13-218

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. NMNM-013814, NM7752 TOS 2/13/2013

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

1a. Type of work: ☑ DRILL ☐ REENTER

7. If Unit or CA Agreement, Name and No.: N/A

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

8. Lease Name and Well No.: Twelve Pack Federal Com #2H C-39626?

2. Name of Operator: COG Operating LLC C-229137?

9. API Well No. 30-015- 41100

3a. Address: One Concho Center, 600 W Illinois Ave, Midland, TX 79701

3b. Phone No. (include area code): (432) 221-0336

10. Field and Pool, or Exploratory: Loco Hills; Glorieta Yeso 96718

4. Location of Well (Report location clearly and in accordance with any State requirements.*)
At surface: SHL: 1140' FNL & 305' FWL, Lot 4
At proposed prod. zone: BHL: 980' FNL & 330' FEL, Lot 1
UNORTHODOX LOCATION

11. Sec., T. R. M. or Blk. and Survey or Area: Sec 6, T17S, R30E

14. Distance in miles and direction from nearest town or post office*: 2.5 miles Northeast of 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): 305'

16. No. of acres in lease: 312.97

17. Spacing Unit dedicated to this well: 155.71

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: 354'

19. Proposed Depth: TVD: 5500' MD: 9851'

20. BLM/BIA Bond No. on file: NMB000740; NMB000215

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3692' GL

22. Approximate date work will start*: 12/31/2012

23. Estimated duration: 10 days

24. Attachments

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

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

25. Signature: Kacie Connally — Name (Printed/Typed): Kacie Connally — Date: 10/02/2012

Title: Permitting Tech

Approved by (Signature): /s/ Don Peterson — Name (Printed/Typed): /s/ Don Peterson — Date: FEB - 8 2013

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
FEB 11 2013
NMOCD ARTESIA

SEE ATTACHED FOR CONDITIONS OF APPROVAL

Approval Subject to General Requirements & 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- 41100	96718	Loco Hills; Glorieta Yeso

Property Code	Property Name	Well Number
39626	TWELVE PACK FEDERAL COM	2H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	3692'

Surface Location

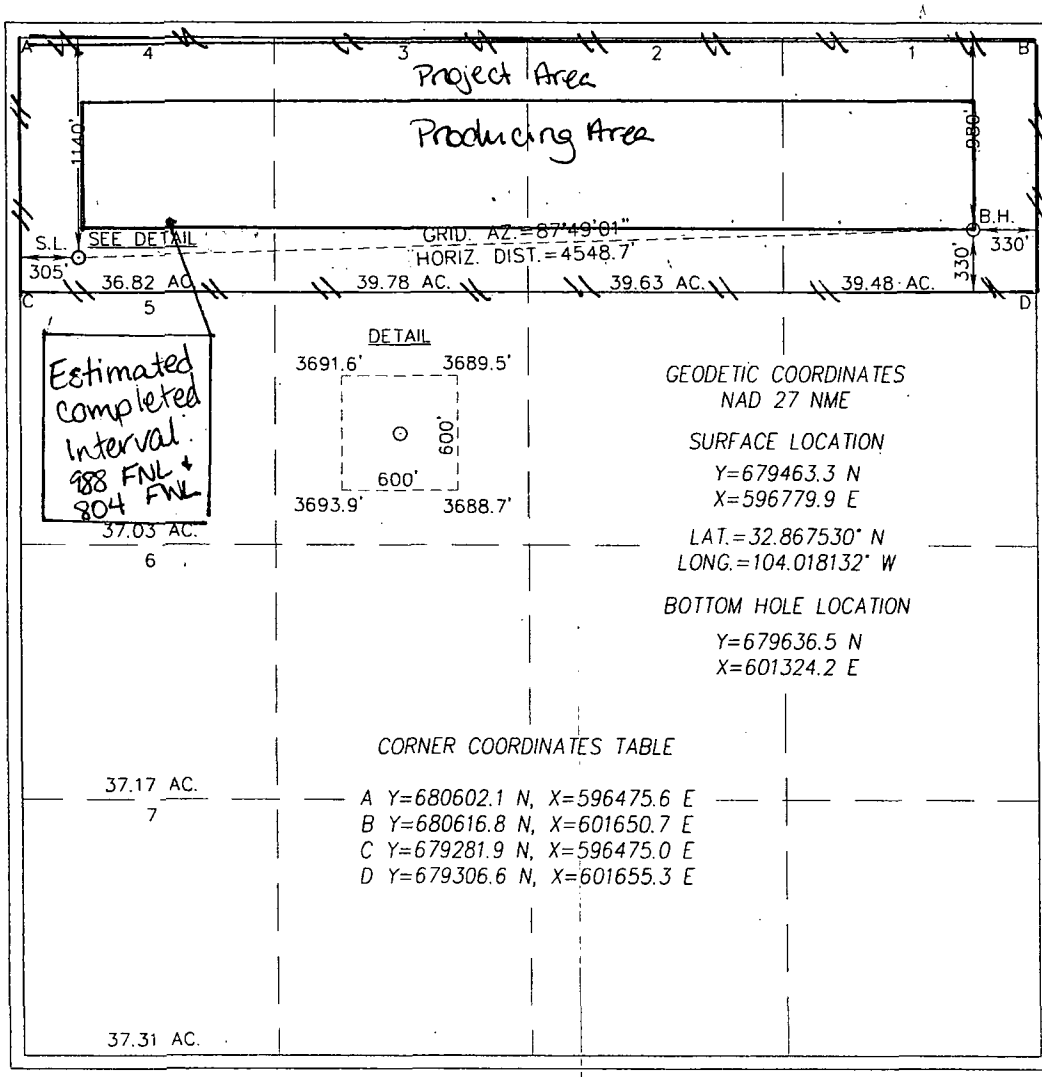
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
4	6	17-S	30-E		1140	NORTH	305	WEST	EDDY

