ATS-12-609

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Form 3160-3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

5 Lease Serial No.	NMNM-118109
6 If Indian, Allotee or Tribe Name	N/A
7 If Unit or CA Agreement, Name and No	N/A
8 Lease Name and Well No.	TUMAK FEDERAL #2 C353267
9 API Well No	30-015- 40464 TES 7/12/2012
10 Field and Pool, or Exploratory	Empire; Glorieta-Yeso 96210
11 Sec., T. R. M. or Blk and Survey or Area	Sec 14 T17S R28E
12 County or Parish	EDDY
13 State	NM

1a. Type of work. ☑ DRILL ☐ REENTER

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

2 Name of Operator: COG Operating LLC C229137

3a Address: 550 W. Texas Ave., Suite 1300, Midland, TX 79701

3b Phone No (include area code): 432-685-4384

4. Location of Well (Report location clearly and in accordance with any State requirements *)
At surface: SHL: 984' FSL & 474' FWL, Unit M
At proposed prod zone: BHL: 990' FSL & 990' FWL, Unit M

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

15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line, if any)	474'	16 No of acres in lease	40
17 Spacing Unit dedicated to this well	40		
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	124'	19 Proposed Depth	TVD: 5400' MD: 5425'
20 BLM/BIA Bond No on file	NMB000740; NMB000215		
21 Elevations (Show whether DF, KDB, RT, GL, etc)	3708' GL	22 Approximate date work will start*	6-30-12
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
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): Kelly J. Holly	Date: 4-4-12
Title: Permitting Tech		
Approved by (Signature): James A. Amos	Name (Printed/Typed): James A. Amos	Date: JUL 10 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

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

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 ~~40464~~	~~96210~~	Empire; Glorieta-Yeso

Property Code	Property Name	Well Number
~~37882~~ 39326	TUMAK FEDERAL	2

OGRID No	Operator Name	Elevation
229137	COG OPERATING, LLC	3708'

Surface Location

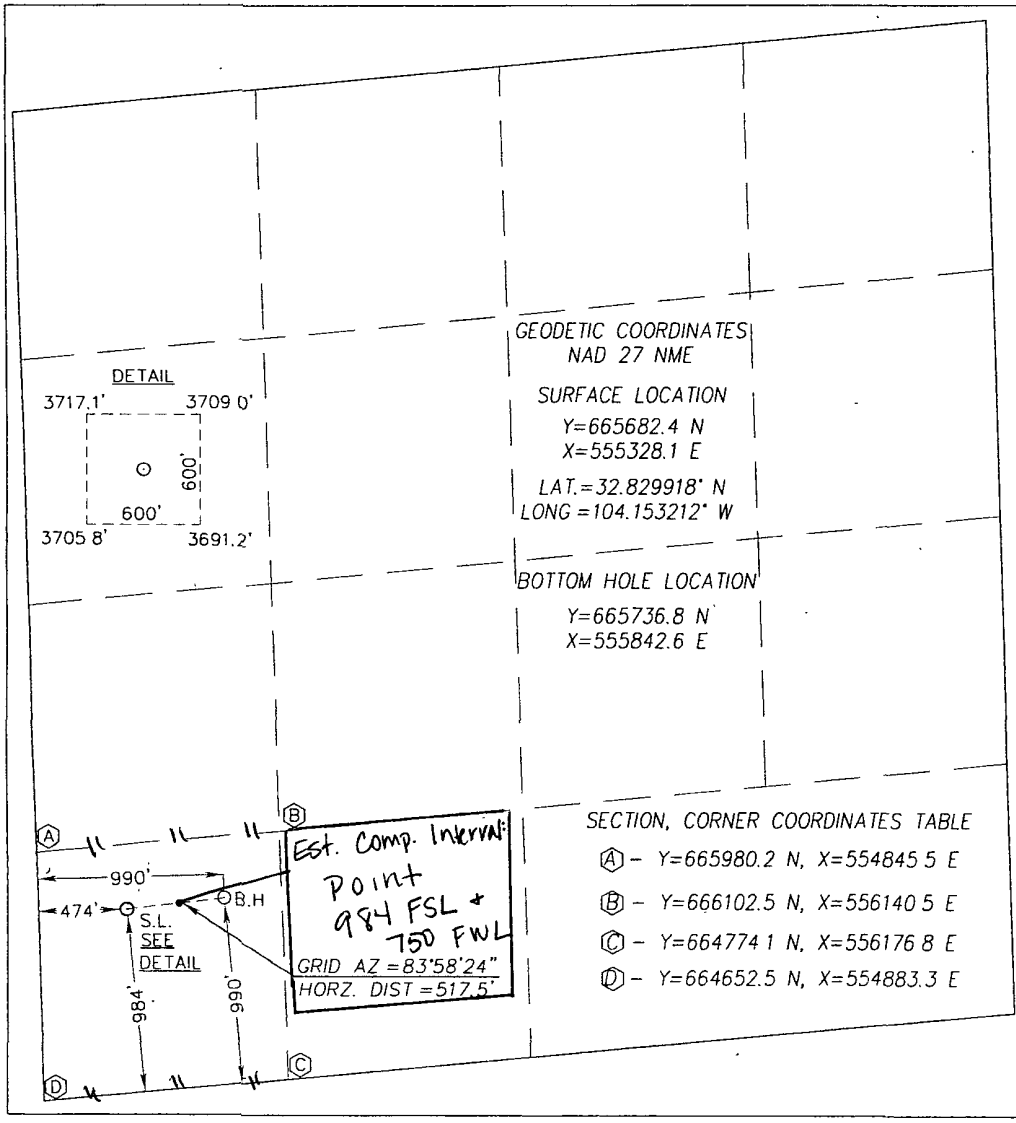
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	14	17-S	28-E		984	SOUTH	474	WEST	EDDY

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
M	14	17-S	28-E		990	SOUTH	990	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No
40			5425' 7/10

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



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 — Date: 11-9-11

Kelly J. Holly
Printed Name

kholly@concho.com
E-mail Address

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.

