

OCD-ARTESIA

Form 3160-3
(April 2004)

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. SH:LC-028731B BH:NM-125007
1b. Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6 If Indian, Allottee or Tribe Name N/A
2 Name of Operator COG Operating LLC		7 If Unit or CA Agreement, Name and No N/A
3a Address 550 W. Texas Ave., Suite 1300 Midland, TX 79701	3b Phone No. (include area code) 432-685-4384	8 Lease Name and Well No. SUBMARINE 11 FED COM #3H
4 Location of Well (Report location clearly and in accordance with any State requirements *) At surface SHL: 1605' FNL & 85' FWL, Unit E At proposed prod zone BHL: 1650' FNL & 330' FEL, Unit H		9 API Well No. 30-015- 40546
14 Distance in miles and direction from nearest town or post office* 2 miles from Loco Hills, NM		10 Field and Pool, or Exploratory Dodd; Glorieta-Upper Yeso
12 County or Parish EDDY		13 State NM
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drg unit line, if any) 85'	16 No. of acres in lease SHL: 1480 BHL: 160	17 Spacing Unit dedicated to this well 160
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 170'	19 Proposed Depth TVD: 5300' MD: 9972'	20 BLM/BIA Bond No on file NMB000740; NMB000215
21 Elevations (Show whether DF, KDB, RT, GL, etc) 3629' GL	22 Approximate date work will start* 06/30/2012	23 Estimated duration 15 days

24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No 1, shall be attached to this form.

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 1 Well plat certified by a registered surveyor | 4 Bond to cover the operations unless covered by an existing bond on file (see Item 20 above) |
| 2 A Drilling Plan | 5 Operator certification |
| 3 A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office) | 6 Such other site specific information and/or plans as may be required by the authorized officer |

25. Signature 	Name (Printed/Typed) Kelly J. Holly	Date 04/04/2012
Title Permitting Tech		

Approved by (Signature) /s/ Don Peterson	Name (Printed/Typed) CARLSBAD FIELD OFFICE	Date JUL 26 2012
Title FIELD MANAGER		

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

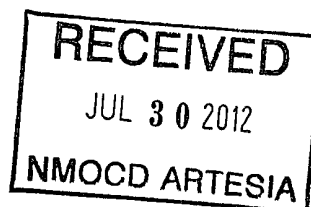
Conditions of approval, if any, are attached.

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



Approval Subject to General Requirements
& Special Stipulations Attached

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Surface Use Plan
COG Operating, LLC
Submarine 11 Federal Unit #3H
SL: 1605' FNL & 85' FWL UL E
BHL: 1650' FNL & 330' FEL UL A
Section 11, 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 15th day of December, 2011.

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@conchoresources.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 46546	Pool Code 97917	Pool Name Dodd; Glorieta=Upper Yeso
Property Code 39253	Property Name SUBMARINE 11 FEDERAL COM	Well Number 3H
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3629'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
E	11	17-S	29-E		1605	NORTH	85	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
H	11	17-S	29-E		1650	NORTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No
160			9972 726

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>[Signature]</i> 1-5-2012 Signature Date Kelly J. Holly Printed Name kholly@concho.com E-mail Address</p>
<p>CORNER COORDINATES TABLE</p> <p>① - Y=674009.3 N, X=585916.2 E ② - Y=674002.2 N, X=591205.2 E ③ - Y=672688.7 N, X=585919.9 E ④ - Y=672682.1 N, X=591209.9 E ⑤ - Y=675329.9 N, X=585912.5 E ⑥ - Y=675322.9 N, X=591200.5 E</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>DECEMBER 3, 2011</p> <p>Date of Survey Signature of Professional Surveyor: <i>[Signature]</i> GARY G. EIDSON NEW MEXICO 12641 RECEIVED PROFESSIONAL SURVEYOR Certificate Number: Gary G. Eidson 12641 Ronald J. Eidson 3239 AF JWSC W O 11.11.2278</p>

ATTACHMENT TO FORM 3160-3
 COG Operating, LLC
 SUBMARINE 11 FEDERAL COM #3H
 SHL: 1605' FNL & 85' FWL, Unit E
 BHL: 1650' FNL & 330' FEL, Unit H
 Sec 11, T17S, R29E
 Eddy County, NM

1. Proration Unit Spacing: 160 Acres
2. Ground Elevation: 3629'
3. Proposed Depths: Horizontal TVD = 5302', MD =9972'
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'
Blaine	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
Blaine	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 Cert

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
SUBMARINE 11 FEDERAL COM #3H
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6. Casing Program - Proposed

Hole size	Interval	OD of Casing	Weight	Cond.	Collar	Grade
17-1/2"	0' - +/-400' ²¹⁵	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' - 9972'	7" x 5-1/2"	26#/17#	New	LTC	L-80
7" Csg - Collapse sf - 2.37, Burst sf - 1.91, Tension sf - 4.14						
5 1/2" Csg - Collapse sf - 2.50, Burst sf - 1.93, Tension sf - 3.86						

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, 400sx Class "C" w/ 2% CaCl₂ & 0.25 pps CF, yield 1.32 cu.ft./sk., wt. 14.8 ppg. 190% excess, calculated to surface.