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
1	6	17-S	30-E		980	NORTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
155.71			

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



GEODETIC COORDINATES
NAD 27 NME

SURFACE LOCATION
Y=679463.3 N
X=596779.9 E

LAT.=32.867530° N
LONG.=104.018132° W

BOTTOM HOLE LOCATION
Y=679636.5 N
X=601324.2 E

CORNER COORDINATES TABLE
A Y=680602.1 N, X=596475.6 E
B Y=680616.8 N, X=601650.7 E
C Y=679281.9 N, X=596475.0 E
D Y=679306.6 N, X=601655.3 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.

Kacie Connally 10/1/12
Signature Date

Kacie Connally
Printed Name

kconnally@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 22, 2012
Date of Survey

Signature & Seal of Professional Surveyor:

RONALD J. EIDSON NEW MEXICO 3239 REGISTERED PROFESSIONAL SURVEYOR

09/26/2012

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

AF JWSC W.O.: 12.11.0838

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 27th day of September, 2012.

Signed: Carl Bird

Printed Name: Carl Bird

Position: Drilling Engineer

Address: One Concho Center, 600 W. Illinois, Midland, Texas 79701

Telephone: (432) 683-7443

Field Representative (if not above signatory): Same

E-mail: cbird@concho.com

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
TWELVE-PACK FEDERAL COM #2H
SHL: 1140' FNL & 305' FWL, LOT 4
BHL: 980' FNL & 330' FEL, Lot 1
Sec 6, T17S, R30E
Eddy County, NM

1. Proration Unit Spacing: 160 Acres

2. Ground Elevation: 3692'

3. Proposed Depths: Horizontal: **EOC (end of curve) TVD= 5500' MD= 5807'**
Toe (end of lateral) TVD=5430' MD= 9851'

4. Estimated tops of geological markers:

Rustler	341'
Top of Salt	600'
Base of Salt	1000'
Yates	1176'
Seven Rivers	1453'
Queen	2054'
Grayburg	2459'
San Andres	2782'
Glorieta	4211'
Paddock	4273'
Blinebry	4674'
Tubb	5622'

5. Possible mineral bearing formations:

Water Sand	130'	Fresh Water
Grayburg	2459'	
San Andres	2782'	
Glorieta	4211'	
Paddock	4273'	
Blinebry	4674'	
Tubb	5622'	