SEPTEMBER 30, 2011
Date of Survey

Signature & Seal of Professional Surveyor

GARY G. EIDSON
NEW MEXICO
12641
REGISTERED PROFESSIONAL SURVEYOR

Certificate Number: Gary G Eidson 12641
Ronald J Eidson 3239

ACR — JWSC W O · 11 11 1092

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Rustler	220'
Salt	400'
Base of Salt	800'
Yates	740'
Seven Rivers	1001'
Queen	1590'
Grayburg	1980'
San Andres	2280'
Glorieta	3680'
Paddock	3780'
Blinebry	4220'
Tubb	5300'

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

Water Sand	150'	Fresh Water
Grayburg	1980'	Oil/Gas
San Andres	2280'	Oil/Gas
Glorieta	3680'	Oil/Gas
Paddock	3780'	Oil/Gas
Blinebry	4220'	Oil/Gas
Tubb	5300'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to ~~300'~~ and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 8 5/8" casing to ~~850'~~ and circulating cement, in a single or multi-stage job and/or with an ECP, back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them. This will be achieved by cementing, with a single or multi-stage job, the 5 1/2" production casing back 200' into the intermediate casing, (but calculated to surface) to be run at TD. If wellbore conditions arise that require immediate action and/or a change to this program, COG Operating LLC personnel will always react to protect the wellbore and/or environment.

See COA

See COA

4. Casing Program

See COA

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	Jt.	brst/clps/ten
17 ½"	0-~~300~~ 425	13 3/8"	48#	H-40/J-55 hybrid	ST&C/New	ST&C	9.22/3.943/15.8
11"	0-~~850~~ 915	8 5/8"	24or32#	J-55	ST&C/New	ST&C	3.03/2.029/7.82
7 7/8"	0-TD	5 1/2"	15.5or17#	J-55orL-80	LT&C/New	LT&C	1.88/1.731/2.42

5. Cement Program See COA

13 3/8" Surface Casing: Class C w/ 2% Cacl2 + 0.25 pps CF, 400 sx, yield 1.32, back to surface. 154% excess

8 5/8" Intermediate Casing:

11" Hole:
Single Stage: 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, 300 sx lead, yield-2.45 + Class C w/2% CaCl2, 200 sx tail, yield-1.32, back to surface. 363% excess
Multi-Stage: Stage 1: Class C w/2% CaCl2, 200 sx, yield - 1.32; 108% excess Stage 2: 50:50:10 C:Poz:Gel w/ 5% Salt +0.25% CF, 300 sx, yield - 2.45, back to surface, 726% excess; assumption for tool is lost circulation. Multi stage tool to be set at approximately, depending on hole conditions, 350' (50' below the surface casing). Cement volumes will be adjusted proportionately for depth changes of multi stage tool.

5 1/2" Production Casing:

Single Stage: LEAD 500 sx 35:65:6 C:Poz:Gel w/ 5% Salt + 5 pps LCM + 0.2% SMS + 0.3% FL-52A + 0.125 pps CF, yield-2.05; + TAIL 400 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0 6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF, yield-1.37, to 200' minimum tie back to intermediate casing 76 8% open hole excess, cement calculated back to surface.
Multi-Stage: Stage 1: (Assumed TD of 5450') 500 sx 50:50:2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0.3% FL-52A + 0.125 pps CF,

yield - 1 37, 34% excess; Stage 2 LEAD 450 sx 50.50.2 C:Poz:Gel w/ 5% Salt + 3 pps LCM + 0.6% SMS + 1% FL-25 + 1% BA-58 + 0 3% FL-52A + 0 125 pps CF, yield - 1 37, + TAIL 250 sx Class C w/ 0 3% R-3 + 1 5% CD-32, yield – 1.02 148% open hole excess, cement calculated back to surface. Multi stage tool to be set at approximately, depending on hole conditions, 2500' Cement volumes will be adjusted proportionately for depth changes of multi stage tool, assumption for tool is water flow.

6. Minimum Specifications for Pressure Control

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 psi WP) preventer, and in some cases possibly a 2000 psi Hydril type annular preventer as provided for in Onshore Order #2. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on the bottom A 13-5/8" or 11" BOP will be used, depending on the rig selected, during the drilling of the well. The BOP will be nippled up on the 13 3/8" surface casing with BOP equipment and tested to 2000 psi When 11" BOP is used the special drilling flange will be utilized on the 13-3/8" head to allow testing the BOP with a retrievable test plug After setting 8-5/8" the BOP will then be nippled up on the 8 5/8" intermediate casing and tested by a third party to 2000 psi and used continuously until total depth is reached. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve, choke lines and a choke manifold (Exhibit #11) with a 2000 psi WP rating

The majority of the rigs currently in use have a 13-5/8" BOP, so no special provision is needed for most wells in the area for conventionally testing the BOP with a test plug. However, due to the vagaries of rig scheduling, it might be that one of the few rigs with 11" BOP's might be called upon to drill any specific well in the area Note that intermediate hole size is always 11". Therefore, COG Operating LLC respectfully requests a variance to the requirement of 13-5/8" BOP on 13-3/8" casing. When that circumstance is encountered the special flange will be utilized to allow testing the entire BOP with a test plug, without subjecting the casing to test pressure. The special flange also allows the return to full-open capability if desired. See COA

7. Types and Characteristics of the Proposed Mud System

The well will be drilled to TD with a combination of brine, cut brine and polymer mud system. The applicable depths and properties of this system are as follows:

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-300' 250	Fresh Water	8.5	28	N.C.
300-850' 915	Brine	10	30	N.C.
850'-TD'	Cut Brine	8.7-9.2	30	N.C.

Sufficient mud materials will be kept at the well site to maintain mud properties and meet minimum lost circulation and weight increase requirements at all times.

8. Auxiliary Well Control and Monitoring Equipment

A. Kelly cock will be kept in the drill string at all times.

B. A full opening drill pipe-stabbing valve with proper drill pipe connections will be on the rig floor at all times.

9. Logging, Testing and Coring Program See COA

A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be run from TD to Surface.

B Drill Stem test is not anticipated.

C. No conventional coring is anticipated.

D. Further testing procedures will be determined after the 5 ½" production casing has been cemented at TD, based on drill shows and log evaluation.