9 5/8" Intrmd. Csg: Set at +/- 1350'MD.

Option #1: **Single Stage (TD to Surface):** Lead Slurry: 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1, 0.25 pps CF, yield 2.45 cu.ft./sk., 11.8 ppg. Tail Slurry: 200 sx Class "C" w/ 2% CaCl₂, yield 1.32 cu.ft./sk., wt. 14.8 ppg. 185% excess, calculated to surface.

Option #2: **Multi Stage: Stage 1 (TD to DV Tool @ 450'):** 200 sx Class "C" w/ 2% CaCl₂, yield 1.32 cu.ft./sk., wt. 14.8 ppg. 45% excess. **Stage 2 (DV Tool to surface):** 300 sx 50:50:10:C:Poz:Gel w/ 5% salt, 5 pps LCM-1, 0.25 pps CF, yield 2.45 cu.ft./sk., wt. 14.8 ppg calculated 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 +/- 9972'MD.

Option#1: **Single Stage (KOP to surface):** Lead Slurry: 400 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 2.01 cu.ft./sk., wt. 12.5 ppg. Tail Slurry: 300 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, 0.6% SMS, 1% FL-25, 1% BA-58, 0.125 pps CF, 0.3% FL-52A; yield 1.37 cu.ft./sk., wt. 14.0 ppg. 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. 90% 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.**

Option #2: **Multi Stage (DV Tool & ECP (external csq. packer)@ KOP and DV Tool at 3000'):** **Stage 1:** (KOP To DV Tool at 3000'): 200 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, 0.6% SMS, 1% FL-25, 1% BA-58, .125 pps CF, 0.3% FL-52A; yield 1.37 cu.ft./sk., wt. 14.00 ppg. 6% excess. **This is a minimum volume and will be adjusted up after caliper is run.** **Stage 2 (DV Tool to surface)** Lead Slurry: 400 sx 50:50:2:C:Poz:Gel w/ 5% salt, 3 pps LCM, 0.6% SMS, 1% FL-25, 1% BA-58, 0.125 pps CF, 0.3% FL-52A; yield 1.37 cu.ft./sk., wt. 14.0 ppg. Tail Slurry: 300 sx Class C w/ 0.3% R-3 + 1.5% CD-32, yield 1.02 cu.ft./sk., wt. 16.8 ppg. 154% excess calculated back to surface (no need for excess in casing overlap). **This is a minimum volume and will be adjusted up after caliper is run.**

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
SUBMARINE 11 FEDERAL COM #3H
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You will note that in option #2 the Multi stage tool (DV Tool) will 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.

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' 215	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' - 9972'	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 +/- 4825', building curve over +/- 750' to horizontal at 5302' TVD. Drill 7 7/8" lateral section in a easterly direction for +/-4397' lateral to TD at +/-9972' MD, 5302' 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.

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COG Operating, LLC
SUBMARINE 11 FEDERAL COM #3H
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12. Logging, Testing and Coring Program:

- 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 1800 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, however an H2S plan is attached to the Drilling Program. No major loss of circulation zones has been reported in offsetting wells.

14. Anticipated Starting Date

Drilling operations will commence approximately on June 30, 2012 with drilling and completion operations lasting approximately 90 days.



COG Operating LLC

Eddy County, NM (NAN27 NME)

Submarine 11 Federal Com #3H

Submarine 11 Federal Com #3H

OH

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

SHL = 1605' FNL & 85' FWL

PP = 1608' FNL & 330' FWL

BHL = 1650' FNL & 330' FEL

Standard Planning Report

12 January, 2012



Scientific Drilling
Directional Drilling Operations



SDI
Planning Report



Database:	EDM 5000.1 Single User Db	Local Co-ordinate Reference:	Site Submarine 11 Federal Com #3H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3629 00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3629 00usft
Site:	Submarine 11 Federal Com #3H	North Reference:	Grid
Well:	Submarine 11 Federal Com #3H	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:	Submarine 11 Federal Com #3H		
Site Position:		Northing:	673,725 00 usft
From:	Map	Easting:	586,002 00 usft
Position Uncertainty:	0 00 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 51' 6 627 N
		Longitude:	104° 3' 11 820 W
		Grid Convergence:	0° 15 '

Well:	Submarine 11 Federal Com #3H		
Well Position	+N/-S	0 00 usft	Northing:
	+E/-W	0 00 usft	Easting:
Position Uncertainty	0 00 usft	Wellhead Elevation:	Ground Level:
			3,629 00 usft

Wellbore:	OH		
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Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
	IGRF2010	2012/01/12	(°)	(°)	(nT)
			7.79	60.67	48,882

Design:	Plan #1-8-3/4" Hole		
Audit Notes:			
Version:	Phase:	PLAN	Tie On Depth:
			0 00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0 00	0 00	0 00
			90 61

Plan Sections										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Dogleg	Build	Turn	TFO	Target
Depth	(°)	(°)	Depth	(usft)	(usft)	Rate	Rate	Rate	(°)	
(usft)			(usft)			(°/100usft)	(°/100usft)	(°/100usft)		
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
4,824 54	0 00	0 00	4,824 54	0 00	0 00	0 00	0 00	0 00	0 00	
5,574 54	90 00	90 61	5,302 00	-5 11	477 44	12 00	12 00	0 00	90 61	
9,971 75	90 00	90 61	5,302 00	-52 20	4,874 40	0 00	0 00	0 00	0 00	PBHL-Submarine 11