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to ~~366'~~ (25' into Rustler) 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 ~~1190'~~ and circulating cement back to surface in a single or multi-stage job and/or with an ECP. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them or be isolated by external casing packers. This will be achieved by cementing 7" casing from the KOP by single or multi-stage job using ECP & DV Tools as necessary. The 7" portion of the tapered 7" x 5 ½" production casing will be cemented back to a minimum of 200' into the intermediate casing (although cement volume is actually calculated to surface). At the KOP the 7" casing will be tapered to 5 ½" casing which will be run thru curve and lateral with external casing packers for zone isolation. 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

6. Proposed Mud System

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

DEPTH (MD)	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-366 400	Fresh Water	8.5	28	N.C.
366'-1190' 1125	Brine	10	30	N.C.
1190'-4979'	Cut Brine	8.7-9.2	30	N.C.
4979'-5807'	Cut Brine/polymer mud	8.7-9.2	30	N.C.
5807'-9851'	Cut Brine/polymer mud	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.

6. Proposed Casing Program

See COA

Hole Size	Interval MD	OD Casing	Weight	Grade	Condition	Jt.	brst/clps/ten
17 ½"	0-366' 400	13 3/8"	48#	H-40/J-55 Hybrid	New	ST&C	4.73/4.75/21.1
12 ¼"	366'-1190' 1125	9 5/8"	40#	J/K-55	New	ST&C	3.35/4.18/12.97
8 ¾"	1190'-4979'	7"	26#	L-80	New	LT&C	1.45/2.27/4.60
8 ¾"	4979'-5807'	5 ½"	17#	L-80	New	LT&C	1.55/2.64/4.65
7 7/8"	5807'-9851'	5 ½"	17#	L-80	New	LT&C	1.55/2.64/4.65

Production string will be a tapered string with 7" 26# L-80 LTC run from surface to kick off point (4979') and then crossed over to 5 ½" 17# L-80 LTC.

7. Proposed Cement Program See COA

13 3/8" SURFACE: **(Circulate to Surface)**

Lead: 0'-366' Excess 94%	425 sks	Class "C" w/2% CaCl2 + 0.25 pps CF	1.32 cf/sk	14.8 ppg

9 5/8" INTERMEDIATE:

Option #1: Single Stage (Circulate to Surface)

Lead: 0'-850' Excess 153%	300 sks	50:50:10 C:Poz:Gel w/ 5% Salt+ 0.25% CF +5 pps LCM	2.45 cf/sk	11.8 ppg
Tail: 850'-1190' Excess 159%	200 sks	Class C w/2% CaCl2	1.32 cf/sk	14.8 ppg

Option #2: Multi-stage w/ DV Tool @ +/-416'(DV Tool 50' below 13 3/8" csg. Shoe) (Circulate to Surface)

Stage #1:

Lead: 416'-880' Excess 238%	200 sks	50:50:10 C:Poz:Gel w/5%	2.45 cf/sk	11.8 ppg
Tail: 880'-1190' Excess 144%	200 sks	Class "C" w/2% CaCl2	1.32 cf/sk	14.8 ppg

Stage #2

0'-416' Excess 218%	200 sks	50:50:10 C:Poz:Gel w/5% salt+ 0.25% CF	2.45 cf/sk	11.8 ppg

Note: Multi-stage tool to be set depending on hole conditions at approximately 416' (50' below the surface casing shoe). Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

7" X 5 ½" TAPERED PRODUCTION CASING:

Cement details for 7" portion of tapered casing string as follows:.