10. Abnormal Conditions, Pressure, Temperatures and Potential Hazards

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 110 degrees and the estimated maximum bottom hole pressure is 2300 psig. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, although a Hydrogen Sulfide Drilling Operation Plan is attached to this program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations

Road and location work will not begin until approval has been received from the BLM. As this is a Master Drilling plan, please refer to the Form 3160-3 for the anticipated start date. Once commenced, drilling operations should be finished in approximately 10 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities

CONCHO

COG Operating LLC

Eddy County, NM (NAN27 NME)
Tumak Federal #2
Tumak Federal #2

OH

Plan: Plan #2 7-7/8" Hole
SHL = 984' FSL & 474' FWL
BHL = 940' FSL & 940' FWL
Paddock Top = 0' N/S of Surface & 276' E of Surface @ 3650' TVD

Standard Planning Report

06 December, 2011

Scientific Drilling
Directional Drilling Operations

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Tumak Federal #2
Company:	COG Operating LLC	**TVD Reference:**	GL Elev @ 3708 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL Elev @ 3708 00usft
Site:	Tumak Federal #2	**North Reference:**	Grid
Well:	Tumak Federal #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 7-7/8" Hole		

Project Eddy County, NM (NAN27 NME)

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Tumak Federal #2

Site Position:		**Northing:**	665,682 40 usft	**Latitude:**	32° 49' 47 704 N
From:	Map	**Easting:**	555,328 10 usft	**Longitude:**	104° 9' 11 561 W
Position Uncertainty:	0 00 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0 10 °

Well Tumak Federal #2

Well Position	**+N/-S**	0 00 usft	**Northing:**	665,682 40 usft	**Latitude:**	32° 49' 47 704 N
	+E/-W	0 00 usft	**Easting:**	555,328 10 usft	**Longitude:**	104° 9' 11.561 W
Position Uncertainty		0 00 usft	**Wellhead Elevation:**		**Ground Level:**	3,708 00 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	2011/12/06	7 84	60 63	48,866

Design Plan #2 7-7/8" Hole

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0 00

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.00	0 00	0 00	90 05

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	
950 00	0 00	0 00	950 00	0 00	0 00	0 00	0 00	0 00	0 00	
1,259 60	6 19	90.05	1,258 99	-0 01	16 71	2 00	2 00	29 09	90 05	
5,424 90	6 19	90 05	5,400 00	-0 40	465 98	0 00	0 00	0 00	0 00	PBHL-Tumak Fed #2

Database:	EDM Julio	**Local Co-ordinate Reference:**	Site Tumak Federal #2
Company:	COG Operating LLC	**TVD Reference:**	GL Elev @ 3708 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL Elev @ 3708 00usft
Site:	Tumak Federal #2	**North Reference:**	Grid
Well:	Tumak Federal #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 7-7/8" Hole		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00
West HL-Tumak Fed #2 - North HL-Tumak Fed #2									
850 00	0.00	0.00	850 00	0 00	0 00	0 00	0.00	0 00	0 00
8-5/8" Casing									
950 00	0.00	0 00	950 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start Build 2.00°/100'									
1,000 00	1 00	90 05	1,000 00	0 00	0 44	0 44	2 00	2 00	0 00
1,100 00	3 00	90 05	1,099 93	0 00	3 93	3 93	2 00	2 00	0 00
1,200 00	5 00	90 05	1,199 68	-0 01	10 90	10 90	2 00	2 00	0 00
1,259 60	6 19	90 05	1,259 00	-0 01	16 71	16 71	2 00	2 00	0 00
EOC hold 6.19°									
1,300.00	6 19	90 05	1,299 16	-0 02	21 07	21.07	0 00	0 00	0 00
1,400 00	6 19	90 05	1,398 58	-0 03	31 86	31 86	0 00	0 00	0 00
1,500 00	6 19	90 05	1,498 00	-0 04	42 64	42 64	0 00	0.00	0 00
1,600 00	6 19	90 05	1,597 41	-0 05	53 43	53 43	0 00	0 00	0 00
1,700 00	6 19	90 05	1,696 83	-0 06	64 21	64 21	0 00	0 00	0 00
1,800 00	6 19	90 05	1,796.25	-0.07	75 00	75 00	0.00	0.00	0 00
1,900 00	6 19	90 05	1,895 66	-0 07	85 79	85 79	0.00	0 00	0 00
2,000 00	6 19	90 05	1,995 08	-0 08	96 57	96 57	0 00	0 00	0 00
2,100 00	6 19	90 05	2,094 50	-0 09	107 36	107 36	0 00	0.00	0 00
2,200 00	6 19	90.05	2,193 91	-0 10	118 14	118 14	0.00	0.00	0 00
2,300 00	6 19	90 05	2,293 33	-0 11	128 93	128 93	0 00	0 00	0 00
2,400 00	6 19	90 05	2,392 74	-0 12	139 72	139 72	0 00	0 00	0 00
2,500 00	6 19	90 05	2,492 16	-0 13	150 50	150 50	0 00	0 00	0 00
2,600 00	6 19	90 05	2,591 58	-0 14	161.29	161 29	0 00	0 00	0 00
2,700 00	6 19	90.05	2,690 99	-0 15	172 07	172 07	0 00	0 00	0 00
2,800 00	6 19	90 05	2,790 41	-0 16	182 86	182 86	0 00	0 00	0 00
2,900 00	6 19	90 05	2,889 83	-0 17	193 65	193 65	0 00	0 00	0 00
3,000.00	6 19	90 05	2,989 24	-0 18	204 43	204 43	0 00	0 00	0 00
3,100 00	6 19	90 05	3,088 66	-0 19	215 22	215 22	0 00	0 00	0 00
3,200 00	6 19	90 05	3,188 08	-0 20	226 00	226 00	0 00	0 00	0 00
3,300 00	6 19	90.05	3,287 49	-0 21	236 79	236 79	0 00	0 00	0 00
3,400 00	6 19	90 05	3,386.91	-0 22	247 57	247 57	0 00	0 00	0 00
3,500 00	6 19	90 05	3,486 33	-0 22	258 36	258 36	0 00	0 00	0 00
3,600.00	6 19	90 05	3,585 74	-0 23	269.15	269 15	0 00	0 00	0 00
3,664 63	6 19	90 05	3,650 00	-0 24	276 12	276 12	0 00	0 00	0 00
Top of Paddock									
3,700 00	6 19	90 05	3,685 16	-0 24	279 93	279 93	0 00	0 00	0 00
3,800.00	6 19	90 05	3,784.58	-0 25	290 72	290 72	0 00	0 00	0 00
3,900 00	6 19	90 05	3,883 99	-0 26	301 50	301 50	0 00	0 00	0 00
4,000 00	6 19	90 05	3,983 41	-0 27	312 29	312 29	0 00	0 00	0 00
4,100 00	6 19	90 05	4,082 83	-0 28	323 08	323 08	0 00	0 00	0 00
4,200 00	6 19	90 05	4,182.24	-0 29	333 86	333 86	0 00	0 00	0 00
4,300 00	6 19	90 05	4,281 66	-0 30	344 65	344.65	0 00	0 00	0 00
4,400 00	6 19	90 05	4,381 08	-0 31	355 43	355 43	0 00	0 00	0 00
4,500 00	6 19	90 05	4,480 49	-0 32	366 22	366 22	0 00	0 00	0 00
4,600 00	6 19	90 05	4,579 91	-0 33	377 01	377 01	0 00	0 00	0 00
4,700 00	6 19	90.05	4,679.33	-0 34	387 79	387.79	0 00	0 00	0 00
4,800 00	6 19	90 05	4,778 74	-0 35	398 58	398.58	0 00	0 00	0 00
4,900 00	6 19	90 05	4,878.16	-0 36	409 36	409 36	0 00	0 00	0 00
5,000 00	6.19	90 05	4,977.58	-0 36	420 15	420 15	0 00	0 00	0 00
5,100 00	6 19	90 05	5,076 99	-0 37	430 94	430 94	0 00	0 00	0 00
5,200 00	6 19	90 05	5,176 41	-0 38	441 72	441 72	0 00	0 00	0 00
5,300 00	6 19	90 05	5,275 83	-0 39	452 51	452 51	0 00	0 00	0 00

