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OCD-ARTESIA

Form 3150-3  
(April 2004)

MAY 29 2012

NMOCD 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, 20075 Lease Serial No.  
NMLC-028731B6 If Indian, Allottee or Tribe Name  
N/A7 If Unit or CA Agreement, Name and No.  
NMNM-111789X; Dodd Federal Unit8 Lease Name and Well No  
DODD FEDERAL UNIT 10 #1H <39248>9 API Well No.  
30-015- 4035710 Field and Pool, or Exploratory  
Dodd: Glorieta-Upper Yeso <97917>11 Sec, T, R M or Blk and Survey or Area  
Sec 10 T17S R29E1a Type of work ☒ DRILL ☐ REENTER1b. Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone2 Name of Operator  
COG Operating LLC3a Address 550 W. Texas Ave., Suite 1300  
Midland, TX 797013b Phone No. (include area code)  
432-685-4304

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

At surface SHL: 350' FNL &amp; 1475' FWL, Unit C

At proposed prod zone BHL: 455' FNL &amp; 150' FEL, Unit A

14 Distance in miles and direction from nearest town or post office\*  
2 miles from Loco Hills, NM12 County or Parish  
EDDY13 State  
NM15 Distance from proposed\*  
location to nearest  
property or lease line, ft  
(Also to nearest drig unit line, if any) 350'16 No. of acres in lease  
148017 Spacing Unit dedicated to this well  
160' 120'18 Distance from proposed location\*  
to nearest well, drilling, completed,  
applied for, on this lease, ft 272'19 Proposed Depth  
TVD: 4700' MD: 8157'20 BLM/BIA Bond No on file  
NMB000740; NMB00021521 Elevations (Show whether DF, KDB, RT, GL, etc)  
3588' GL22 Approximate date work will start\*  
05/31/201223. 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

Kacie Connally

Name (Printed/Typed)

Kacie Connally

Date

03/05/2012

Title

Permitting Tech

Approved by (Signature)

/s/ Don Peterson

Name (Printed/Typed)

Date

MAY 23 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 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 AttachedSEE ATTACHED FOR  
CONDITIONS OF APPROVAL

*Surface Use Plan*  
*COG Operating, LLC*  
*Dodd Federal Unit 10 #1H*  
*SL: 350' FNL & 1475' FWL      UL C*  
*BHL: 455' FNL & 150' FEL      UL A*  
*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 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 19th day of March, 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- <b>40357</b>	Pool Code <b>97917</b>	Pool Name Dodd; Glorieta-Upper Yeso
Property Code <del>308195</del> <b>39248</b>	Property Name DODD FEDERAL UNIT 10	Well Number 1H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3588'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	10	17-S	29-E		350	NORTH	1475	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
A	10	17-S	29-E		455	NORTH	150	EAST	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>DETAIL</p>	<p><b>PROJECT AREA</b></p> <p>GRID: AZ=91°32'11"</p> <p>HORIZ. DIST.=3662.7'</p> <p><b>PRODUCING AREA</b></p> <p>GEODETIC COORDINATES NAD 27 NME</p> <p>SURFACE LOCATION Y=674972.8 N X=582103.4 E</p> <p>LAT=32.855299° N LONG=104.065968° W</p> <p>BOTTOM HOLE LOCATION Y=674874.6 N X=585763.8 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><i>Kacie Connally</i> 2-21-12 Signature Date</p> <p>Kacie Connally Printed Name</p> <p>kconnally@concho.com E-mail Address</p>
	<p>CORNER COORDINATES TABLE</p> <p>(A) - Y=675321.9 N, X=580628.5 E</p> <p>(B) - Y=675329.9 N, X=585912.5 E</p> <p>(C) - Y=674001.8 N, X=580629.2 E</p> <p>(D) - Y=674009.3 N, X=585916.2 E</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 21, 2012</p> <p>Date of Survey Signature of Professional Surveyor: <i>Ronald J. Eidson</i></p> <p></p> <p>Certificate Number: Gary C. Eidson 12641 Ronald J. Eidson 3239</p> <p>AF JWSC W O · 12 11.0125</p>

ATTACHMENT TO FORM 3160-3  
 COG Operating, LLC  
 DODD FEDERAL UNIT 10 #1H  
 SHL: 350' FNL & 1475' FWL, Unit C  
 BHL: 455' FNL & 150' FEL, Unit A  
 Sec 10, T17S, R29E  
 Eddy County, NM

1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 3588'
3. Proposed Depths: Horizontal TVD = 4700', MD = 8157'
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'
Blinebry	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 #1H  
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' <sup>225</sup>	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' - 8157'	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 +/- 8157'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 #1H  
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 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" 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>225</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' - 8157'	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 easterly direction for +/-3183' lateral to TD at +/-8157' 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.**

*rwj*

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 #1H  
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12. Logging, Testing and Coring Program:

- A. No electric logs to be run. *See COA*
- 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 #1H