Option #1: Single Stage (Cement cal to Surface)
DV Tool & ECP (external csg. Packer) @ 4979' KOP:

Lead: 980'-4400' (min. tie back 200' above 9 5/8"shoe) Excess 53.0%	500 sks	35:65:6 C:Poz Gel w/5% salt+ 5 pps LCM+ 0.2 % SMS+ 0.3% FL-52A+ 0.125 pps CF+1 % BA-58+ 1% FL-25	2.05 cf/sk	12.5 ppg
Tail: 4400'-4979' Excess 219%	200 sks	50:50:2 C:Poz Gel w/5% salt+ 3 pps LCM+ 0.6 % SMS+ 0.3% FL-52A+ 0.125 pps CF+1% FL-25+ 1% BA-58	1.37 cf/sk	14.0 ppg

Option #2:Multi-stage (2 Stages) w/DV Tool & ECP@ +/-4979'

Stage #1:

Lead: 1240'-4400' Excess 65.0%	350 sks	35:65:2 C:Poz Gel w/5% salt+ 5 pps LCM+ 0.2 % SMS+ 0.3% FL-52A+ 0.125 pps CF+1% FL-25+ 1% BA-58	2.05 cf/sk	14.0 ppg
Tail: 4400'-4979' Excess 219%	200 sks	50:50:2 C:Poz Gel w/5% salt+ 3 pps LCM + 0.6% SMS + 0.3% FL-52A + 0.125 pps CF + 1% FL-25+ 1% BA-58	1.37 cf/sk	14.0 ppg

Stage #2:
2nd DV Tool @ 1240' (50' below 9 5/8" csg shoe) (Cement cal to Surface)

Lead: 990'-1240' (min. tie back 200' above 9 5/8" shoe) Excess 57%	150 sks	35:65:2 C:Poz Gel w/5% salt+ 5 pps LCM+ 0.2 % SMS+ 0.3% FL-52A+ 0.125 pps CF+1% FL-25+ 1% BA-58	2.05 cf/sk	12.5 ppg

Note: 5 ½" casing will be run from KOP at 4979' thru curve and lateral to TD of 9851' MD. Productive intervals will be isolated by a Peak Packer system or similar.

Note: Assumption for 2nd DV tool is water flow. Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

Note: FL-52A is fluid loss additive, R-3 is retarder.

Note: Multi-stage tool to be set depending on hole conditions at approximately 1230' Cement volumes will be adjusted proportionately for depth changes of multi-stage tool.

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 and 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 psig. 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 . BOP and well head will be tested by a third party to 2000 psig 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 will include a Kelly cock and floor safety valve, choke lines and a choke manifold with a 2000 psi WP rating all of which will also be tested to working pressure by independent tester also. see COM

9. Production Hole Drilling Summary:

Drill 8 ¾" hole and kick off at +/- 4979', building curve at 11°/100' over +/- 758' to horizontal at Az 73° 5806' MD/5500'TVD. Turn at 4°/100' to Az 90.70°. Drill 7 7/8" lateral section in a easterly direction for +/3602' lateral to TD at +/-9851' MD, 5430' TVD. Run 7" x 5-1/2" production casing. 7" to be run from surface to kickoff point and then changed over to 5 ½" with DV Tool and ECP at kickoff point. 5 ½" casing will be run from kickoff point to td and isolation packers set throughout lateral. 7" to be cemented from kickoff point to surface.

10. 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.

11. Logging, Testing and Coring Program: See COM

A. The following logs will be run in the vertical portion of the hole to KOP: SLB-PEX/HRLA,HNGS.

B. The mud logging program will consist of lagged 10' samples from KOP 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.

12. Abnormal Conditions, Pressures, Temperatures and Potential Hazards:

No abnormal pressures or temperatures are anticipated. The estimated bottom hole temperature at TD is 93° Fahrenheit and estimated maximum bottom hole pressure is 2420 psi. Wells in the Loco Hills area will penetrate formations that are known or could reasonably be expected to contain Hydrogen Sulfide. Measurable gas volumes or Hydrogen Sulfide levels have not been encountered during drilling operations in this area, However as per Onshore order No. 6 a H2S drilling operations plan is included with this APD. No major loss circulation zones have been reported in offsetting wells.