Database:	EDM-Julio	**Local Co-ordinate Reference:**	Site Tumak Federal #2
Company:	COG Operating LLC	**TVD Reference:**	GL Elev @ 3708 00usft
Project:	Eddy County, NM (NAN27 NME)	**MD Reference:**	GL Elev @ 3708 00usft
Site:	Tumak Federal #2	**North Reference:**	Grid
Well:	Tumak Federal #2	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #2 7-7/8" Hole		

Planned Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
5,400 00	6 19	90 05	5,375 24	-0 40	463 29	463 29	0 00	0 00	0.00
5,424 90	6 19	90 05	5,400 00	-0 40	465 98	465.98	0 00	0 00	0 00
PBHL-Tumak Fed #2									

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
West HL-Tumak Fed #2	0 00	0 00	0 00	54 40	514 50	665,736 80	555,842 60	32° 49' 48 234 N	104° 9' 5.530 W
- plan misses target center by 517 37usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E)									
- Rectangle (sides W0 00 H200 00 D0 00)									
North HL-Tumak Fed #2	0 00	0 00	0 00	54 40	514 50	665,736 80	555,842 60	32° 49' 48 234 N	104° 9' 5.530 W
- plan misses target center by 517 37usft at 0 00usft MD (0 00 TVD, 0 00 N, 0 00 E)									
- Rectangle (sides W200 00 H0 00 D0 00)									
PBHL-Tumak Fed #2	0 00	0 01	5,400 00	-0 40	465 98	665,682 00	555,794.08	32° 49' 47 692 N	104° 9' 6 100 W
- plan hits target center									
- Circle (radius 50 00)									

Casing Points

Measured Depth (usft)	Vertical Depth (usft)	Name	Casing Diameter (")	Hole Diameter (")
850 00	850 00	8-5/8" Casing	8-5/8	12-1/4

Formations

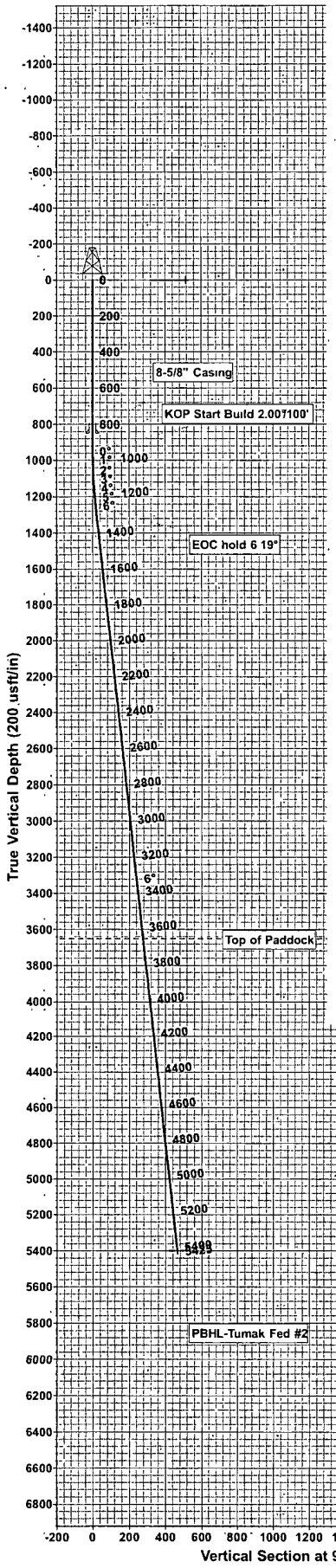
Measured Depth (usft)	Vertical Depth (usft)	Name	Lithology	Dip (°)	Dip Direction (°)
3,664 63	3,650 00	Top of Paddock		0 00	

