Form 3160-3
(April 2004)

OCD Artesia

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: **NMLC-028731B**

6. If Indian, Allotee or Tribe Name: **N/A**

TCS 8/21/2012

7. If Unit or CA Agreement, Name and No.: **NMNM-111789X; Dodd Federal Unit** c 3081957

1a. Type of work. ☑ DRILL ☐ REENTER

1b. Type of Well: ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

8. Lease Name and Well No: **DODD FEDERAL UNIT ~~#103H~~ 902H**

2. Name of Operator: **COG Operating LLC** c 229137

9. API Well No. **30-015-** 40624

3a. Address: **550 W. Texas Ave., Suite 100, Midland, TX 79701**

3b. Phone No. *(include area code)*: **432-685-4385**

10. Field and Pool, or Exploratory: **Dodd; Glorieta-Upper Yeso** c 97317

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

At surface: **SHL: 1775' FNL & 85' FEL, Unit H**

At proposed prod zone: **BHL: 1775' FNL & 1650' FWL, Unit F**

11. Sec., T. R. M. or Blk. and Survey or Area: **Sec 10 T17S R29E**

14. Distance in miles and direction from nearest town or post office*: **2 miles from Loco Hills, NM**

12. County or Parish: **EDDY**

13. State: **NM**

15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any)	16. No. of acres in lease	17. Spacing Unit dedicated to this well
85'	**1480**	**160**
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft	19. Proposed Depth	20. BLM/BIA Bond No. on file
170'	**TVD: 4700' MD: 8049'**	**NMB000740; NMB000215**
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
3623' GL	**06/30/2012**	**15 days**

24. Attachments

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

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

25. Signature	Name *(Printed/Typed)*	Date
Title: **Regulatory Analyst**	**Robyn M. Odom**	**04/04/2012**

Approved by *(Signature)*: /s/ Don Peterson	Name *(Printed/Typed)*	Date: JUL 26 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

RECEIVED
AUG 20 2012
NMOCD ARTESIA

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Approval Subject to General Requirements & Special Stipulations Attached

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 15th day of December, 2011.

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: (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	Pool Code	Pool Name
30-015-	97917	Dodd; Glorieta-Upper Yeso

Property Code	Property Name	Well Number
308195	DODD FEDERAL UNIT	902 ~~103H~~

OGRID No.	Operator Name	Elevation
229137	COG OPERAING, LLC	3623'

Surface Location

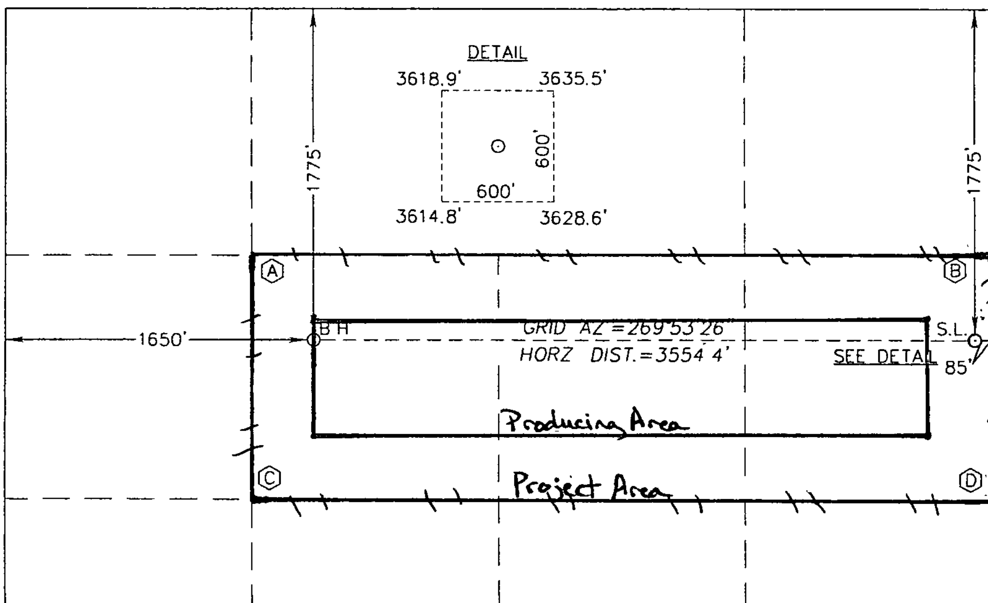
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	10	17-S	29-E		1775	NORTH	85	EAST	EDDY

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		1775	NORTH	1650	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No
120			8049 7/26

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



CORNER COORDINATES TABLE

Ⓐ - Y=674003.7 N, X=581955.1 E
Ⓑ - Y=674009.3 N, X=585916.2 E
Ⓒ - Y=672683.4 N, X=581958.6 E
Ⓓ - Y=672688.7 N, X=585919.9 E

GEODETIC COORDINATES
NAD 27 NME

SURFACE LOCATION
Y=673555.1 N
X=585832.5 E

LAT.=32.851375° N
LONG.=104.053837° W

BOTTOM HOLE LOCATION
Y=673548.4 N
X=582279.0 E

OPERATOR CERTIFICATION

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.

Signature: Robyn Odom   Date: 6/26/2012

Printed Name: Robyn M. Odom

E-mail Address: Rodom@concho.com

SURVEYOR CERTIFICATION

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

DECEMBER 3, 2011

Date of Survey

Signature & Seal of Professional Surveyor:

RONALD J. EIDSON NEW MEXICO 3239 REGISTERED PROFESSIONAL SURVEYOR

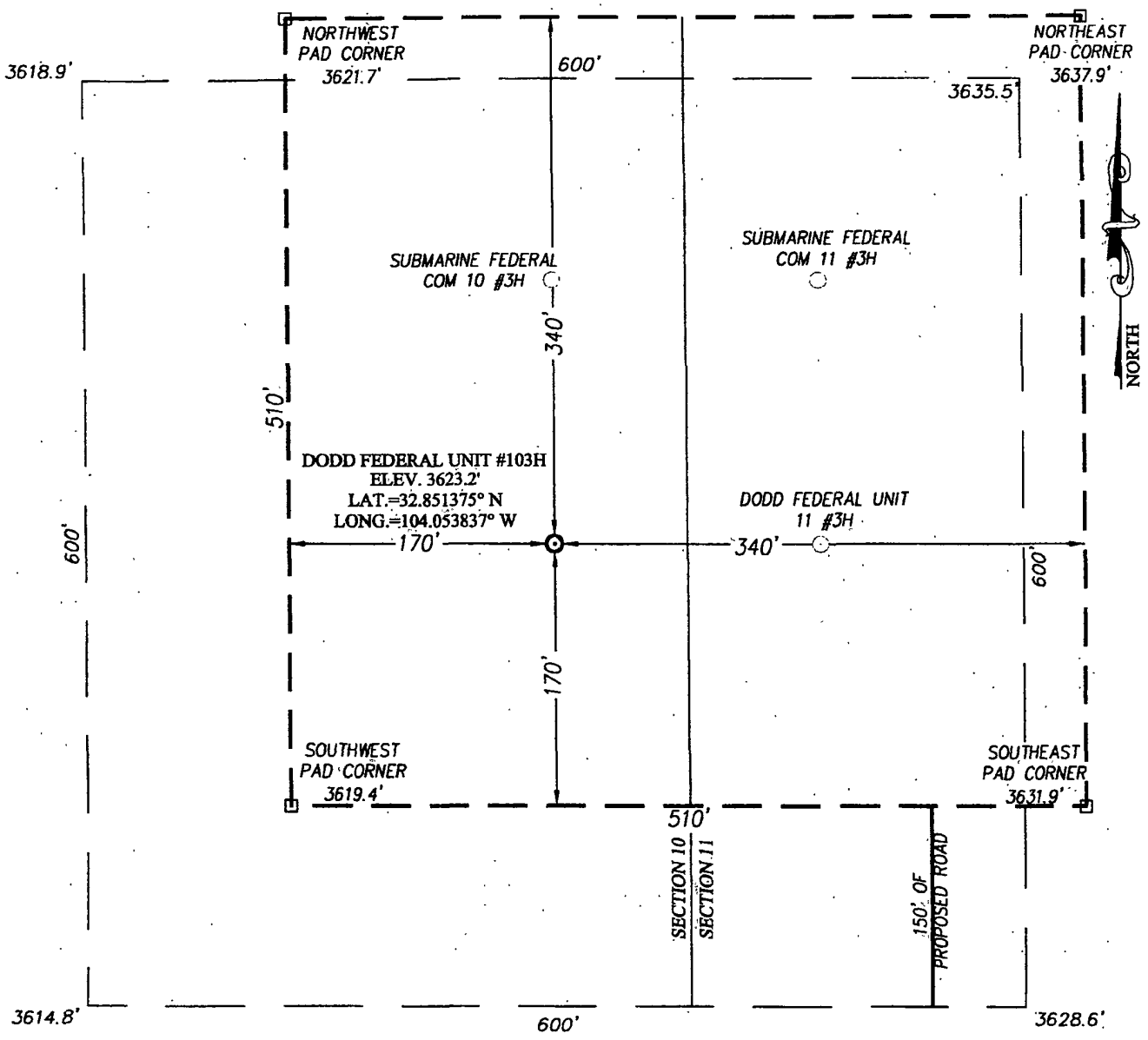
Ronald J. Eidson 06/12/2012

Certificate Number	Gary G. Eidson	12641
	Ronald J. Eidson	3239

AF/DSR RONALD 12-3367   JWSC W.O. 12.13.1060

SECTION 10, TOWNSHIP 17 SOUTH, RANGE 29 EAST, N.M.P.M.

EDDY COUNTY NEW MEXICO



DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF U.S. HWY. #82 AND C.R. #214 (BARNAVAL DRAW) GO NORTHWEST ON C.R. #214 APPROX. 1.5 MILES. TURN RIGHT AND GO EAST APPROX. 0.8 MILES. TURN LEFT AND GO NORTH APPROX. 0.1 MILES. TURN RIGHT AND GO EAST APPROX. 0.5 MILES. TURN LEFT AND GO NORTH APPROX. 0.5 MILES. TURN LEFT AND GO WEST APPROX. 0.4 MILES. THIS LOCATION IS APPROX. 150 FEET NORTH OF THE TWO TRACK ROAD.

100 0 100 200 Feet

Scale: 1"=100'

PROVIDING SURVEYING SERVICES SINCE 1946
JOHN WEST SURVEYING COMPANY
412 N. DAL PASO
HOBBS, N.M. 88240
(575) 393-3117

COG OPERAING, LLC

DODD FEDERAL UNIT #103H WELL
LOCATED 1775 FEET FROM THE NORTH LINE
AND 85 FEET FROM THE EAST LINE OF SECTION 10,
TOWNSHIP 17 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO

Survey Date: 12/3/11	Sheet 1 of 1 Sheets		
W.O. Number: 12.13.1060	Dr. By: AF/DSR	Rev 1:	
Date: 06/12/12	Rel. W.O.: 11.11.2267	12131060	Scale: 1"=100'

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
DODD FEDERAL UNIT 10 #3H
SHL: 1775' FNL & 85' FEL, Unit H
BHL: 1775' 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 =8049'

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'~~ 450' 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

6. Casing Program - **Proposed**

Hole size	Interval	OD of Casing	Weight	Cond.	Collar	Grade
See COA 17-1/2"	0' - +/-~~400'~~ 425	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' – 8049'	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 ½" 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 ½" 17# L-80 LTC.

7. Cement Program See COA

13 3/8" Surface Csg: Set at +/- ~~400'~~ 425'MD, Lead Slurry: 400sx Class "C" w/ 2% CaCl2 & 0.25 pps CF, 1.32 cu.ft./sk.yield, 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 .25 pps CF, 2.45 cu.ft./sk. yield, 11.8 ppg. Tail Slurry: 200 sx Class "C" w/ 2% CaCl2, 1.32 cu.ft./sk. yield,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, 1.32 cu.ft./sk. yield,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, 2.45 cu.ft./sk. yield,11.8 ppg. 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

7 x 5 1/2" Production Csg: Set at +/- 8049'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, 2.01 cu. ft./sk. yield, 14.0 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; 1.37 cu. ft./sk. yield, 14.0 ppg. DV Tool and ECP to be set at kick off point with 7" cemented to surface and 5 ½" 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**.