13. Anticipated Starting Date

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

CRESCENT DIRECTIONAL DRILLING

COG Operating LLC

Eddy County, NM
Twelve-Pack Federal Com
#2H

OH

Plan: Plan #1

Standard Planning Report

31 October, 2012

Surface: 1140' FNL, 305' FWL, Sec 6, T17S, R30E, Lot 4
PBHL: 980' FNL, 330' FEL, Sec 6, T17S, R30E, Unit A
PP: 990' FNL, 805' FWL, Sec 6, T17S, R30E, Lot 4

CONCHO

Database:	Houston R5000 Database	**Local Co-ordinate Reference:**	Well #2H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3706.0usft (UDI #40 - 14 KB)
Project:	Eddy County, NM	**MD Reference:**	WELL @ 3706.0usft (UDI #40 - 14 KB)
Site:	Twelve Pack Federal Com	**North Reference:**	Grid
Well:	#2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

Project Eddy County, NM

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 Twelve Pack Federal Com

Site Position:		**Northing:**	680,272.90 usft	**Latitude:**	32° 52' 11.122 N
From:	Map	**Easting:**	596,705.40 usft	**Longitude:**	104° 1' 6.119 W
Position Uncertainty:	2.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.17 °

Well #2H

Well Position	**+N/-S**	-809.6 usft	**Northing:**	679,463.30 usft	**Latitude:**	32° 52' 3.109 N
	+E/-W	74.5 usft	**Easting:**	596,779.90 usft	**Longitude:**	104° 1' 5.274 W
Position Uncertainty		2.0 usft	**Wellhead Elevation:**		**Ground Level:**	3,692.0 usft

Wellbore OH

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	10/31/2012	7.67	60.67	48,814

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	0.0

Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	87.82

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
0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.00	0.00	
4,979.0	0.00	0.00	4,979.0	0.0	0.0	0.00	0.00	0.00	0.00	
5,806.6	91.00	73.00	5,500.0	155.0	507.0	11.00	11.00	0.00	73.00	
6,249.1	91.00	90.70	5,492.2	217.5	943.3	4.00	0.00	4.00	89.85	
9,851.0	91.00	90.70	5,429.5	173.2	4,544.3	0.00	0.00	0.00	0.00	PBHL (TP#2H)