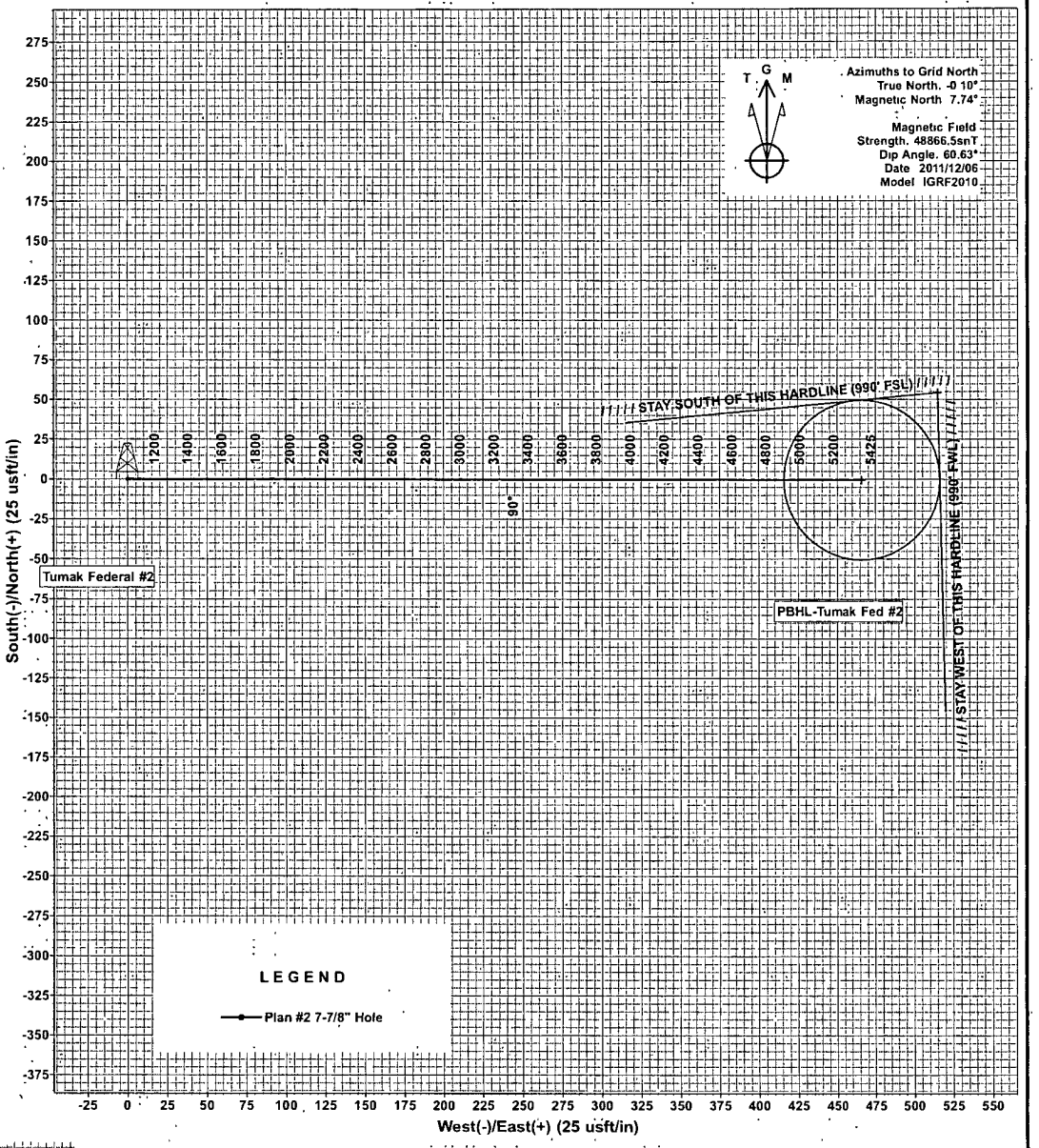
Plan Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
950 00	950 00	0 00	0 00	KOP Start Build 2 00°/100'
1,259 60	1,259 00	-0 01	16 71	EOC hold 6 19°

Scientific Drilling for COG Operating LLC
Site: Eddy County, NM (NAN27 NME)
Well: Tumak Federal #2
Wellbore: OH
Design: Plan #2 7-7/8" Hole

Scientific Drilling
Directional Drilling Operations





WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
North HL-Tumak Fed #2	0.00	54.40	514.50	665736.80	555842.60	32° 49' 48.234 N	104° 9' 5.530 W	Rectangle (Sides: L0.00 W200.00)
West HL-Tumak Fed #2	0.00	54.40	514.50	665736.80	555842.60	32° 49' 48.234 N	104° 9' 5.530 W	Rectangle (Sides: L200.00 W0.00)
PBHL-Tumak Fed #2	5400.00	-0.40	465.98	665682.00	555794.08	32° 49' 47.692 N	104° 9' 6.100 W	Circle (Radius: 50.00)

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	950.00	0.00	0.00	950.00	0.00	0.00	0.00	0.00	0.00	
3	1259.60	6.19	90.05	1258.99	-0.01	16.71	2.00	90.05	16.71	
4	5424.90	6.19	90.05	5400.00	-0.40	465.98	0.00	0.00	465.98	PBHL-Tumak Fed #2

WELL DETAILS: Tumak Federal #2

Ground Level: 3708.00

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	665682.40	555328.10	32° 49' 47.704 N	104° 9' 1.561 W	

PROJECT DETAILS: Eddy County, NM (NAN27 NME)

Plan: Plan #2 7-7/8" Hole (Tumak Federal #2/OH)

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

Created By: Julio Pina Date: 06-Dec-11
Checked: _____ Date: _____
Reviewed: _____ Date _____
Approved: _____ Date _____