Dodd Federal Unit 10 #1H

OH

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

SHL = 350' FNL & 1475' FWL

BHL = 455' FNL & 150' FEL

## **Standard Planning Report**

23 February, 2012





Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Dodd Federal Unit 10 #1H
Company:	COG Operating LLC	TVD Reference:	GL @ 3588 00usft
Project:	Eddy County, NM (NAN27, NME)	MD Reference:	GL @ 3588 00usft
Site:	Dodd Federal Unit 10 #1H	North Reference:	Grid
Well:	Dodd Federal Unit 10 #1H	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 #1H		
Site Position:		Northing:	674,972 80 usft
From:	Map	Easting:	582,103 40 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 51' 19 075 N
		Longitude:	104° 3' 57 485 W
		Grid Convergence:	0:15 °

Well: Dodd Federal Unit 10 #1H						
Well Position	+N/-S	0 00 usft	Northing:	674,972 80 usft	Latitude:	32° 51' 19 075 N
	+E/-W	0 00 usft	Easting:	582,103 40 usft	Longitude:	104° 3' 57 485 W
Position Uncertainty		0 00 usft	Wellhead Elevation:		Ground Level:	3,588 00 usft

Wellbore:	OH				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	02/23/12	7 78	60 67	48,871

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	91 54

Plan Sections										
Measured Depth	Inclination	Azimuth	Vertical Depth	+N/-S	+E/-W	Dogleg Rate	Build Rate	Turn Rate	TFO	Target
(usft)	(°)	(°)	(usft)	(usft)	(usft)	(°/100usft)	(°/100usft)	(°/100usft)	(°)	
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
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	91 54	4,700 00	-12 80	477 29	12 00	12 00	0 00	91 54	
8,156 79	90 00	91 54	4,700 00	-98 20	3,660 40	0 00	0 00	0 00	0 00	PBHL-Dodd Fed 10 #



SDI  
Planning Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Dodd Federal Unit 10 #1H
Company:	COG Operating LLC	TVD Reference:	GL @ 3588 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL @ 3588 00usft
Site:	Dodd Federal Unit 10 #1H	North Reference:	Grid
Well:	Dodd Federal Unit 10 #1H	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	91 54	4,299 66	-0 17	6 27	6 27	12 00	12 00	0 00
4,400 00	21 30	91 54	4,395 94	-0 87	32 59	32 60	12 00	12 00	0 00
4,500 00	33 30	91 54	4,484 64	-2 10	78 35	78 38	12 00	12 00	0 00
4,600 00	45 30	91 54	4,561 89	-3 80	141 54	141 59	12 00	12 00	0 00
4,700 00	57 30	91 54	4,624 31	-5 89	219 41	219 49	12 00	12 00	0 00
4,800 00	69 30	91 54	4,669 16	-8 28	308 55	308 66	12 00	12 00	0 00
4,900 00	81 30	91 54	4,694 50	-10 87	405 06	405 21	12 00	12 00	0 00
4,972 54	90 00	91 54	4,700 00	-12 80	477 30	477 47	12 00	12 00	0 00
Land hold 90.00°									
5,000 00	90 00	91 54	4,700 00	-13 54	504 75	504 93	0 00	0 00	0 00
5,100 00	90 00	91 54	4,700 00	-16 22	604 71	604 93	0 00	0 00	0 00
5,200 00	90 00	91 54	4,700 00	-18 90	704 68	704 93	0 00	0 00	0 00
5,300 00	90 00	91 54	4,700 00	-21 59	804 64	804 93	0 00	0 00	0 00
5,400 00	90 00	91 54	4,700 00	-24 27	904 60	904 93	0 00	0 00	0 00
5,500 00	90 00	91 54	4,700 00	-26 95	1,004 57	1,004 93	0 00	0 00	0 00
5,600 00	90 00	91 54	4,700 00	-29 63	1,104 53	1,104 93	0 00	0 00	0 00
5,700 00	90 00	91 54	4,700 00	-32 31	1,204 50	1,204 93	0 00	0 00	0 00
5,800 00	90 00	91 54	4,700 00	-35 00	1,304 46	1,304 93	0 00	0 00	0 00
5,900 00	90 00	91 54	4,700 00	-37 68	1,404 42	1,404 93	0 00	0 00	0 00
6,000 00	90 00	91 54	4,700 00	-40 36	1,504 39	1,504 93	0 00	0 00	0 00
6,100 00	90 00	91 54	4,700 00	-43 04	1,604 35	1,604 93	0 00	0 00	0 00
6,200 00	90 00	91 54	4,700 00	-45 72	1,704 32	1,704 93	0 00	0 00	0 00
6,300 00	90 00	91 54	4,700 00	-48 40	1,804 28	1,804 93	0 00	0 00	0 00
6,400 00	90 00	91 54	4,700 00	-51 09	1,904 24	1,904 93	0 00	0 00	0 00
6,500 00	90 00	91 54	4,700 00	-53 77	2,004 21	2,004 93	0 00	0 00	0 00
6,600 00	90 00	91 54	4,700 00	-56 45	2,104 17	2,104 93	0 00	0 00	0 00
6,700 00	90 00	91 54	4,700 00	-59 13	2,204 14	2,204 93	0 00	0 00	0 00
6,800 00	90 00	91 54	4,700 00	-61 81	2,304 10	2,304 93	0 00	0 00	0 00
6,900 00	90 00	91 54	4,700 00	-64 50	2,404 06	2,404 93	0 00	0 00	0 00
7,000 00	90 00	91 54	4,700 00	-67 18	2,504 03	2,504 93	0 00	0 00	0 00
7,100 00	90 00	91 54	4,700 00	-69 86	2,603 99	2,604 93	0 00	0 00	0 00
7,200 00	90 00	91 54	4,700 00	-72 54	2,703 96	2,704 93	0 00	0 00	0 00
7,300 00	90 00	91 54	4,700 00	-75 22	2,803 92	2,804 93	0 00	0 00	0 00
7,400 00	90 00	91 54	4,700 00	-77 90	2,903 88	2,904 93	0 00	0 00	0 00
7,500 00	90 00	91 54	4,700 00	-80 59	3,003 85	3,004 93	0 00	0 00	0 00
7,600 00	90 00	91 54	4,700 00	-83 27	3,103 81	3,104 93	0 00	0 00	0 00
7,700 00	90 00	91 54	4,700 00	-85 95	3,203 78	3,204 93	0 00	0 00	0 00
7,800 00	90 00	91 54	4,700 00	-88 63	3,303 74	3,304 93	0 00	0 00	0 00
7,900 00	90 00	91 54	4,700 00	-91 31	3,403 71	3,404 93	0 00	0 00	0 00
8,000 00	90 00	91 54	4,700 00	-94 00	3,503 67	3,504 93	0 00	0 00	0 00
8,100 00	90 00	91 54	4,700 00	-96 68	3,603 63	3,604 93	0 00	0 00	0 00
8,156 79	90 00	91 54	4,700 00	-98 20	3,660 40	3,661 72	0 00	0 00	0 00
PBHL-Dodd Fed 10 #1H									