Database:	Houston R5000 Database	**Local Co-ordinate Reference:**	Well #2H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3706.0usft (UDI #40 - 14' KB)
Project:	Eddy County, NM	**MD Reference:**	WELL @ 3706.0usft (UDI #40 - 14' KB)
Site:	Twelve Pack Federal Com	**North Reference:**	Grid
Well:	#2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00
100.0	0.00	0.00	100.0	0.0	0.0	0.0	0.00	0.00	0.00
200.0	0.00	0.00	200.0	0.0	0.0	0.0	0.00	0.00	0.00
300.0	0.00	0.00	300.0	0.0	0.0	0.0	0.00	0.00	0.00
400.0	0.00	0.00	400.0	0.0	0.0	0.0	0.00	0.00	0.00
500.0	0.00	0.00	500.0	0.0	0.0	0.0	0.00	0.00	0.00
600.0	0.00	0.00	600.0	0.0	0.0	0.0	0.00	0.00	0.00
700.0	0.00	0.00	700.0	0.0	0.0	0.0	0.00	0.00	0.00
800.0	0.00	0.00	800.0	0.0	0.0	0.0	0.00	0.00	0.00
900.0	0.00	0.00	900.0	0.0	0.0	0.0	0.00	0.00	0.00
1,000.0	0.00	0.00	1,000.0	0.0	0.0	0.0	0.00	0.00	0.00
1,100.0	0.00	0.00	1,100.0	0.0	0.0	0.0	0.00	0.00	0.00
1,200.0	0.00	0.00	1,200.0	0.0	0.0	0.0	0.00	0.00	0.00
1,300.0	0.00	0.00	1,300.0	0.0	0.0	0.0	0.00	0.00	0.00
1,400.0	0.00	0.00	1,400.0	0.0	0.0	0.0	0.00	0.00	0.00
1,500.0	0.00	0.00	1,500.0	0.0	0.0	0.0	0.00	0.00	0.00
1,600.0	0.00	0.00	1,600.0	0.0	0.0	0.0	0.00	0.00	0.00
1,700.0	0.00	0.00	1,700.0	0.0	0.0	0.0	0.00	0.00	0.00
1,800.0	0.00	0.00	1,800.0	0.0	0.0	0.0	0.00	0.00	0.00
1,900.0	0.00	0.00	1,900.0	0.0	0.0	0.0	0.00	0.00	0.00
2,000.0	0.00	0.00	2,000.0	0.0	0.0	0.0	0.00	0.00	0.00
2,100.0	0.00	0.00	2,100.0	0.0	0.0	0.0	0.00	0.00	0.00
2,200.0	0.00	0.00	2,200.0	0.0	0.0	0.0	0.00	0.00	0.00
2,300.0	0.00	0.00	2,300.0	0.0	0.0	0.0	0.00	0.00	0.00
2,400.0	0.00	0.00	2,400.0	0.0	0.0	0.0	0.00	0.00	0.00
2,500.0	0.00	0.00	2,500.0	0.0	0.0	0.0	0.00	0.00	0.00
2,600.0	0.00	0.00	2,600.0	0.0	0.0	0.0	0.00	0.00	0.00
2,700.0	0.00	0.00	2,700.0	0.0	0.0	0.0	0.00	0.00	0.00
2,800.0	0.00	0.00	2,800.0	0.0	0.0	0.0	0.00	0.00	0.00
2,900.0	0.00	0.00	2,900.0	0.0	0.0	0.0	0.00	0.00	0.00
3,000.0	0.00	0.00	3,000.0	0.0	0.0	0.0	0.00	0.00	0.00
3,100.0	0.00	0.00	3,100.0	0.0	0.0	0.0	0.00	0.00	0.00
3,200.0	0.00	0.00	3,200.0	0.0	0.0	0.0	0.00	0.00	0.00
3,300.0	0.00	0.00	3,300.0	0.0	0.0	0.0	0.00	0.00	0.00
3,400.0	0.00	0.00	3,400.0	0.0	0.0	0.0	0.00	0.00	0.00
3,500.0	0.00	0.00	3,500.0	0.0	0.0	0.0	0.00	0.00	0.00
3,600.0	0.00	0.00	3,600.0	0.0	0.0	0.0	0.00	0.00	0.00
3,700.0	0.00	0.00	3,700.0	0.0	0.0	0.0	0.00	0.00	0.00
3,800.0	0.00	0.00	3,800.0	0.0	0.0	0.0	0.00	0.00	0.00
3,900.0	0.00	0.00	3,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,000.0	0.00	0.00	4,000.0	0.0	0.0	0.0	0.00	0.00	0.00
4,100.0	0.00	0.00	4,100.0	0.0	0.0	0.0	0.00	0.00	0.00
4,200.0	0.00	0.00	4,200.0	0.0	0.0	0.0	0.00	0.00	0.00
4,300.0	0.00	0.00	4,300.0	0.0	0.0	0.0	0.00	0.00	0.00
4,400.0	0.00	0.00	4,400.0	0.0	0.0	0.0	0.00	0.00	0.00
4,500.0	0.00	0.00	4,500.0	0.0	0.0	0.0	0.00	0.00	0.00
4,600.0	0.00	0.00	4,600.0	0.0	0.0	0.0	0.00	0.00	0.00
4,700.0	0.00	0.00	4,700.0	0.0	0.0	0.0	0.00	0.00	0.00
4,800.0	0.00	0.00	4,800.0	0.0	0.0	0.0	0.00	0.00	0.00
4,900.0	0.00	0.00	4,900.0	0.0	0.0	0.0	0.00	0.00	0.00
4,979.0	0.00	0.00	4,979.0	0.0	0.0	0.0	0.00	0.00	0.00
KOP - 4979.0' MD, 4979.0' TVD, 0.00° INC, 0.00° AZI, 0.0' VS									
5,000.0	2.31	73.00	5,000.0	0.1	0.4	0.4	11.00	11.00	0.00
5,050.0	7.81	73.00	5,049.8	1.4	4.6	4.7	11.00	11.00	0.00