Database:	EDM 5000-1 Single User Db	Local Co-ordinate Reference:	Site: Submarine 11 Federal Com #3H
Company:	COG Operating, LLC	IVD Reference:	GL Elev @ 3629.00usft
Project:	Eddy County, NM (NAN27/NME)	MD Reference:	GL Elev @ 3629.00usft
Site:	Submarine 11 Federal Com #3H	North Reference:	Grd
Well:	Submarine 11 Federal Com #3H	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
4,822.54	0.00	0.00	4,822.54	0.00	0.00	0.00	0.00	0.00	0.00
Start Build 12.00°/100'									
4,824.54	0.00	0.00	4,824.54	0.00	0.00	0.00	0.00	0.00	0.00
4,900.00	9.06	90.61	4,899.69	-0.06	5.95	5.95	12.00	12.00	0.00
5,000.00	21.06	90.61	4,996.08	-0.34	31.88	31.88	12.00	12.00	0.00
5,100.00	33.06	90.61	5,084.97	-0.83	77.28	77.28	12.00	12.00	0.00
5,200.00	45.06	90.61	5,162.48	-1.50	140.17	140.18	12.00	12.00	0.00
5,300.00	57.06	90.61	5,225.22	-2.33	217.80	217.81	12.00	12.00	0.00
5,331.71	60.86	90.61	5,241.57	-2.62	244.96	244.97	12.00	12.00	0.00
PP-330 FWL Submarine 11 #3H									
5,400.00	69.06	90.61	5,270.45	-3.29	306.77	306.79	12.00	12.00	0.00
5,500.00	81.06	90.61	5,296.19	-4.32	403.21	403.23	12.00	12.00	0.00
5,574.54	90.00	90.61	5,302.00	-5.11	477.44	477.47	12.00	12.00	0.00
Land hold 90.00°									
5,600.00	90.00	90.61	5,302.00	-5.39	502.90	502.93	0.00	0.00	0.00
5,700.00	90.00	90.61	5,302.00	-6.46	602.90	602.93	0.00	0.00	0.00
5,800.00	90.00	90.61	5,302.00	-7.53	702.89	702.93	0.00	0.00	0.00
5,900.00	90.00	90.61	5,302.00	-8.60	802.88	802.93	0.00	0.00	0.00
6,000.00	90.00	90.61	5,302.00	-9.67	902.88	902.93	0.00	0.00	0.00
6,100.00	90.00	90.61	5,302.00	-10.74	1,002.87	1,002.93	0.00	0.00	0.00
6,200.00	90.00	90.61	5,302.00	-11.81	1,102.87	1,102.93	0.00	0.00	0.00
6,300.00	90.00	90.61	5,302.00	-12.88	1,202.86	1,202.93	0.00	0.00	0.00
6,400.00	90.00	90.61	5,302.00	-13.95	1,302.85	1,302.93	0.00	0.00	0.00
6,500.00	90.00	90.61	5,302.00	-15.02	1,402.85	1,402.93	0.00	0.00	0.00
6,600.00	90.00	90.61	5,302.00	-16.09	1,502.84	1,502.93	0.00	0.00	0.00
6,700.00	90.00	90.61	5,302.00	-17.16	1,602.84	1,602.93	0.00	0.00	0.00
6,800.00	90.00	90.61	5,302.00	-18.24	1,702.83	1,702.93	0.00	0.00	0.00
6,900.00	90.00	90.61	5,302.00	-19.31	1,802.83	1,802.93	0.00	0.00	0.00
7,000.00	90.00	90.61	5,302.00	-20.38	1,902.82	1,902.93	0.00	0.00	0.00
7,100.00	90.00	90.61	5,302.00	-21.45	2,002.81	2,002.93	0.00	0.00	0.00
7,200.00	90.00	90.61	5,302.00	-22.52	2,102.81	2,102.93	0.00	0.00	0.00
7,300.00	90.00	90.61	5,302.00	-23.59	2,202.80	2,202.93	0.00	0.00	0.00
7,400.00	90.00	90.61	5,302.00	-24.66	2,302.80	2,302.93	0.00	0.00	0.00
7,500.00	90.00	90.61	5,302.00	-25.73	2,402.79	2,402.93	0.00	0.00	0.00
7,600.00	90.00	90.61	5,302.00	-26.80	2,502.79	2,502.93	0.00	0.00	0.00
7,700.00	90.00	90.61	5,302.00	-27.87	2,602.78	2,602.93	0.00	0.00	0.00
7,800.00	90.00	90.61	5,302.00	-28.94	2,702.77	2,702.93	0.00	0.00	0.00
7,900.00	90.00	90.61	5,302.00	-30.01	2,802.77	2,802.93	0.00	0.00	0.00
8,000.00	90.00	90.61	5,302.00	-31.09	2,902.76	2,902.93	0.00	0.00	0.00
8,100.00	90.00	90.61	5,302.00	-32.16	3,002.76	3,002.93	0.00	0.00	0.00
8,200.00	90.00	90.61	5,302.00	-33.23	3,102.75	3,102.93	0.00	0.00	0.00
8,300.00	90.00	90.61	5,302.00	-34.30	3,202.75	3,202.93	0.00	0.00	0.00
8,400.00	90.00	90.61	5,302.00	-35.37	3,302.74	3,302.93	0.00	0.00	0.00
8,500.00	90.00	90.61	5,302.00	-36.44	3,402.73	3,402.93	0.00	0.00	0.00
8,600.00	90.00	90.61	5,302.00	-37.51	3,502.73	3,502.93	0.00	0.00	0.00
8,700.00	90.00	90.61	5,302.00	-38.58	3,602.72	3,602.93	0.00	0.00	0.00
8,800.00	90.00	90.61	5,302.00	-39.65	3,702.72	3,702.93	0.00	0.00	0.00
8,900.00	90.00	90.61	5,302.00	-40.72	3,802.71	3,802.93	0.00	0.00	0.00
9,000.00	90.00	90.61	5,302.00	-41.79	3,902.71	3,902.93	0.00	0.00	0.00
9,100.00	90.00	90.61	5,302.00	-42.86	4,002.70	4,002.93	0.00	0.00	0.00
9,200.00	90.00	90.61	5,302.00	-43.94	4,102.69	4,102.93	0.00	0.00	0.00
9,300.00	90.00	90.61	5,302.00	-45.01	4,202.69	4,202.93	0.00	0.00	0.00