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Dodd Federal Unit 10 #1H
Company:	COG Operating LLC	TVD Reference:	GL @ 3588 00usft
Project:	Eddy County, NM (NAN27 NMÉ)	MD Reference:	GL @ 3588 00usft
Site:	Dodd Federal Unit 10 #1H	North Reference:	Grid
Well:	Dodd Federal Unit 10 #1H	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									
PBHL-Dodd Fed 10 #1H	0 00	0 01	4,700 00	-98 20	3,660.40	674,874 60	585,763 80	32° 51' 18 009 N	104° 3' 14.577 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	-12 80	477 30	Land hold 90 00°	



Dodd Federal Unit 10 #1H  
Eddy County, NM (NAN27 NME)  
Northing (Y) 674972.80  
Easting (X) 582103.40  
Plan #1 - 8-3/4" Hole



Azimuth to Grid North  
True North -0.14°  
Magnetic North 7.63°  
Magnetic Field  
Strength 48871 Gauss  
Dip Angle 60.62°  
To convert a Magnetic Direction to a Grid Direction Add 7.61°  
To convert a True Direction to a Grid Direction Subtract 0.15° Model IGRF2010

#### WELL DETAILS Dodd Federal Unit 10 #1H

	+N-S	+E-W	Northing	Ground Level	3588.00	Latitude	Longitude	Slot
	0.00	0.00	674972.80	582103.40		32° 51' 19.075 N	104° 3' 57.485 W	

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

Geodetic System: US State Plane 1927 (Exact solution)  
Datum: NAD 1927 (NADCON CONUS)  
Ellipsoid: Clarke 1866  
Zone: New Mexico East 3001

System Datum: Mean Sea Level

#### SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N-S	+E-W	Oleg	TFace	V5ect	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4223.54	0.00	0.00	4223.54	0.00	0.00	0.00	0.00	0.00	
3	4072.54	90.00	91.54	4700.00	-12.80	477.29	12.00	91.54	477.45	
4	8156.79	90.00	91.54	4700.00	-98.20	3660.40	0.00	0.00	3661.72	PBHL-Dodd Fed 10 #1H

#### SITE DETAILS Dodd Federal Unit 10 #1H

Site Centre Northing 674972.80  
Easting 582103.40

Positional Uncertainty 0.00  
Convergence 0.15  
Local North Grid

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

Local Origin: Site Dodd Federal Unit 10 #1H, Grid North  
Latitude: 32° 51' 19.075 N  
Longitude: 104° 3' 57.485 W  
Grid East: 582103.40  
Grid North: 674972.80  
Scale Factor: 1.000

Geomagnetic Model: IGRF2010  
Sample Date: 23-Feb-12  
Magnetic Declination: 7.78°  
Dip Angle from Horizontal: 60.62°  
Magnetic Field Strength: 48871