Option #2: **Multi-Stage (DV Tool & ECP (external csg. packer) @ KOP and DV Tool at 3000'): Stage 1 (KOP to DV Tool @ 3000'):** Lead Slurry: 200 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; 1.37 cu.ft./sk. yield, 14.0 ppg. 49% excess. **This is a minimum volume and will be adjusted up after caliper is run. Stage 2 (DV Tool @ 3000' 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; 1.37 cu.ft./sk.yield, 14.0 ppg. Tail Slurry: 300 sx Class C w/ 0.3% R-3 + 1.5% CD-32, 1.02 cu.ft./sk. yield, 11.6 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.**

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.

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 nippled 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 nippled 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'- 8049'	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 ¾" 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 +/-3076' lateral to TD at +/-8049' 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 ½" with DV Tool and ECP at kickoff point. 5 ½" 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 #3H

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 ½" 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.

CONCHO

COG Operating LLC

Eddy County, NM (NAN27 NME)
Dodd Federal Unit 10 #3H
Dodd Federal Unit 10 #3H

OH

Plan: Plan #1 - 8-3/4" Hole
SHL = 1775' FNL & 85' FEL
PP = 1775' FNL & 330' FEL
BHL = 1775' FNL & 1650' FWL

Standard Planning Report

08 February, 2012

Scientific Drilling
Directional Drilling Operations

Database:	EDM 5000 1 Single User Db	**Local Co-ordinate Reference:**	Site Dodd Federal Unit 10 #3H
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 #3H	**North Reference:**	Grid
Well:	Dodd Federal Unit 10 #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 Dodd Federal Unit 10 #3H

Site Position:		**Northing:**	673,555 10 usft	**Latitude:**	32° 51' 4 951 N
From:	Map	**Easting:**	585,832 50 usft	**Longitude:**	104° 3' 13 812 W
Position Uncertainty:	0 00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0 15 °

Well Dodd Federal Unit 10 #3H

Well Position	**+N/-S**	0 00 usft	**Northing:**	673,555 10 usft	**Latitude:**	32° 51' 4.951 N
	+E/-W	0 00 usft	**Easting:**	585,832 50 usft	**Longitude:**	104° 3' 13 812 W
Position Uncertainty		0 00 usft	**Wellhead Elevation:**		**Ground Level:**	3,623 00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	02/08/12	7 78	60 67	48,874

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	269 89

Plan Sections

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)	TFO (°)	Target
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
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	269 89	4,700.00	-0.90	-477.46	12 00	12 00	0 00	269 89	
8,048 58	90 00	269 89	4,700 00	-6 70	-3,553 50	0 00	0 00	0 00	0 00	PBHL-Dodd Fed 10 #

Database:	EDM 5000 1 Single User Db	Local Co-ordinate Reference:	Site Dodd Federal Unit 10 #3H
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 #3H	North Reference:	Grid
Well:	Dodd Federal Unit 10 #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
4,222 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	269 89	4,299 66	-0 01	-6 27	6 27	12 00	12 00	0 00
4,400 00	21 30	269 89	4,395 94	-0 06	-32 60	32 60	12 00	12 00	0 00
4,500 00	33 30	269 89	4,484 64	-0 15	-78 38	78 38	12 00	12 00	0 00
4,600 00	45 30	269 89	4,561 89	-0.27	-141 59	141 59	12 00	12 00	0 00
4,700 00	57 30	269 89	4,624 31	-0 41	-219 49	219 49	12 00	12 00	0 00
4,729 71	60.86	269 89	4,639 57	-0 46	-244 97	244 97	12 00	12 00	0 00
PP-330' FEL Dodd Fed 10 #3H									
4,800.00	69 30	269.89	4,669 16	-0 58	-308 66	308 66	12 00	12 00	0 00
4,900 00	81 30	269 89	4,694 50	-0 76	-405 21	405.21	12 00	12 00	0 00
4,972 54	90 00	269 89	4,700 00	-0 90	-477 47	477 47	12 00	12 00	0 00
Land hold 90.00°									
5,000 00	90 00	269 89	4,700 00	-0 95	-504 93	504 93	0 00	0 00	0 00
5,100 00	90 00	269 89	4,700 00	-1.14	-604 93	604.93	0 00	0 00	0 00
5,200 00	90.00	269 89	4,700 00	-1 33	-704 93	704 93	0.00	0 00	0 00
5,300 00	90 00	269 89	4,700 00	-1.52	-804 93	804 93	0 00	0 00	0 00
5,400 00	90 00	269 89	4,700 00	-1.71	-904 93	904 93	0 00	0 00	0 00
5,500 00	90 00	269 89	4,700 00	-1 89	-1,004 93	1,004 93	0 00	0 00	0 00
5,600 00	90.00	269 89	4,700 00	-2 08	-1,104 93	1,104 93	0 00	0 00	0 00
5,700 00	90 00	269 89	4,700.00	-2 27	-1,204 93	1,204 93	0.00	0 00	0 00
5,800 00	90 00	269 89	4,700 00	-2.46	-1,304 93	1,304 93	0 00	0.00	0 00
5,900 00	90 00	269 89	4,700 00	-2.65	-1,404 93	1,404 93	0 00	0 00	0 00
6,000 00	90 00	269 89	4,700 00	-2.84	-1,504 93	1,504 93	0 00	0 00	0 00
6,100 00	90 00	269 89	4,700 00	-3 03	-1,604 93	1,604 93	0 00	0.00	0 00
6,200 00	90 00	269 89	4,700 00	-3 21	-1,704 93	1,704 93	0 00	0 00	0 00
6,300 00	90 00	269 89	4,700 00	-3 40	-1,804 93	1,804 93	0 00	0.00	0 00
6,400 00	90 00	269 89	4,700 00	-3 59	-1,904 93	1,904 93	0 00	0 00	0 00
6,500 00	90 00	269 89	4,700 00	-3 78	-2,004 93	2,004 93	0 00	0 00	0 00
6,600 00	90 00	269 89	4,700 00	-3 97	-2,104 93	2,104 93	0 00	0 00	0 00
6,700 00	90 00	269 89	4,700 00	-4 16	-2,204 93	2,204 93	0 00	0 00	0 00
6,800.00	90 00	269 89	4,700 00	-4 35	-2,304 93	2,304 93	0 00	0 00	0 00
6,900 00	90 00	269.89	4,700 00	-4 53	-2,404 93	2,404 93	0 00	0 00	0 00
7,000 00	90 00	269 89	4,700 00	-4 72	-2,504 93	2,504 93	0 00	0 00	0 00
7,100 00	90 00	269 89	4,700 00	-4 91	-2,604 93	2,604 93	0 00	0.00	0 00
7,200 00	90 00	269 89	4,700 00	-5.10	-2,704 92	2,704 93	0 00	0 00	0 00
7,300 00	90 00	269 89	4,700.00	-5 29	-2,804 92	2,804 93	0 00	0 00	0 00
7,400 00	90 00	269 89	4,700.00	-5 48	-2,904 92	2,904.93	0 00	0 00	0 00
7,500 00	90 00	269 89	4,700 00	-5 67	-3,004 92	3,004.93	0 00	0 00	0 00
7,600 00	90 00	269 89	4,700 00	-5 85	-3,104 92	3,104 93	0 00	0 00	0 00
7,700 00	90 00	269 89	4,700 00	-6 04	-3,204 92	3,204 93	0 00	0 00	0 00
7,800 00	90 00	269 89	4,700.00	-6 23	-3,304 92	3,304.93	0 00	0 00	0 00
7,900 00	90 00	269 89	4,700 00	-6 42	-3,404 92	3,404 93	0 00	0 00	0 00
8,000 00	90 00	269 89	4,700 00	-6 61	-3,504 92	3,504 93	0 00	0 00	0 00
8,048 58	90 00	269 89	4,700.00	-6 70	-3,553 50	3,553 51	0 00	0 00	0 00
PBHL-Dodd Fed 10 #3H									