SDI
Planning Report



Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Submarine 11 Federal Com #3H
Company:	COG Operating LLC	TVD Reference:	GL Elev @ 3629.00usft
Project:	Eddy County, NM (NAN27 NME)	MD Reference:	GL Elev @ 3629.00usft
Site:	Submarine 11 Federal Com #3H	North Reference:	Grid
Well:	Submarine 11 Federal Com #3H	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)
9,400.00	90.00	90.61	5,302.00	-46.08	4,302.68	4,302.93	0.00	0.00	0.00
9,500.00	90.00	90.61	5,302.00	-47.15	4,402.68	4,402.93	0.00	0.00	0.00
9,600.00	90.00	90.61	5,302.00	-48.22	4,502.67	4,502.93	0.00	0.00	0.00
9,700.00	90.00	90.61	5,302.00	-49.29	4,602.67	4,602.93	0.00	0.00	0.00
9,800.00	90.00	90.61	5,302.00	-50.36	4,702.66	4,702.93	0.00	0.00	0.00
9,900.00	90.00	90.61	5,302.00	-51.43	4,802.65	4,802.93	0.00	0.00	0.00
9,971.75	90.00	90.61	5,302.00	-52.20	4,874.40	4,874.68	0.00	0.00	0.00
PBHL Submarine 11 #3H									

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
PP-330' FWL Submarine	- plan hits target center	0.00	0.00	5,241.59	-2.62	244.98	673,722.37	586,246.99	32° 51' 6.595 N 104° 3' 8.948 W
	- Point								
PBHL-Submarine 11 #3H	- plan hits target center	0.00	0.00	5,302.00	-52.20	4,874.40	673,672.80	590,876.40	32° 51' 5.979 N 104° 2' 14.681 W
	- Point								

Plan Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
4,822.54	4,822.54	0.00	0.00	Start Build 12.00°/100'
5,574.54	5,302.00	-5.11	477.44	Land hold 90.00°



Azimuth to Grid North
True North -015°
Magnetic North 7.63°
Magnetic Field
Strength: 48881.5nT
Dip Angle: 60.67°
Date: 2012/01/12
Model: IGRF2010

To convert a Magnetic Direction to a Grid Direction: Add 7.63°
To convert a True Direction to a Grid Direction: Subtract 0.15° Model: IGRF2010

Submarine 11 Federal Com #3H
Eddy County, NM (NAN27 NME)
Northing (Y) 673725.00
Easting (X) 586002.00
Plan #1 8-3/4" Hole

WELL DETAILS Submarine 11 Federal Com #3H

	+N/-S	+E/-W	Northing	Ground Level	3629.00	Latitude	Longitude	Skt
	0.00	0.00	673725.00	Easting	586002.00	32° 51' 6.627 N	104° 3' 11.820 W	

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VFace	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	4824.54	0.00	0.00	4824.54	0.00	0.00	0.00	0.00	0.00	
3	5574.54	90.00	90.61	5302.00	-5.11	477.44	12.00	90.61	477.46	
4	9971.75	90.00	90.61	5302.00	-52.20	4874.40	0.00	0.00	4874.68	PBHL-Submarine 11 #3H

DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP-330 FWL Submarine 11 #3H 5241.59	-2.62	244.98	673722.38	586246.98	32° 51' 6.595 N	104° 3' 6.948 W	Point	
plan hls target center								
PBHL-Submarine 11 #3H	5302.00	-52.20	4874.40	673672.80	590876.40	32° 51' 5.979 N	104° 2' 14.681 W	Point
plan hls target center								

PROJECT DETAILS Eddy County, NM (NAN27 NME)