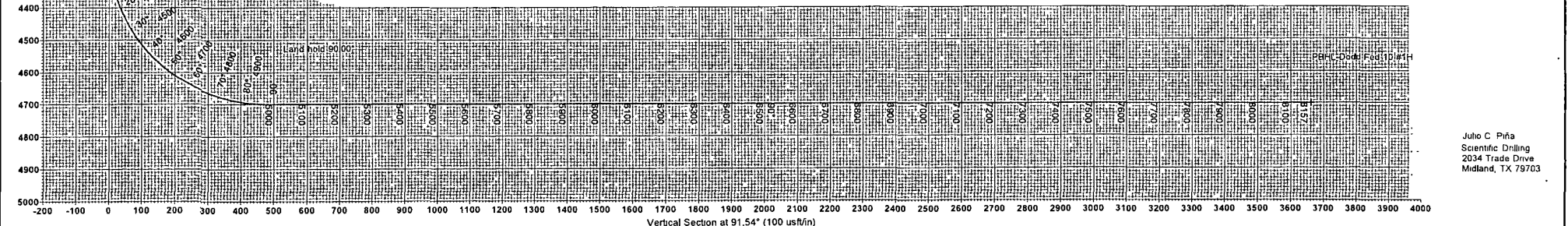
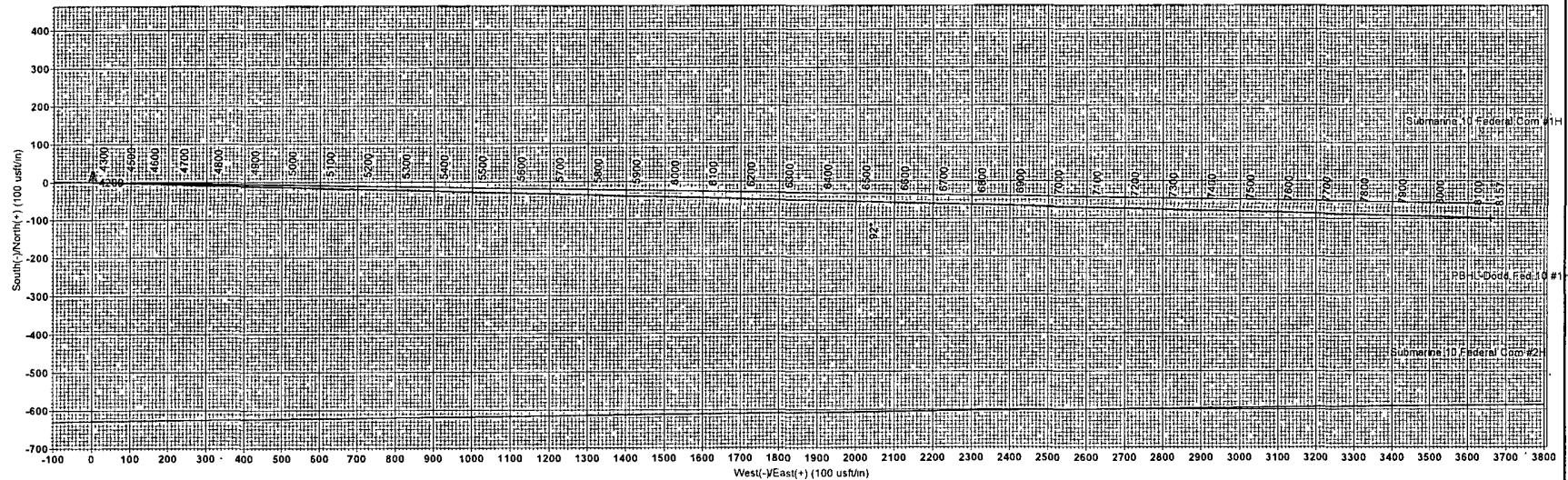
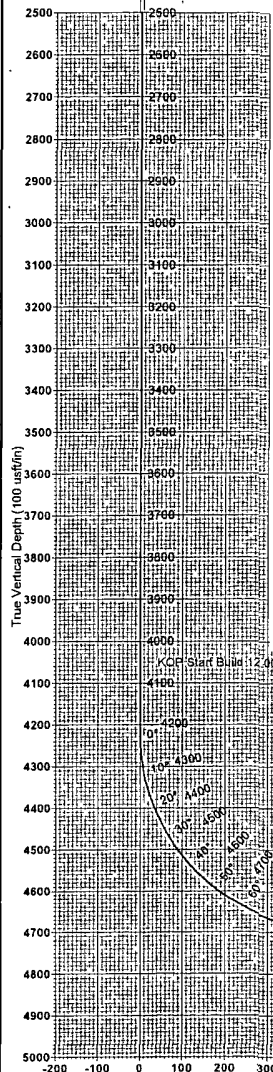
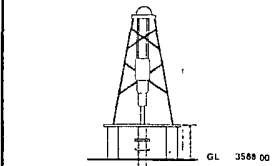
To convert a Magnetic Direction to a Grid Direction Add 7.61°  
To convert a Magnetic Direction to a True Direction Add 7.78° East  
To convert a True Direction to a Grid Direction Subtract 0.15°

#### DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-Dodd Fed 10 #1H	4700.00	-98.20	3660.40	674874.60	585763.8032	51° 18.009 N	104° 3' 14.577 W	Point

