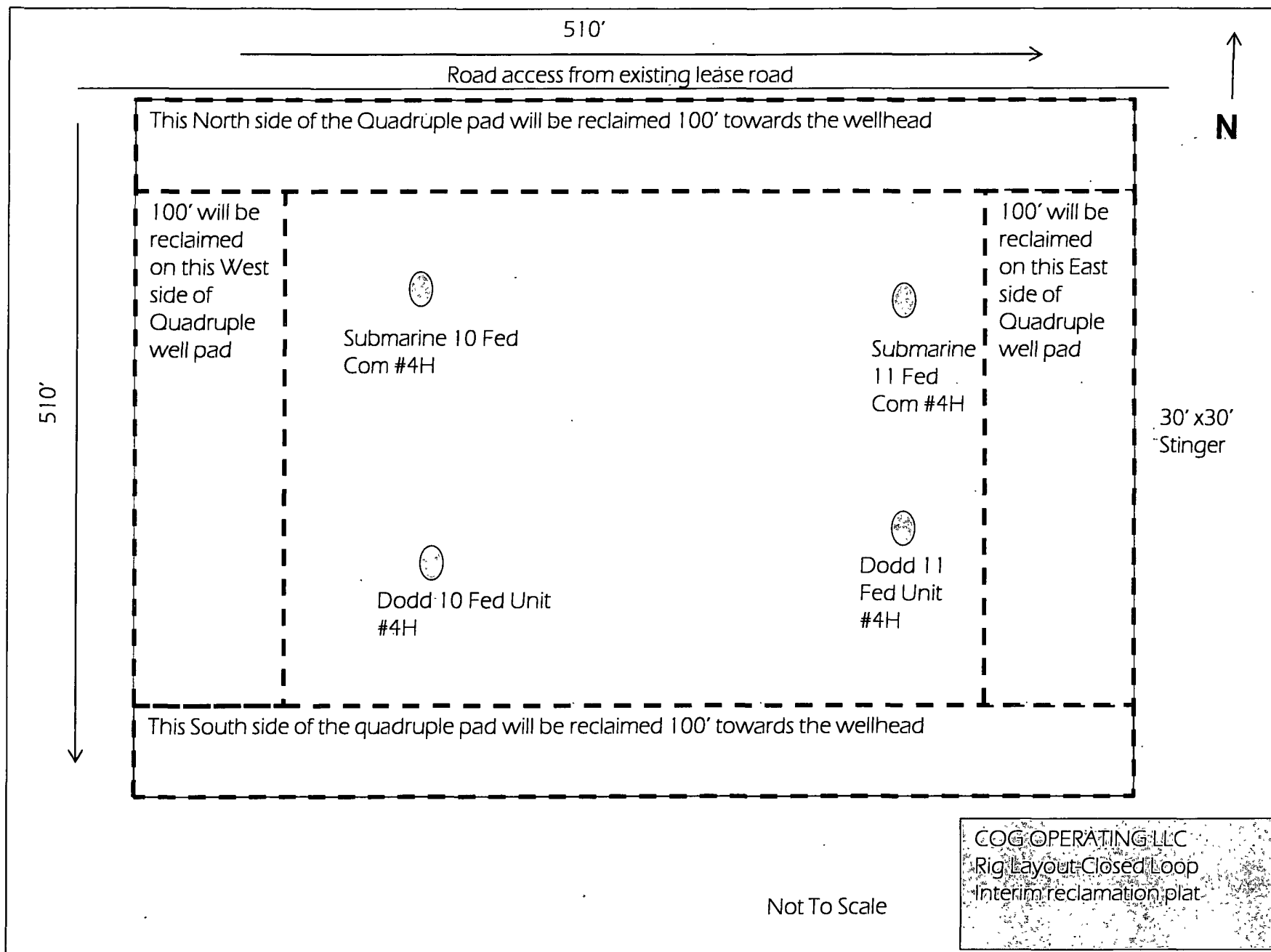
COG Operating LLC

# EXHIBIT 8

Drilling Location - H2S Safety Equipment Diagram



See Previous comments



## PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING, LLC
LEASE NO.:	NMLC029731B
WELL NAME & NO.:	4H-DODD FEDERAL 10
SURFACE HOLE FOOTAGE:	2455'/N. & 0040'/E.
BOTTOM HOLE FOOTAGE	2435'/N. & 1650'/W
LOCATION:	Section 10, 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**