Geocentric 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

SITE DETAILS Submarine 11 Federal Com #3H

Site Centre Northing 673725.00
Easting 586002.00

Posterior Uncertainty 0.00
Convergence 0.15
Local North Grid

LEGEND

- Dodd Federal Unit #517 OH Plan #1 7-7/8" Hole V0
- Dodd Federal Unit #522 OH Plan #1 7-7/8" Hole V0
- Dodd Federal Unit #562 OH Plan #1 7-7/8" Hole V0
- Submarine 10 Federal Com #2H OH Plan #1 8-3/4" Hole V0
- Submarine 10 Federal Com #3H OH Plan #1 8-3/4" Hole V0
- Submarine 10 Federal Com #4H OH Plan #1 8-3/4" Hole V0
- Submarine 11 Federal Com #2H OH Plan #1 8-3/4" Hole V0
- Submarine 11 Federal Com #4H OH Plan #1 8-3/4" 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 New Mexico East 3001

Local Origin Site Submarine 11 Federal Com #3H Grid North

Latitude 32° 51' 6.627 N

Longitude 104° 3' 11.820 W

Grid East 586002.00

Grid North 673725.00

Scale Factor 1.000

Geomagnetic Model IGRF2010

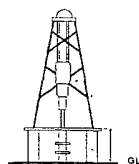
Sample Date 12-Jan-12

Magnetic Declination 7.79°

Dip Angle from Horizontal 60.67°

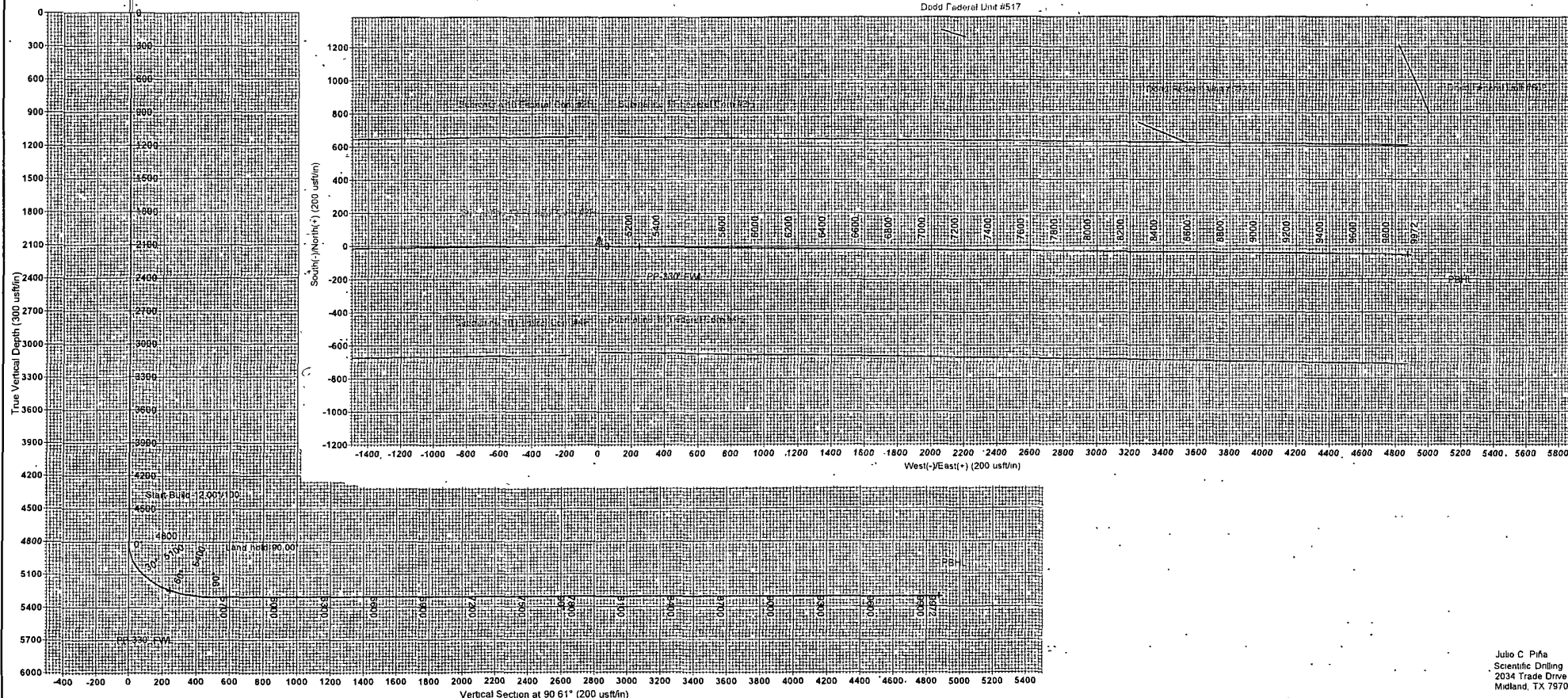
Magnetic Field Strength 48882

To convert a Magnetic Direction to a Grid Direction: Add 7.63°
To convert a Magnetic Direction to a True Direction: Add 7.79° East
To convert a True Direction to a Grid Direction: Subtract 0.15°