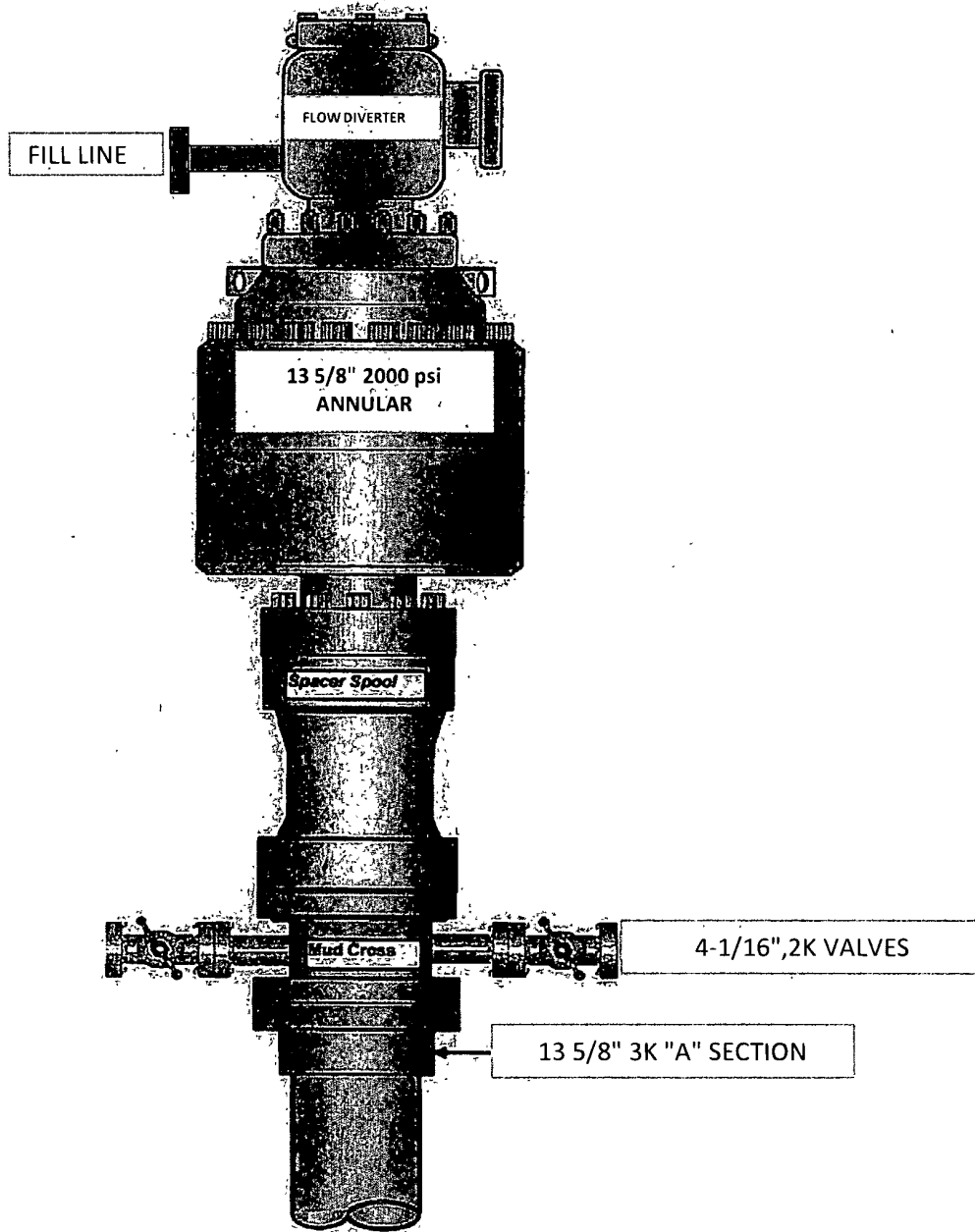
#### LEGEND

- Submarine 10 Federal Com #1H, OH, Plan #1 8-3/4" Hole V0
- Submarine 10 Federal Com #2H, OH, Plan #2 8-3/4" Hole V0
- Plan #1 - 8-3/4" Hole