Database:	EDM 5000 1 Single User Db	**Local Co-ordinate Reference:**	Site Dodd Federal Unit 10 #3H
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 #3H	**North Reference:**	Grid
Well:	Dodd Federal Unit 10 #3H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1 - 8-3/4" Hole		

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (usft)	+N/-S (usft)	+E/-W (usft)	Northing (usft)	Easting (usft)	Latitude	Longitude
PP-330' FEL Dodd Fed - plan hits target center - Point	0.00	0 00	4,639 59	-0 46	-245 00	673,554 63	585,587 50	32° 51' 4 952 N	104° 3' 16 684 W
PBHL-Dodd Fed 10 #3H - plan hits target center - Point	0 00	0 01	4,700 00	-6 70	-3,553 50	673,548 40	582,279 00	32° 51' 4 975 N	104° 3' 55.469 W

Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
4,222 54	4,222 54	0 00	0 00	KOP Start Build 12.00°/100'
4,972.54	4,700.00	-0.90	-477.47	Land hold 90 00°

CONCHO

Dodd Federal Unit 10 #3H
Eddy County, NM (NAN27 NME)
Northing (Y) 673555.10
Easting (X) 585832.50
Plan #1 - 8-3/4" Hole

Scientific Drilling
Directional Drilling Operations

Azimuths to Grid North
True North -0 15°
Magnetic North 7 62°

Magnetic Field
Strength 48873 9nT
Dip Angle 60 67°
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 #3H

Ground Level 3623 00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0 00	0 00	673555 10	585832 50	32° 51' 4 951 N	104° 3 13 812 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

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 #3H, Grid North

Latitude 32° 51 4 951 N
Longitude 104° 3 13 812 W

Grid East 585832 50
Grid North 673555 10
Scale Factor 1 000

Geomagnetic Model IGRF2010
Sample Date 08-Feb-12
Magnetic Declination 7 78°
Dip Angle from Horizontal 60 67°
Magnetic Field Strength 48874

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°

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	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	90 00	269 89	4700 00	-0 90	-477 46	12 00	269 89	477 46	
4	8048 58	90 00	269 89	4700 00	-6 70	-3553 50	0 00	0 00	3553 51	PBHL-Dodd Fed 10 #3H

SITE DETAILS Dodd Federal Unit 10 #3H

Site Centre Northing 673555 10
Easting 585832 50

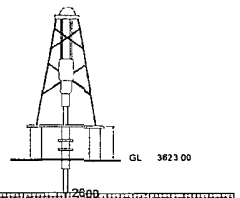
Positional Uncertainty 0 00
Convergence 0 15
Local North Grid