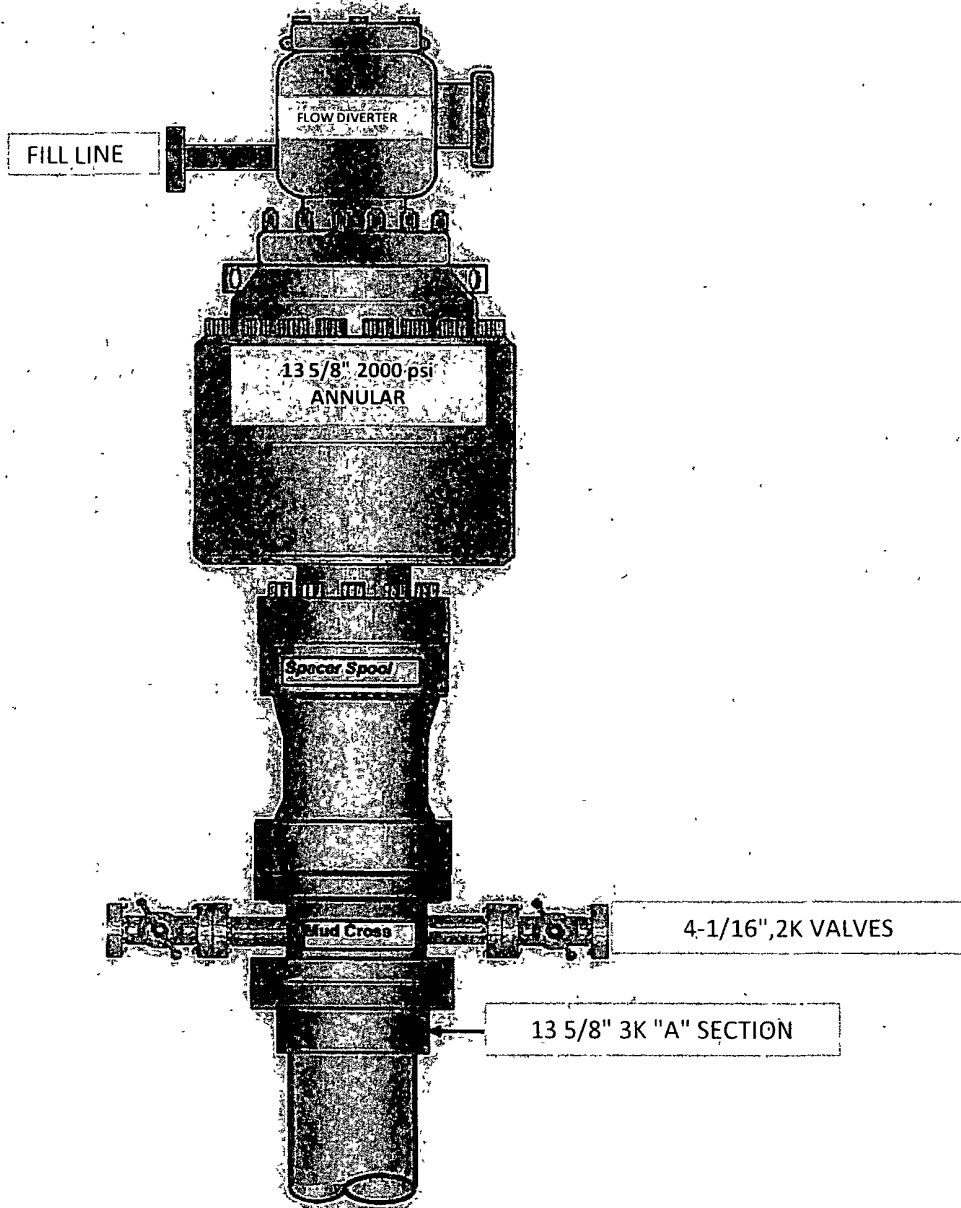


GL Elev @ 3629.00usft

3629.00



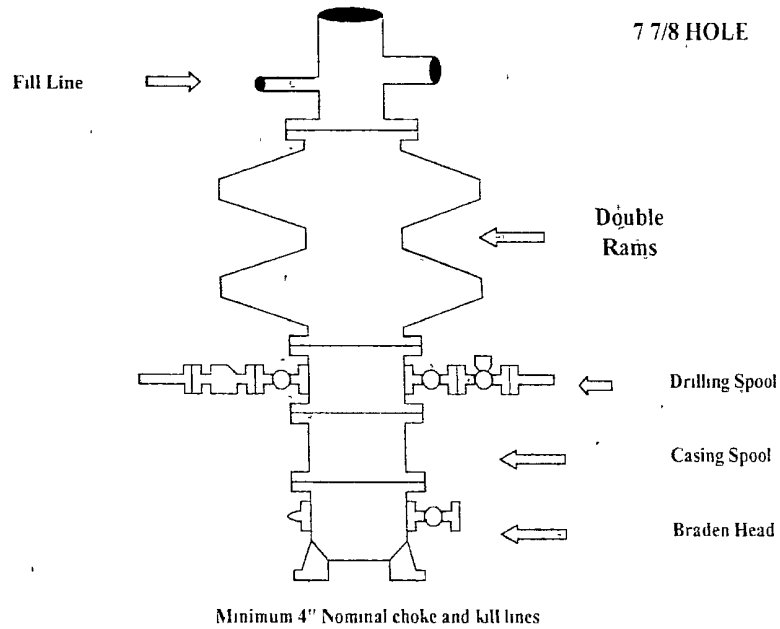
13 5/8" 2K ANNULAR



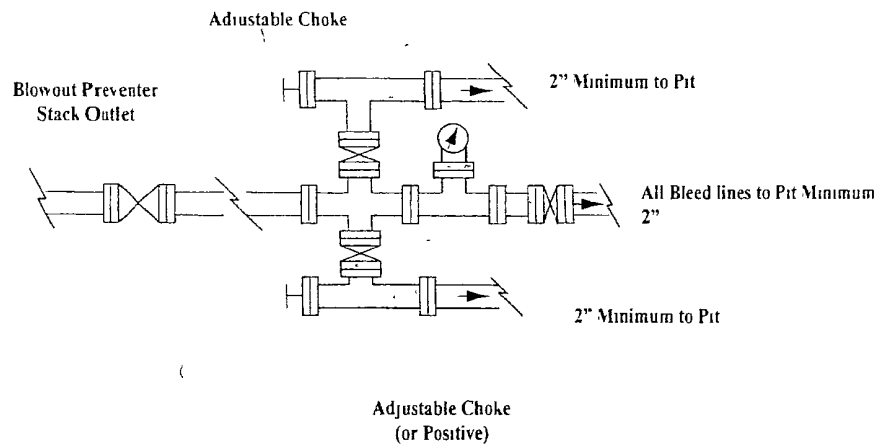
COG Operating LLC

Exhibit #9

BOPE and Choke Schematic



Choke Manifold Requirement (2000 psi WP)
No Annular Required