Database:	Houston R5000 Database	**Local Co-ordinate Reference:**	Well #2H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3706.0usft (UDI #40 - 14' KB)
Project:	Eddy County, NM	**MD Reference:**	WELL @ 3706.0usft (UDI #40 - 14' KB)
Site:	Twelve-Pack Federal Com	**North Reference:**	Grid
Well:	#2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
5,100.0	13.30	73.00	5,098.9	4.1	13.4	13.5	11.00	11.00	0.00
5,150.0	18.80	73.00	5,146.9	8.1	26.6	26.9	11.00	11.00	0.00
5,200.0	24.30	73.00	5,193.4	13.5	44.1	44.6	11.00	11.00	0.00
5,250.0	29.80	73.00	5,237.9	20.1	65.9	66.6	11.00	11.00	0.00
5,300.0	35.30	73.00	5,280.1	28.0	91.6	92.6	11.00	11.00	0.00
5,350.0	40.79	73.00	5,319.4	37.0	121.1	122.4	11.00	11.00	0.00
5,400.0	46.29	73.00	5,355.7	47.1	154.0	155.7	11.00	11.00	0.00
5,450.0	51.79	73.00	5,388.4	58.1	190.1	192.2	11.00	11.00	0.00
5,500.0	57.29	73.00	5,417.4	70.0	229.0	231.5	11.00	11.00	0.00
5,550.0	62.78	73.00	5,442.4	82.7	270.4	273.4	11.00	11.00	0.00
5,600.0	68.28	73.00	5,463.1	96.0	313.9	317.3	11.00	11.00	0.00
5,650.0	73.78	73.00	5,479.3	109.8	359.1	363.0	11.00	11.00	0.00
5,700.0	79.28	73.00	5,491.0	124.0	405.6	410.0	11.00	11.00	0.00
5,750.0	84.78	73.00	5,497.9	138.5	452.9	457.9	11.00	11.00	0.00
5,797.7	90.02	73.00	5,500.1	152.4	498.5	503.9	11.00	11.00	0.00
PP - 5797.7' MD, 5500.1' TVD, 90.02° INC, 503.9' VS									
5,800.0	90.27	73.00	5,500.1	153.1	500.7	506.2	11.00	11.00	0.00
5,806.6	91.00	73.00	5,500.0	155.0	507.0	512.5	11.00	11.00	0.00
EOC - 5806.6' MD, 5500.0' TVD, 91.00° INC, 87.82° AZI, 530.2' VS									
5,900.0	91.01	76.74	5,498.4	179.4	597.1	603.5	4.00	0.01	4.00
6,000.0	91.01	80.74	5,496.6	198.9	695.2	702.2	4.00	0.00	4.00
6,100.0	91.01	84.74	5,494.8	211.5	794.3	801.8	4.00	0.00	4.00
6,200.0	91.00	88.74	5,493.1	217.2	894.1	901.8	4.00	-0.01	4.00
6,249.0	91.00	90.70	5,492.2	217.5	943.1	950.7	4.00	-0.01	4.00
Turn @ 4°/100' - 6249 MD									
6,249.1	91.00	90.70	5,492.2	217.5	943.3	950.9	4.00	-0.01	4.00
6,300.0	91.00	90.70	5,491.3	216.8	994.1	1,001.7	0.00	0.00	0.00
6,400.0	91.00	90.70	5,489.6	215.6	1,094.1	1,101.5	0.00	0.00	0.00
6,500.0	91.00	90.70	5,487.9	214.4	1,194.1	1,201.4	0.00	0.00	0.00
6,600.0	91.00	90.70	5,486.1	213.2	1,294.0	1,301.2	0.00	0.00	0.00
6,700.0	91.00	90.70	5,484.4	211.9	1,394.0	1,401.1	0.00	0.00	0.00
6,800.0	91.00	90.70	5,482.6	210.7	1,494.0	1,500.9	0.00	0.00	0.00
6,900.0	91.00	90.70	5,480.9	209.5	1,594.0	1,600.8	0.00	0.00	0.00
7,000.0	91.00	90.70	5,479.1	208.2	1,694.0	1,700.7	0.00	0.00	0.00
7,100.0	91.00	90.70	5,477.4	207.0	1,793.9	1,800.5	0.00	0.00	0.00
7,200.0	91.00	90.70	5,475.7	205.8	1,893.9	1,900.4	0.00	0.00	0.00
7,300.0	91.00	90.70	5,473.9	204.6	1,993.9	2,000.2	0.00	0.00	0.00
7,400.0	91.00	90.70	5,472.2	203.3	2,093.9	2,100.1	0.00	0.00	0.00
7,500.0	91.00	90.70	5,470.4	202.1	2,193.8	2,199.9	0.00	0.00	0.00
7,600.0	91.00	90.70	5,468.7	200.9	2,293.8	2,299.8	0.00	0.00	0.00
7,700.0	91.00	90.70	5,467.0	199.6	2,393.8	2,399.7	0.00	0.00	0.00
7,800.0	91.00	90.70	5,465.2	198.4	2,493.8	2,499.5	0.00	0.00	0.00
7,900.0	91.00	90.70	5,463.5	197.2	2,593.8	2,599.4	0.00	0.00	0.00
8,000.0	91.00	90.70	5,461.7	195.9	2,693.7	2,699.2	0.00	0.00	0.00
8,100.0	91.00	90.70	5,460.0	194.7	2,793.7	2,799.1	0.00	0.00	0.00
8,200.0	91.00	90.70	5,458.3	193.5	2,893.7	2,899.0	0.00	0.00	0.00
8,300.0	91.00	90.70	5,456.5	192.3	2,993.7	2,998.8	0.00	0.00	0.00
8,400.0	91.00	90.70	5,454.8	191.0	3,093.6	3,098.7	0.00	0.00	0.00
8,500.0	91.00	90.70	5,453.0	189.8	3,193.6	3,198.5	0.00	0.00	0.00
8,600.0	91.00	90.70	5,451.3	188.6	3,293.6	3,298.4	0.00	0.00	0.00
8,700.0	91.00	90.70	5,449.5	187.3	3,393.6	3,398.2	0.00	0.00	0.00
8,800.0	91.00	90.70	5,447.8	186.1	3,493.5	3,498.1	0.00	0.00	0.00
8,900.0	91.00	90.70	5,446.1	184.9	3,593.5	3,598.0	0.00	0.00	0.00