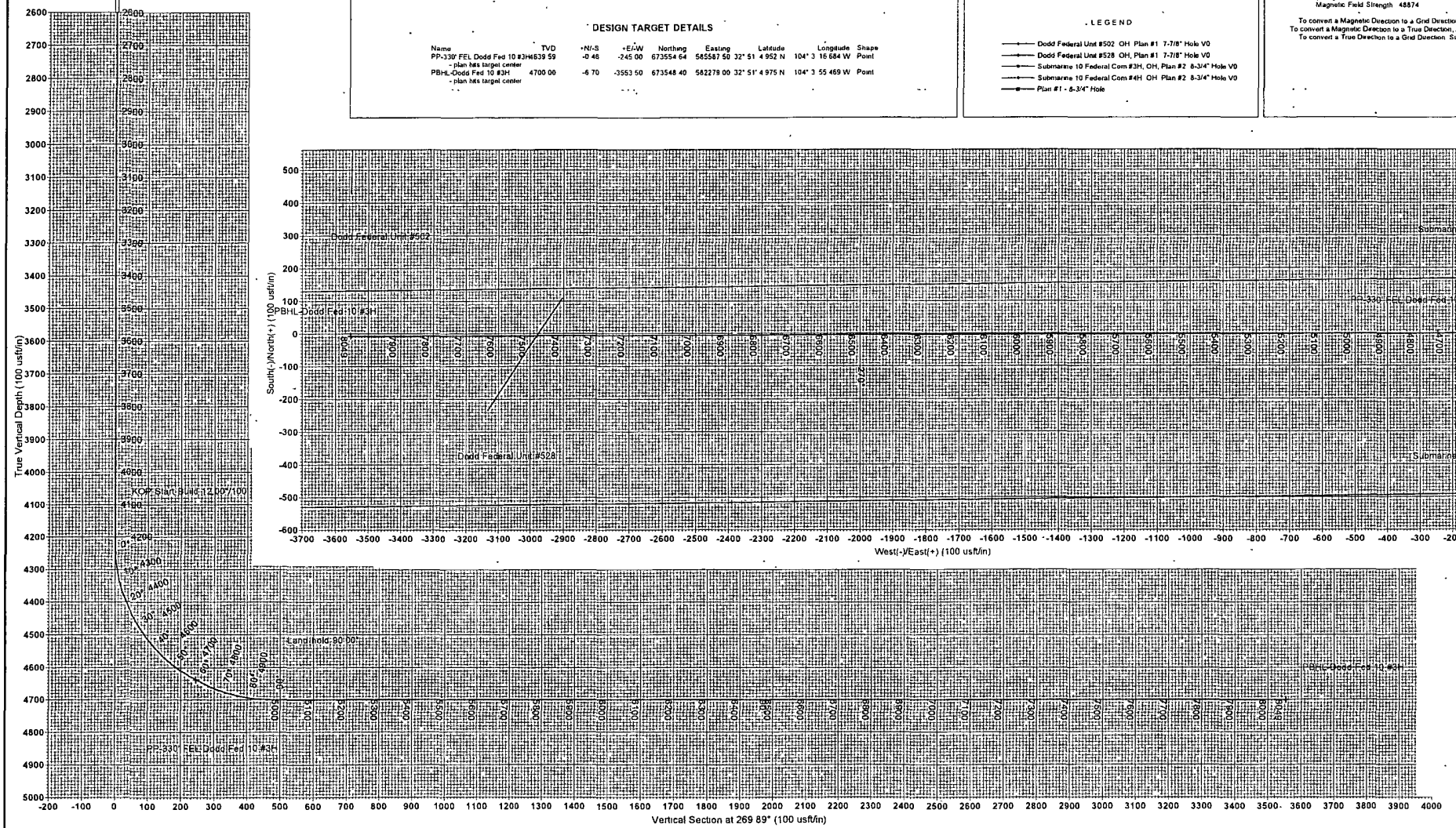
DESIGN TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PP-330' FEL Dodd Fed 10 #3H - plan hits target center	4639 59	-0 46	-245 00	673554 64	585587 50	32° 51 4 952 N	104° 3 16 684 W	Point
PBHL-Dodd Fed 10 #3H - plan hits target center	4700 00	-6 70	-3553 50	673548 40	582279 00	32° 51' 4 975 N	104° 3 55 469 W	Point

LEGEND

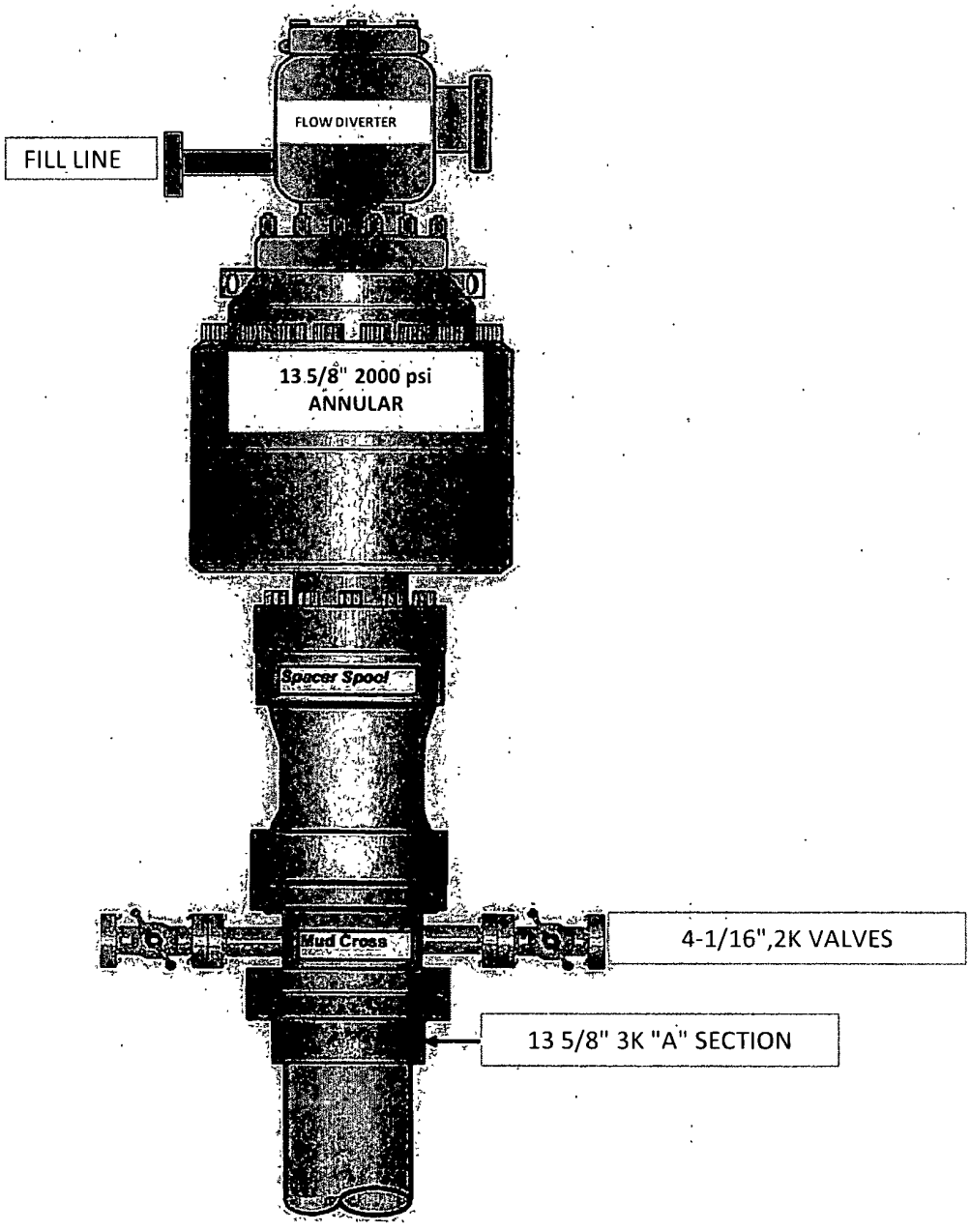
- Dodd Federal Unit #502 OH Plan #1 7-7/8" Hole V0
- Dodd Federal Unit #528 OH, Plan #1 7-7/8" Hole V0
- Submarine 10 Federal Com #3H, OH, Plan #2 8-3/4" Hole V0
- Submarine 10 Federal Com #4H OH Plan #2 8-3/4" Hole V0
- Plan #1 - 8-3/4" Hole