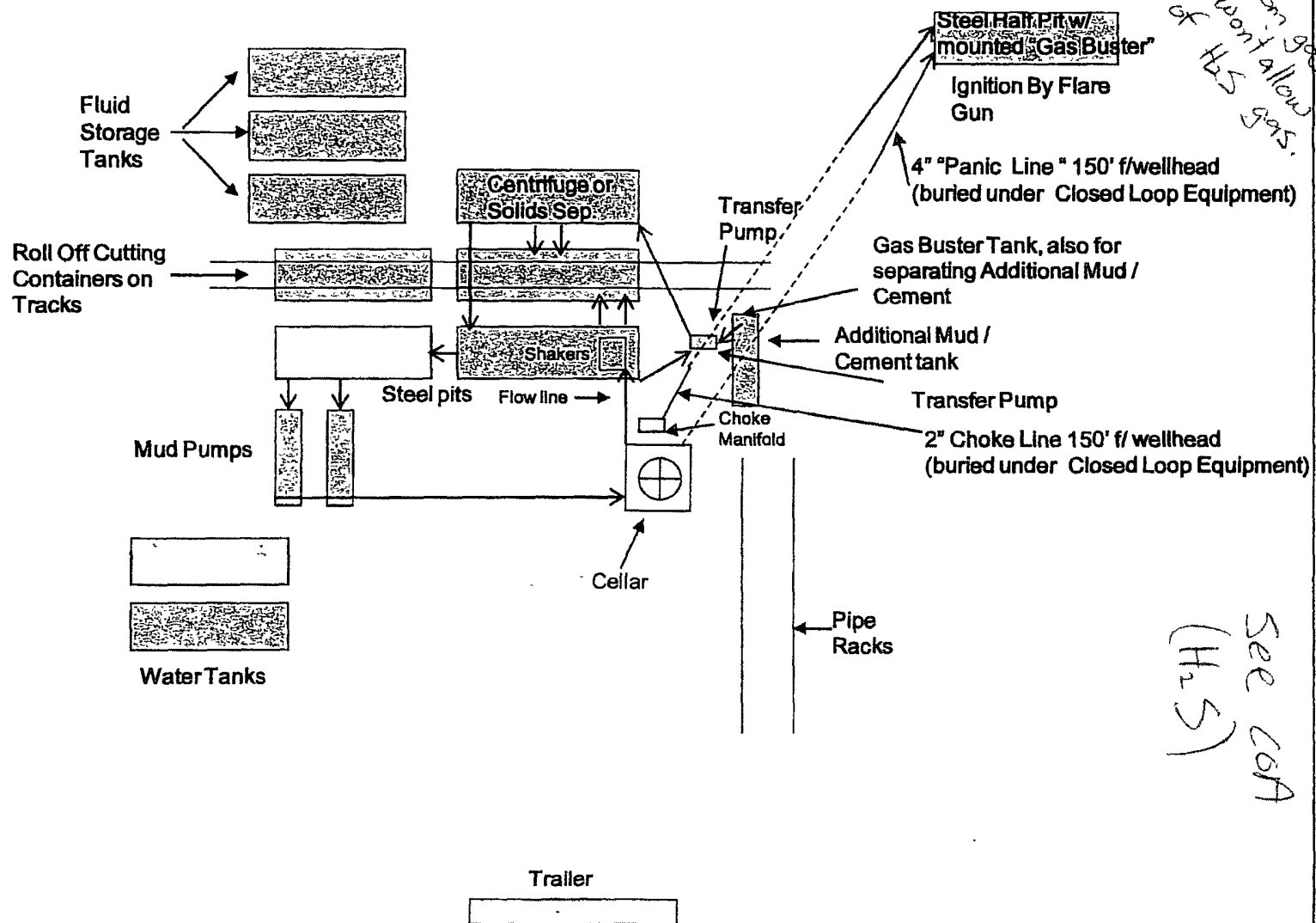


NOTES REGARDING THE BLOWOUT PREVENTERS

**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 (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

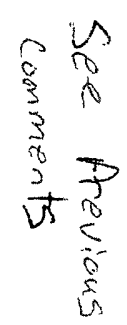
ARTESIA FIRE DEPT. 575-746-5050
ARTESIA POLICE DEPT. 575-746-5000
EDDY CO. SHERIFF DEPT. 575-746-9888