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

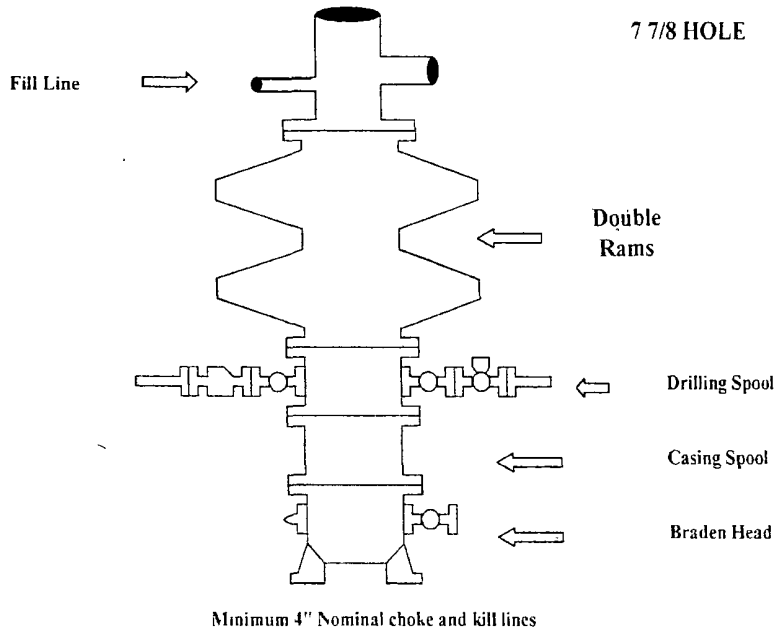
13 5/8" 2K ANNULAR



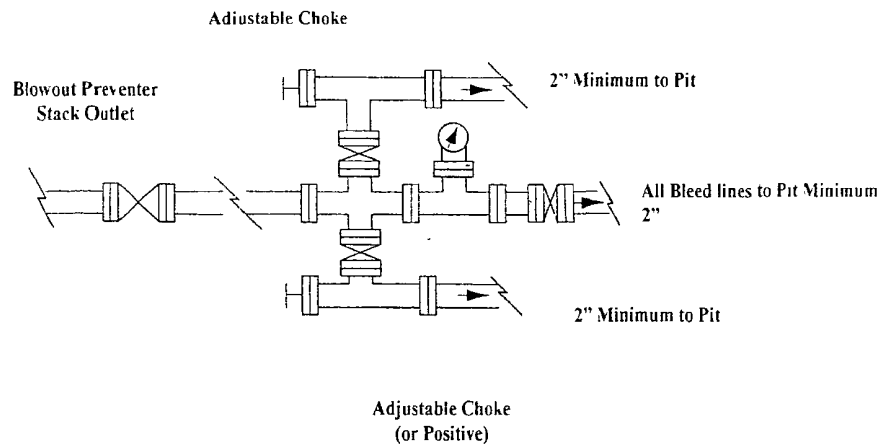
# COG Operating LLC

## Exhibit #9

### BOPE and Choke Schematic



Choke Manifold Requirement (2000 psi WP)  
No Annular Required

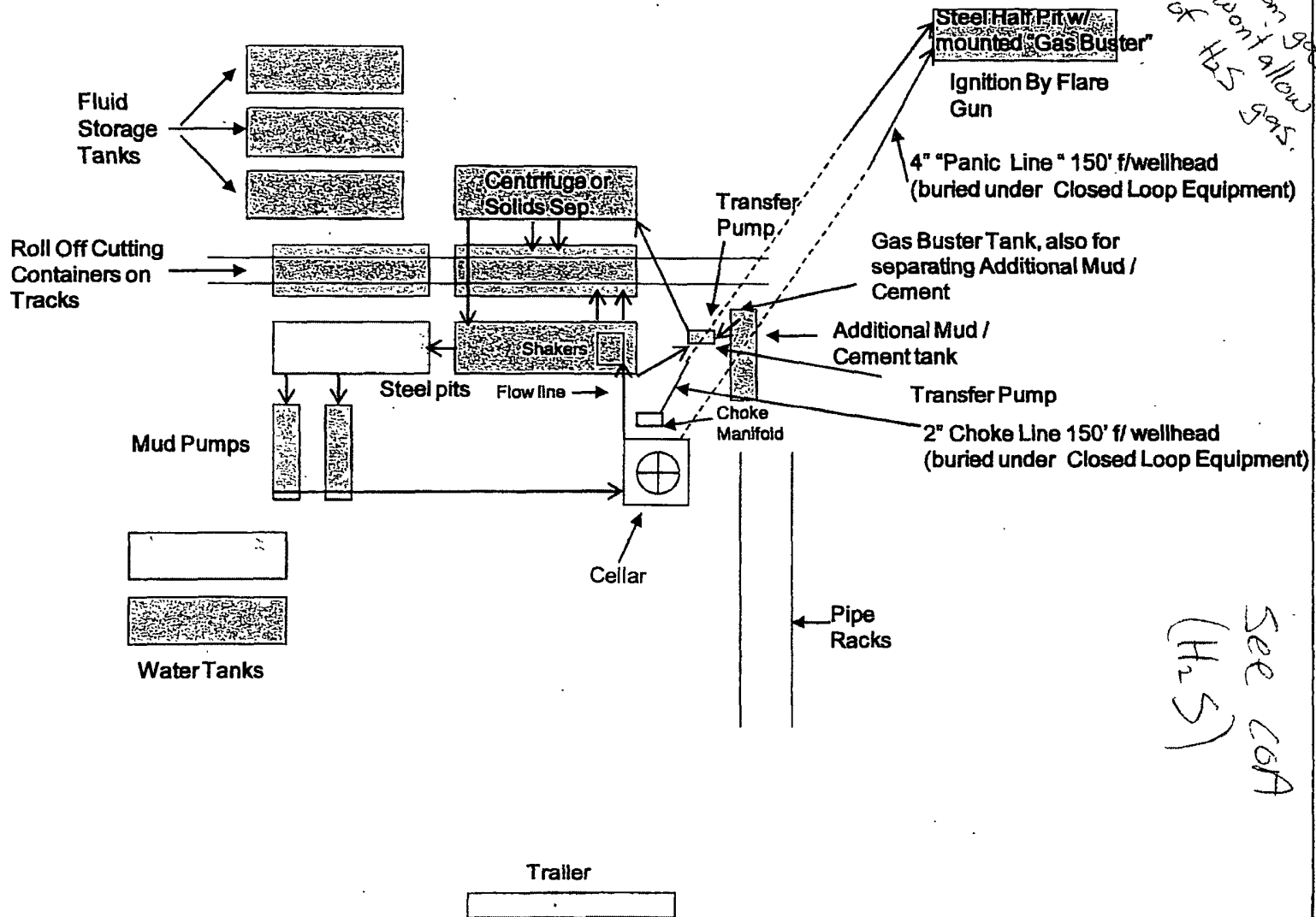


**NOTES REGARDING THE BLOWOUT PREVENTERS**

**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



## Closed Loop Operation & Maintenance Procedure

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

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

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

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

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

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

Cuttings will be hauled to either:

CRI (permit number R9166)