Julio C Piña
Scientific Drilling
2034 Trade Drive
Midland TX 79703

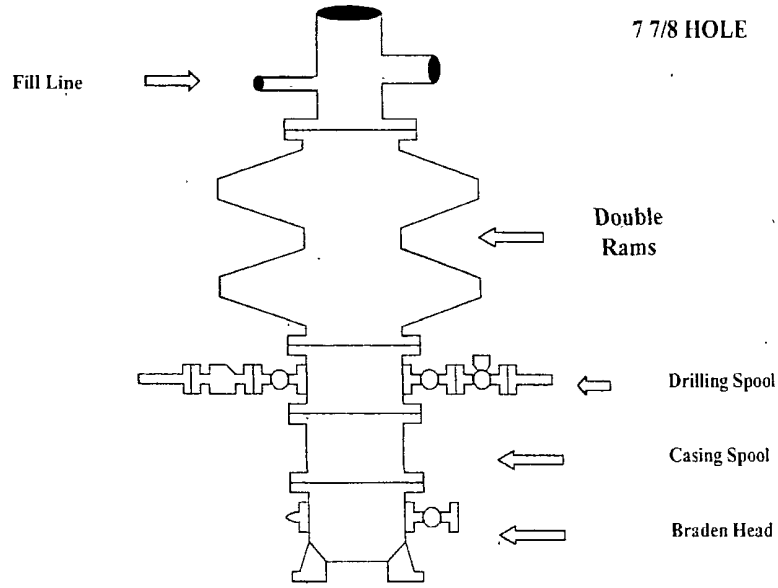
13 5/8" 2K ANNULAR



COG Operating LLC

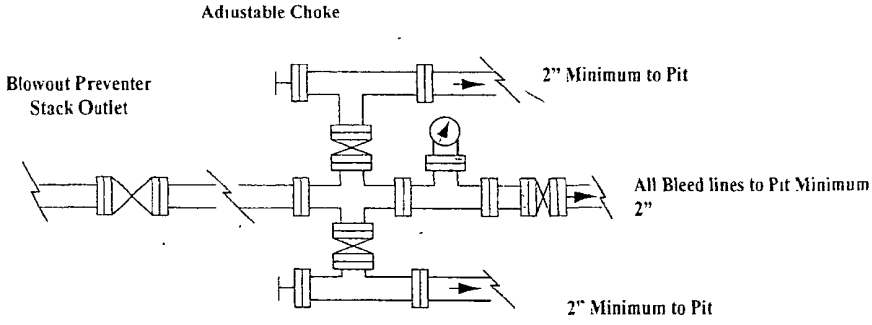
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required



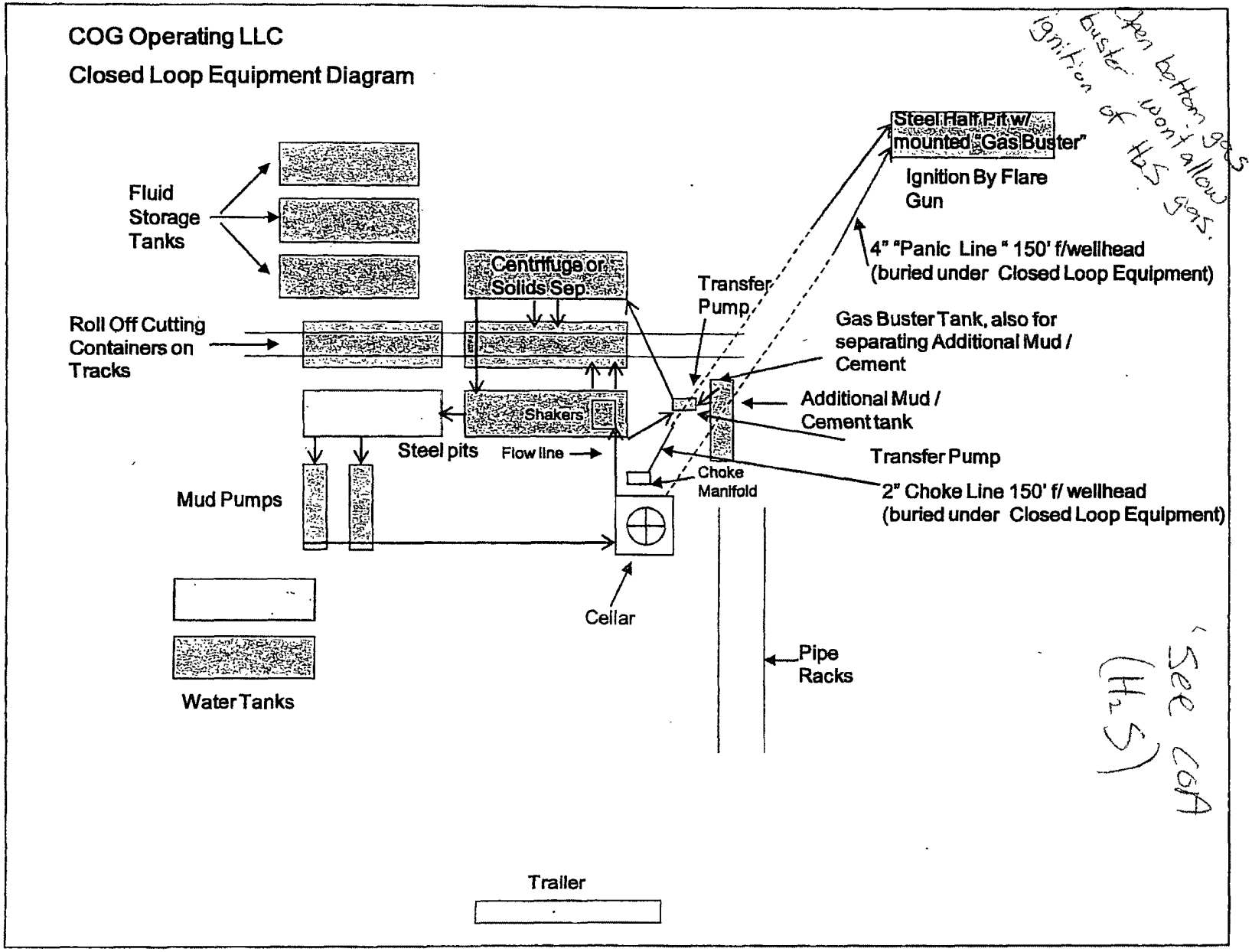
Adjustable Choke
(or Positive)