COG OPERATING LLC
550 West Texas, Suite 1300
Midland, TX 79701

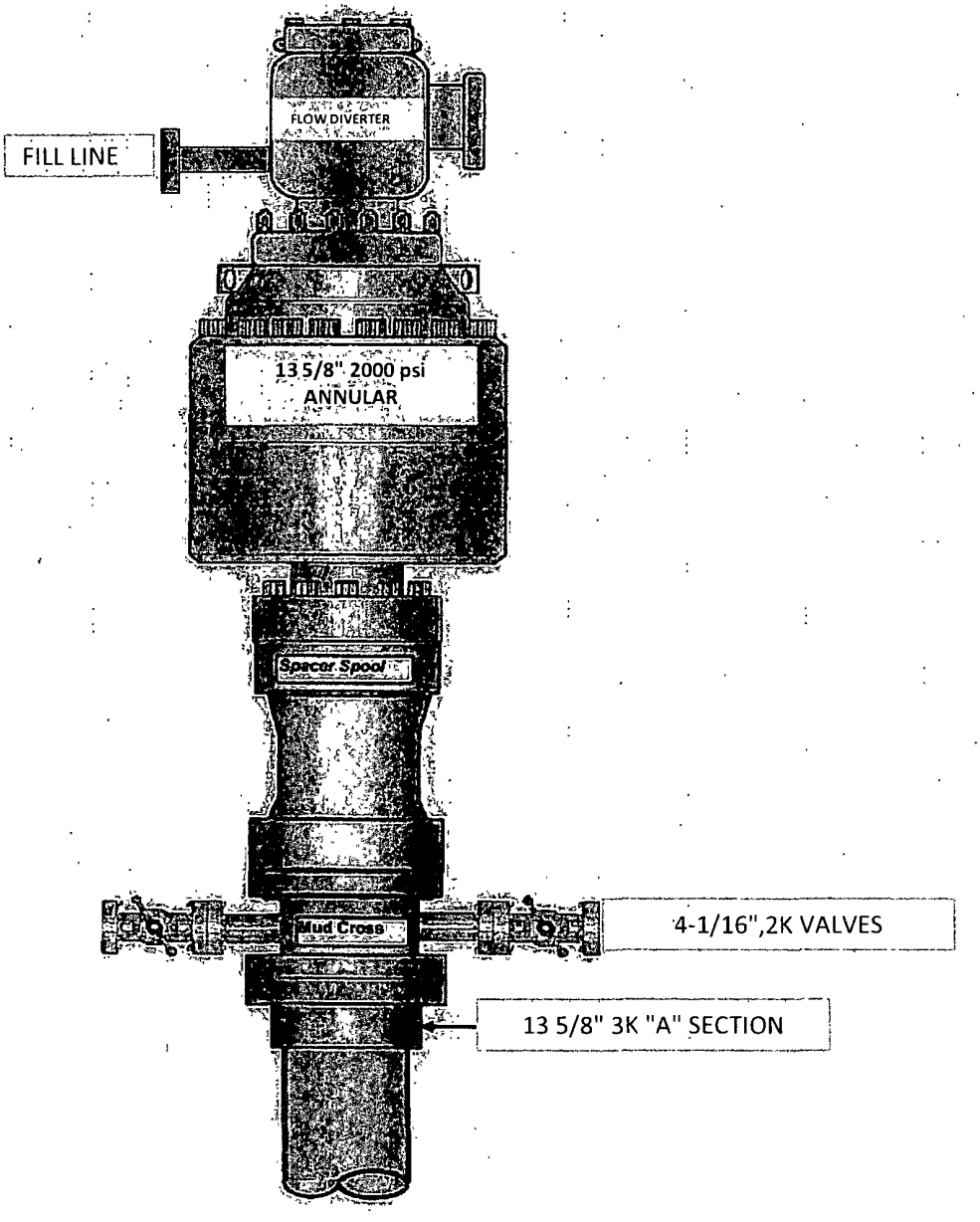
DIRECTIONAL PLAN VARIANCE REQUEST

TUMAK FEDERAL #2
EDDY, NM

SHL	984 FSL, 474 FWL	Sec 14, T17S, R28E, Unit M
BHL	990 FSL, 990 FWL	Sec 14, T17S, R28E, Unit M

COG Operating LLC, as Operator, desires that the APD reflect the footages as stated on the surveyor's plat. However, Operator also desires to avoid inadvertently drilling the well to a non-standard location. Therefore, due to the proximity of the plat bottom hole location to the pro-ration unit hard line(s), the attached directional plan is designed to avoid the hard lines by as much as fifty feet; said fifty feet being in either (or both) the north-south and/or east-west directions as applicable.

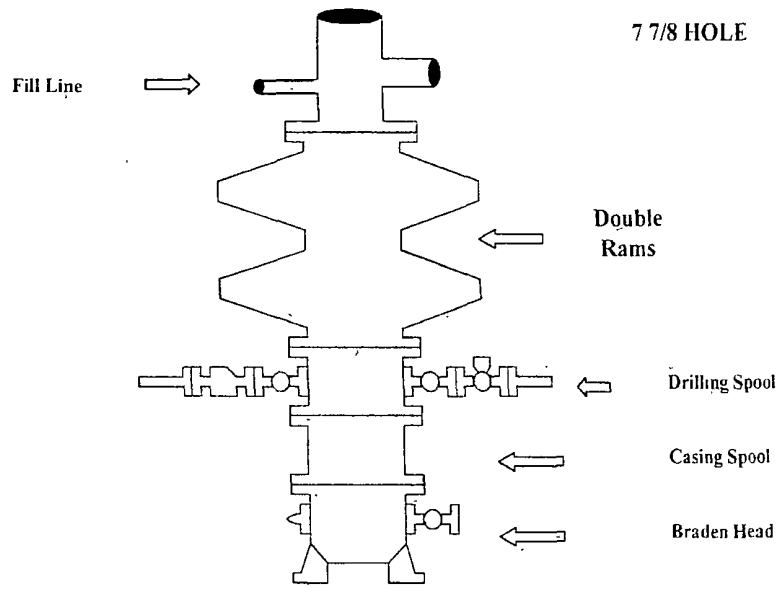
13 5/8" 2K ANNULAR



COG Operating LLC

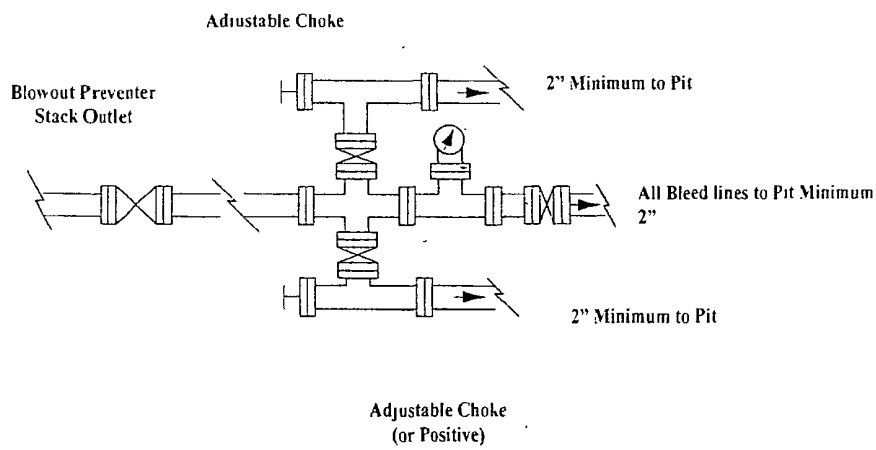
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required