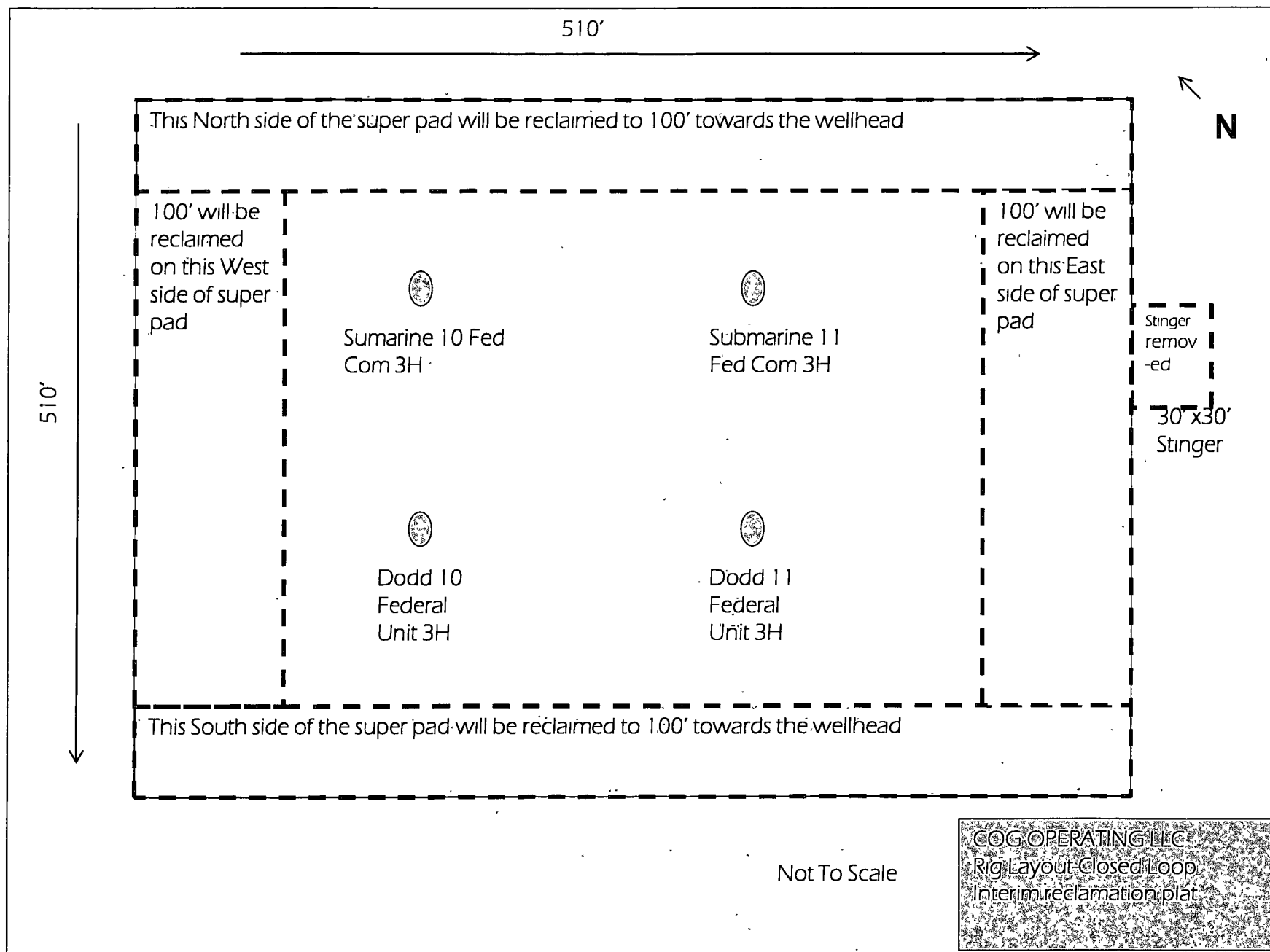
LEA COUNTY EMERGENCY NUMBERS

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

EXHIBIT 8

EXHIBIT 8





PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING, LLC
LEASE NO.:	NM125007
WELL NAME & NO.:	3H – SUBMARINE 11 FED COM
SURFACE HOLE FOOTAGE:	1605'/N. & 85'/W.
BOTTOM HOLE FOOTAGE:	1650'/N. & 330'/E.
LOCATION:	Section 11, 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
 - Communitization Agreement
- ☐ **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**