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



Open bottom gas buster won't allow ignition of H_2S gas.

See COA (H_2S)

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 an 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 well be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
3. The contents and requirements of the H2S Drilling Operations Plan and Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable H2S zone (within 3 days or 500 feet) and weekly H2S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H2S Drilling Operations Plan and the Public Protection Plan. **The concentrations of H2S of wells in this area from surface to TD are low enough that a contingency plan is not required.**

II. H2S SAFETY EQUIPMENT AND SYSTEMS

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

1. **Well Control Equipment:**

   A. Flare line.

   B. Choke manifold.

   C. Blind rams and pipe rams to accommodate all pipe sizes with properly sized closing unit.

   D. Auxiliary equipment may include if applicable: annular preventer & rotating head.

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

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

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

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

4. **Visual warning systems:**

   A. Wind direction indicators as shown on well site diagram (Exhibit #8).

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

5. **Mud program:**

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

6. **Metallurgy:**

   A. All drill strings, casings, tubing, wellhead, blowout preventer, drilling spool, kill lines, choke manifold and lines, and valves shall be suitable for H2S service.

   B. All elastomers used for packing and seals shall be H2S trim.

7. **Communication:**

   A. Radio communications in company vehicles including cellular telephone and 2-way radio.

   B. Land line (telephone) communication at Office.

8. **Well testing:**

   A. Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing will be conducted during daylight hours and formation fluids will not be flowed to the surface. All drill-stem-testing operations conducted in an H2S environment will use the closed chamber method of testing.

   B. There will be no drill stem testing.

EXHIBIT #7

WARNING

YOU ARE ENTERING AN H2S

AUTHORIZED PERSONNEL ONLY

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

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

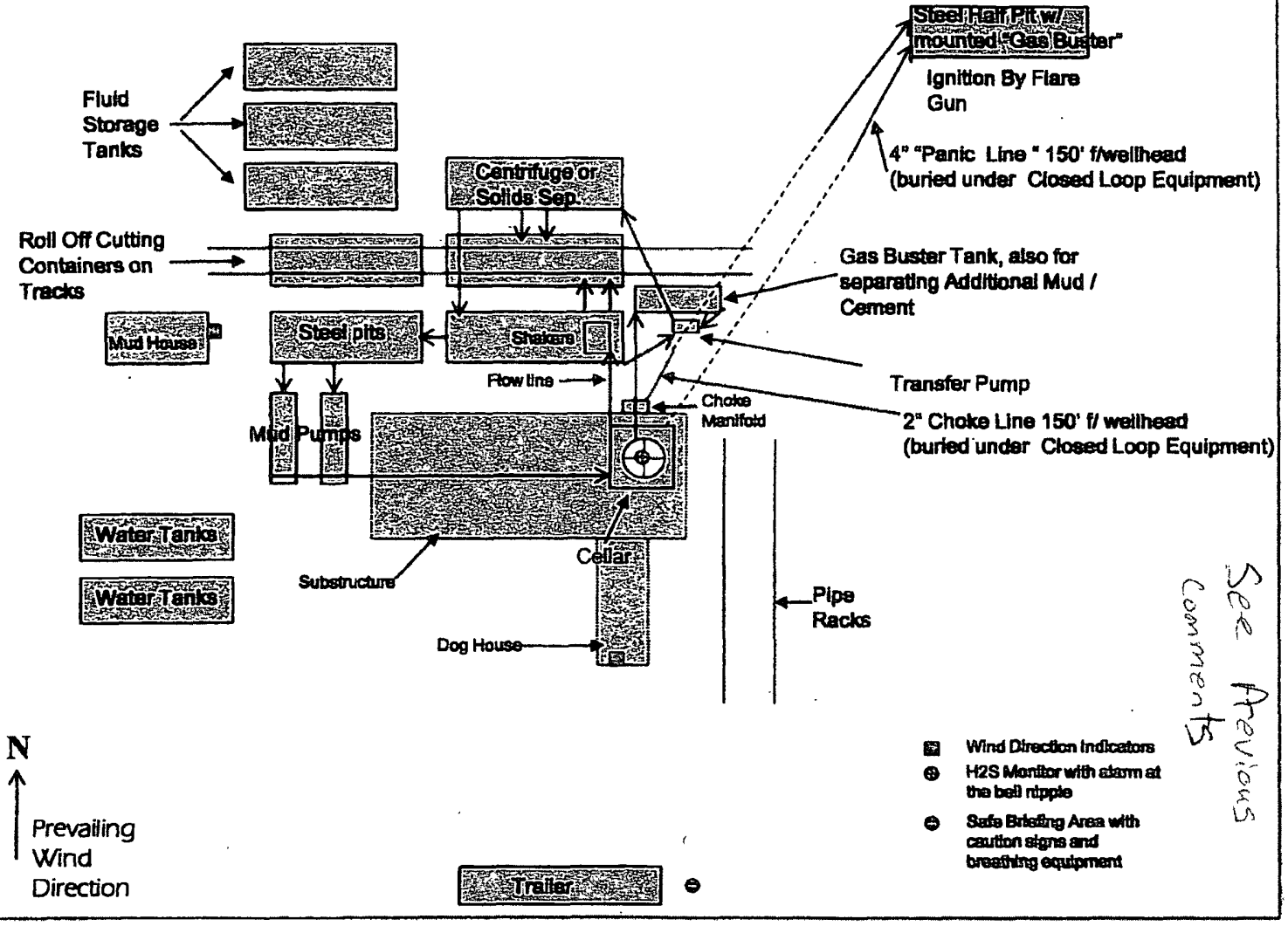
EDDY COUNTY EMERGENCY NUMBERS
ARTESIA FIRE DEPT. 575-746-5050
ARTESIA POLICE DEPT. 575-746-5000
EDDY CO. SHERIFF DEPT. 575-746-9888