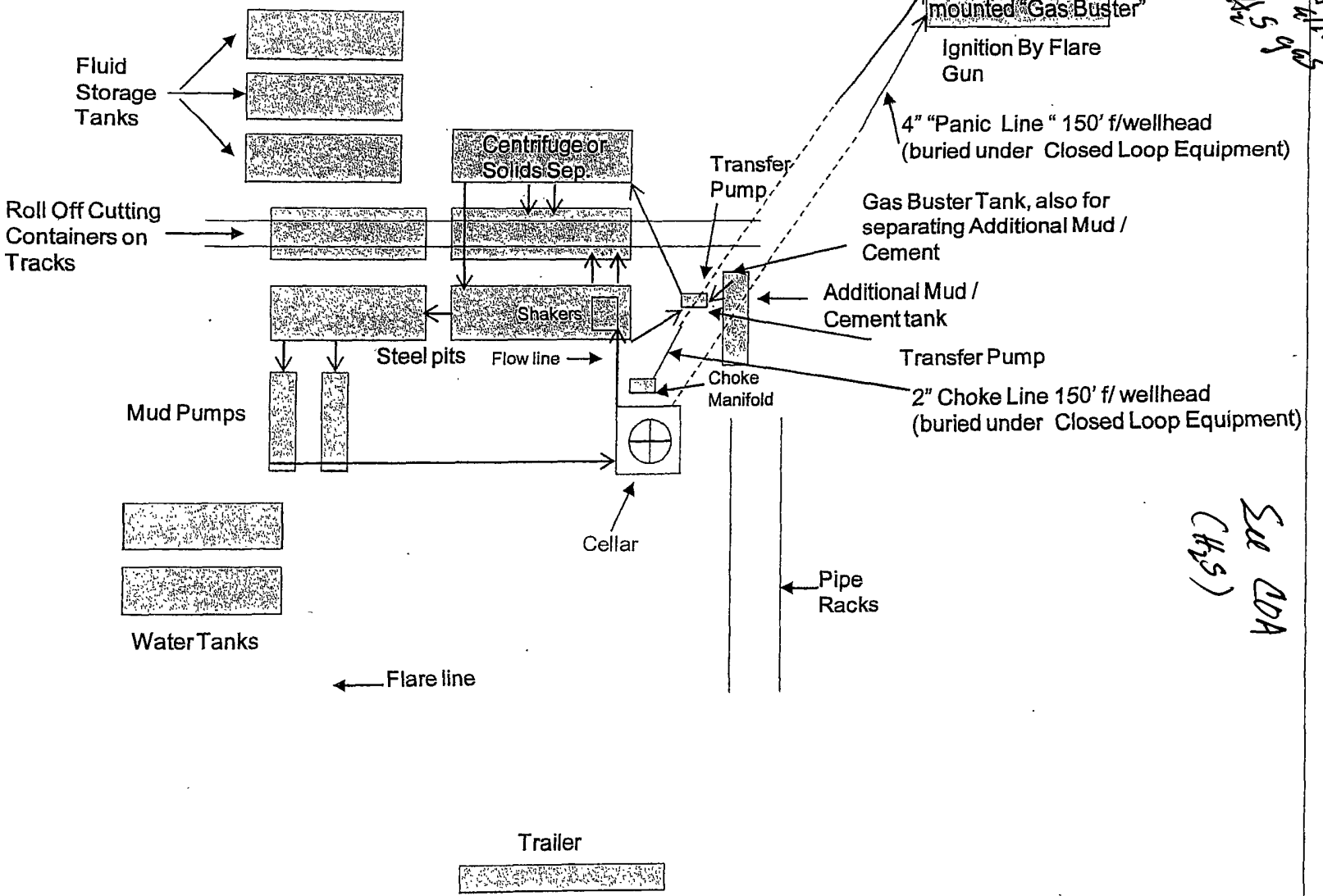


NOTES REGARDING THE BLOWOUT PREVENTERS
Master Drilling Plan
Eddy County, New Mexico

1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All fittings to be flanged
5. Safety valve must be available on rig floor at all times with proper connections, valve to be full 2000 psi WP minimum.
6. All choke and fill lines to be securely anchored especially ends of choke lines
7. Equipment through which bit must pass shall be at least as large as the diameter of the casing being drilled through.
8. Kelly cock on Kelly.
9. Extension wrenches and hands wheels to be properly installed
10. Blow out preventer control to be located as close to driller's position as feasible
11. Blow out preventer closing equipment to include minimum 40-gallon accumulator, two independent sources of pump power on each closing unit installation all API specifications

COG Operating LLC

Closed Loop Equipment Diagram



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

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

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

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

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

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

Cuttings will be hauled to either:

CRI (permit number R9166)
or
GMI (permit number 711-019-001)

dependent upon which rig is available to drill this well.

COG Operating LLC

Hydrogen Sulfide Drilling Operation Plan

I. HYDROGEN SULFIDE TRAINING

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

1. The hazards 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

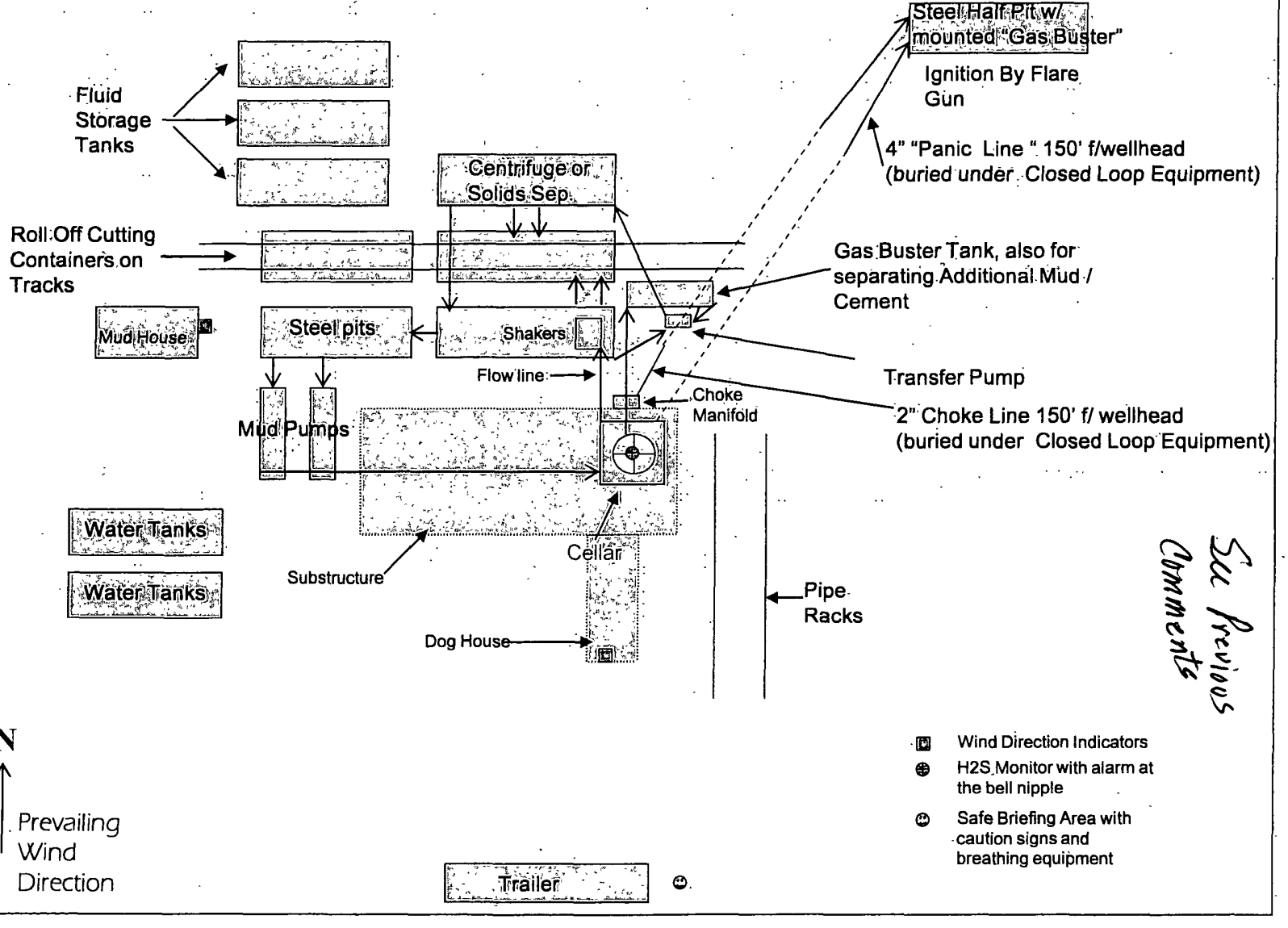
EDDY COUNTY EMERGENCY NUMBERS
ARTESIA FIRE DEPT. 575-746-5050
ARTESIA POLICE DEPT. 575-746-5000
EDDY CO. SHERIFF DEPT. 575-746-9888