or

GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

## COG Operating LLC

### Hydrogen Sulfide Drilling Operation Plan

#### I. HYDROGEN SULFIDE TRAINING

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

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

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

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

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

## **II. H2S SAFETY EQUIPMENT AND SYSTEMS**

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

### **1. Well Control Equipment:**

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

### **2. Protective equipment for essential personnel:**

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

### **3. H2S detection and monitoring equipment:**

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

### **4. Visual warning systems:**

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

### **5. Mud program:**

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

**6. Metallurgy:**

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

**7. Communication:**

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

**8. Well testing:**

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

**EXHIBIT #7**

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

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

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

**EDDY COUNTY EMERGENCY NUMBERS**

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

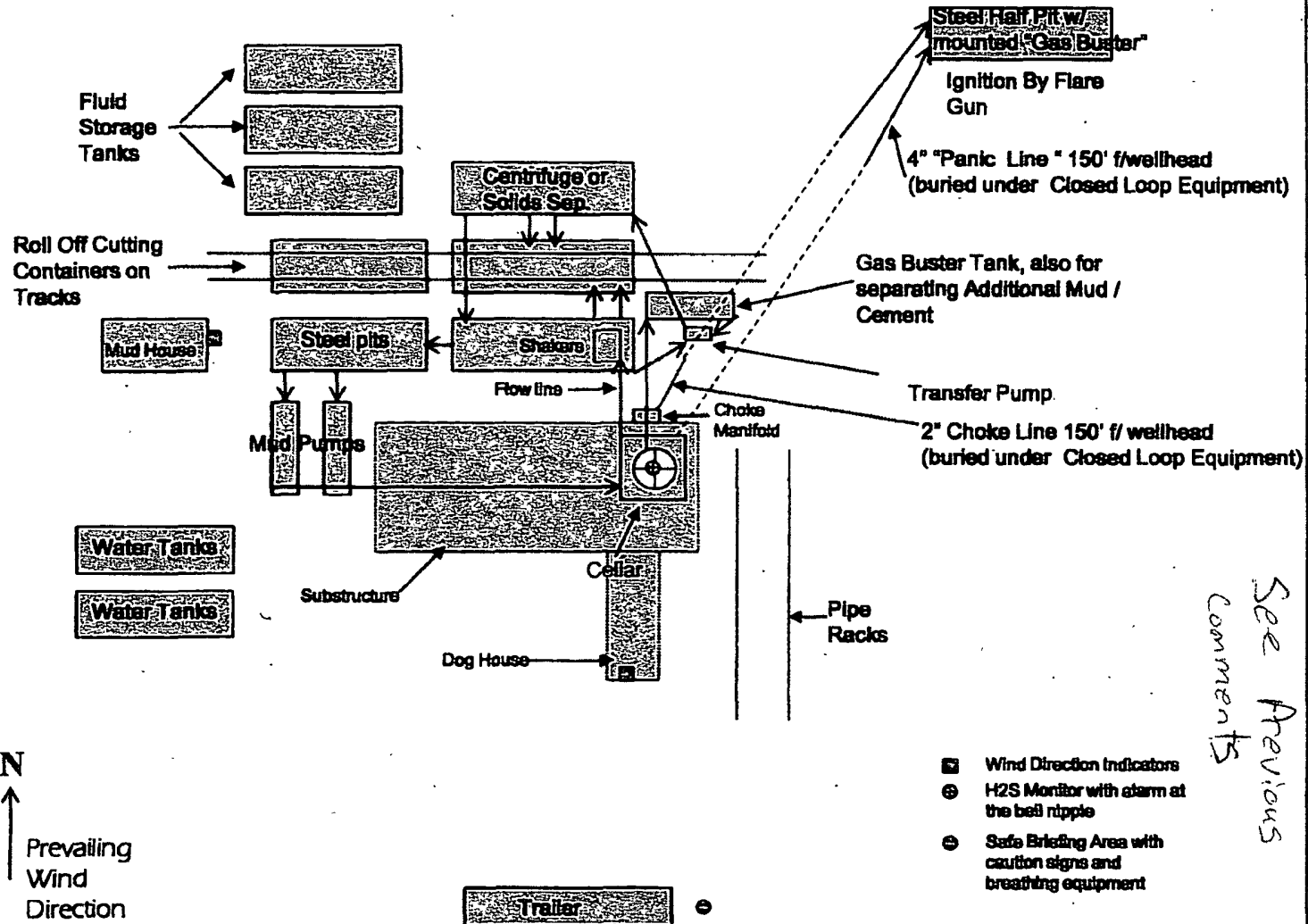
**LEA COUNTY EMERGENCY NUMBERS**

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

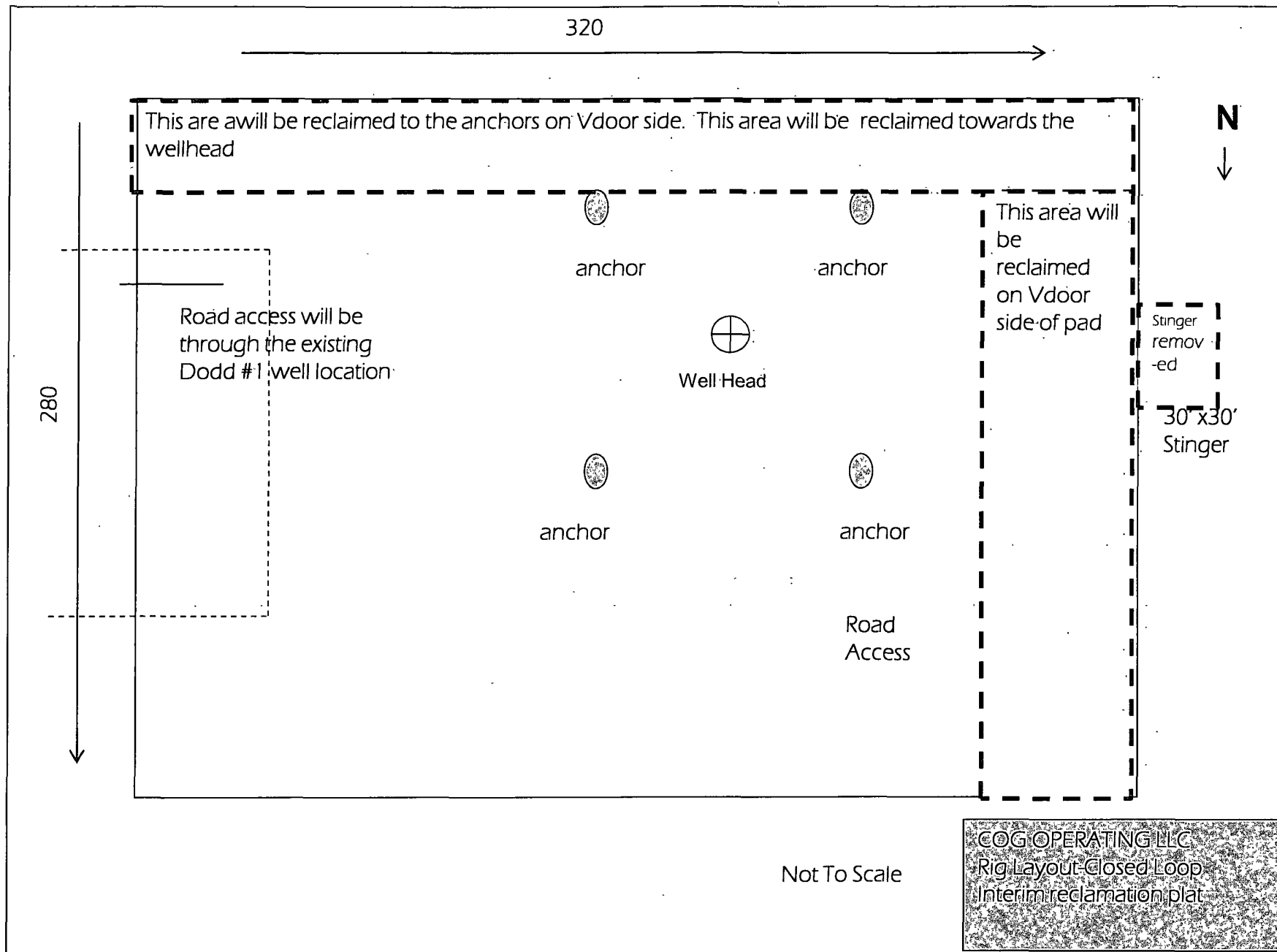
COG Operating LLC

Drilling Location - H2S Safety Equipment Diagram

# EXHIBIT 8



See Previous comments



# PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	LC028731B
WELL NAME & NO.:	1H Dodd Federal Unit 10
SURFACE HOLE FOOTAGE:	350' FNL & 1475' FWL
BOTTOM HOLE FOOTAGE:	455' FNL & 150' FEL
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**
  - Berming
- ☐ **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**