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

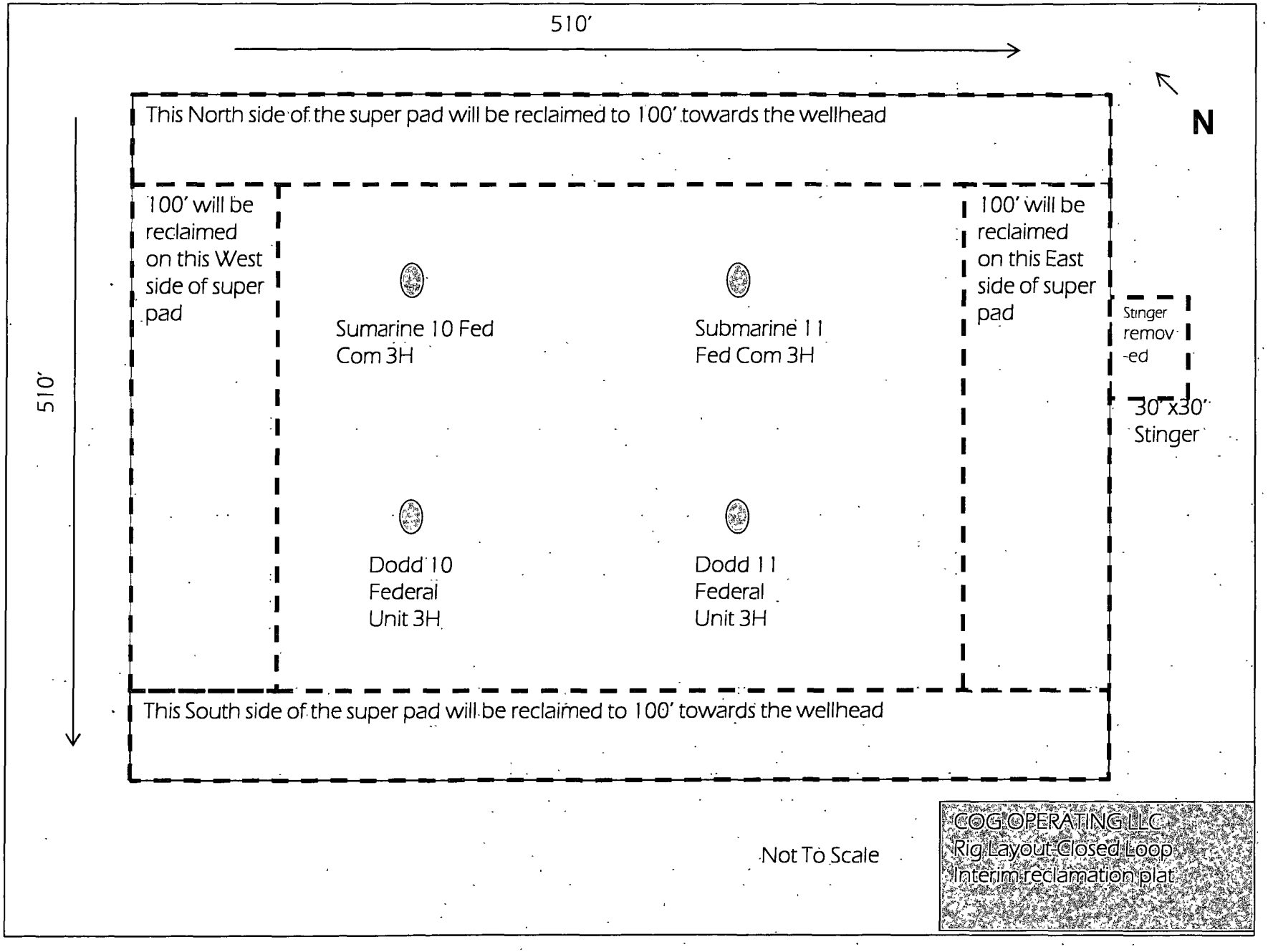
COG Operating LLC

EXHIBIT 8

Drilling Location - H2S Safety Equipment Diagram



See Previous Comments


510'
510'
This North side of the super pad will be reclaimed to 100' towards the wellhead
N
100' will be reclaimed on this West side of super pad
100' will be reclaimed on this East side of super pad
Sumarine 10 Fed Com 3H
Submarine 11 Fed Com 3H
Stinger remov -ed
30' x30' Stinger
Dodd 10 Federal Unit 3H
Dodd 11 Federal Unit 3H
This South side of the super pad will be reclaimed to 100' towards the wellhead
Not To Scale
COG OPERATING LLC
Rig Layout Closed Loop
Interim reclamation plat

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING, LLC
LEASE NO.:	LC028731B
WELL NAME & NO.:	103H – DODD FEDERAL UNIT
SURFACE HOLE FOOTAGE:	1775'/N. & 85'/E.
BOTTOM HOLE FOOTAGE	1775'/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.