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

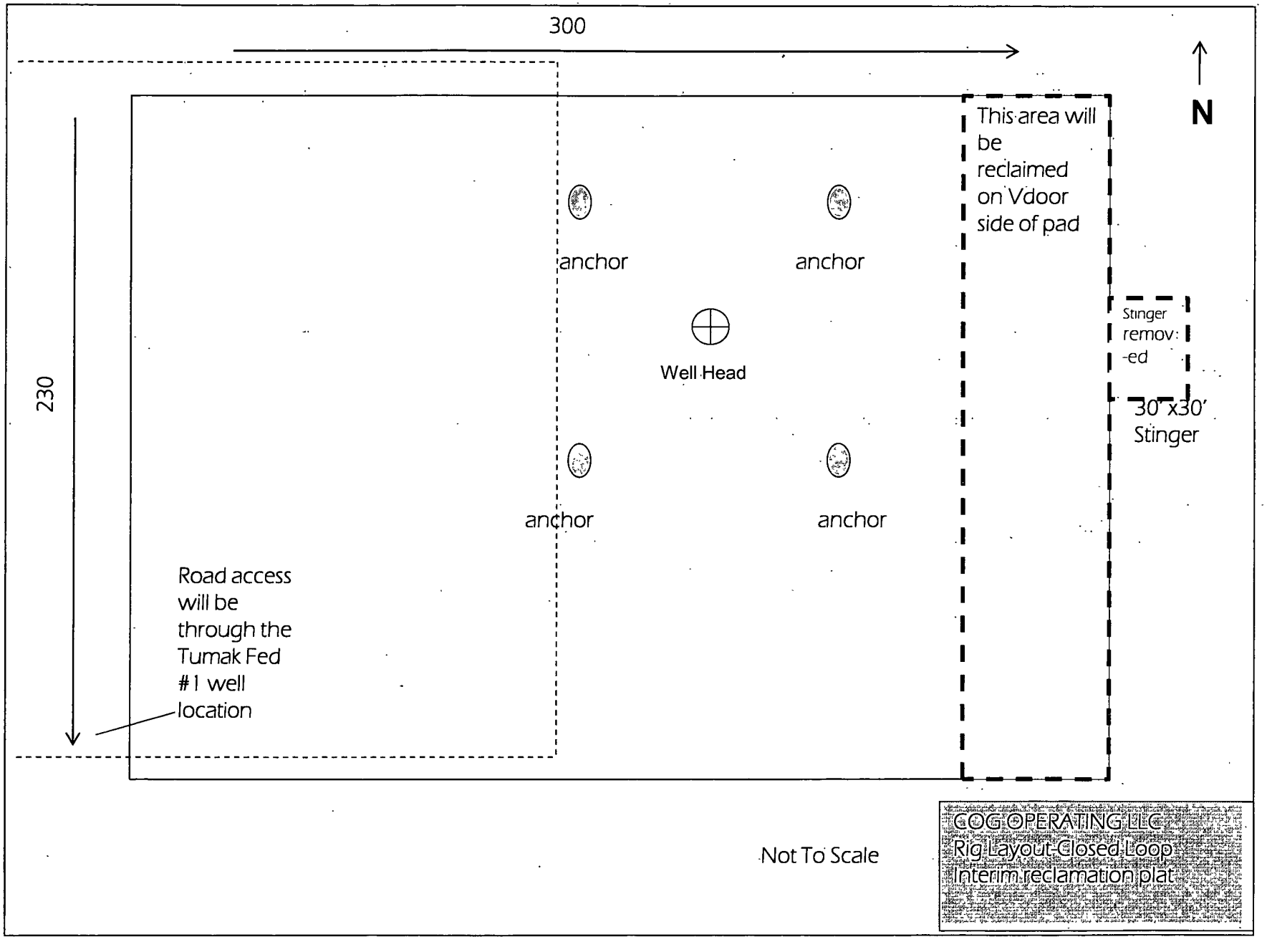
COG Operating LLC

EXHIBIT 8

Drilling Location - H2S Safety Equipment Diagram



See Previous Comments


300
N
This area will be reclaimed on Vdoor side of pad
anchor
anchor
Well Head
Stinger remov -ed
30' x30' Stinger
230
anchor
anchor
Road access will be through the Tumak Fed #1 well location
Not To Scale
COG OPERATING LLC
Rig Layout Closed Loop
Interim reclamation plat

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	NM-118109
WELL NAME & NO.:	2 Tumak Federal
SURFACE HOLE FOOTAGE:	984' FSL & 474' FWL
BOTTOM HOLE FOOTAGE	990' FSL & 990' FWL
LOCATION:	Section 14, T.17 S., R.28 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.