Database:	Houston R5000 Database	**Local Co-ordinate Reference:**	Well #2H
Company:	COG Operating LLC	**TVD Reference:**	WELL @ 3706.0usft (UDI #40 - 14' KB)
Project:	Eddy County, NM	**MD Reference:**	WELL @ 3706.0usft (UDI #40 - 14' KB)
Site:	Twelve Pack Federal Com	**North Reference:**	Grid
Well:	#2H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	OH		
Design:	Plan #1		

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)
9,000.0	91.00	90.70	5,444.3	183.7	3,693.5	3,697.8	0.00	0.00	0.00
9,100.0	91.00	90.70	5,442.6	182.4	3,793.5	3,797.7	0.00	0.00	0.00
9,200.0	91.00	90.70	5,440.8	181.2	3,893.5	3,897.5	0.00	0.00	0.00
9,300.0	91.00	90.70	5,439.1	180.0	3,993.4	3,997.4	0.00	0.00	0.00
9,400.0	91.00	90.70	5,437.4	178.7	4,093.4	4,097.2	0.00	0.00	0.00
9,500.0	91.00	90.70	5,435.6	177.5	4,193.4	4,197.1	0.00	0.00	0.00
9,600.0	91.00	90.70	5,433.9	176.3	4,293.4	4,297.0	0.00	0.00	0.00
9,700.0	91.00	90.70	5,432.1	175.1	4,393.3	4,396.8	0.00	0.00	0.00
9,800.0	91.00	90.70	5,430.4	173.8	4,493.3	4,496.7	0.00	0.00	0.00
9,851.0	91.00	90.70	5,429.5	173.2	4,544.3	4,547.6	0.00	0.00	0.00
TD @ 9851.0' MD, 5429.5' TVD									

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
PBHL (TP#2H) - plan hits target center - Point	0.00	0.00	5,429.5	173.2	4,544.3	679,636.50	601,324.20	32° 52' 4.685 N	104° 0' 11.987 W

Plan Annotations

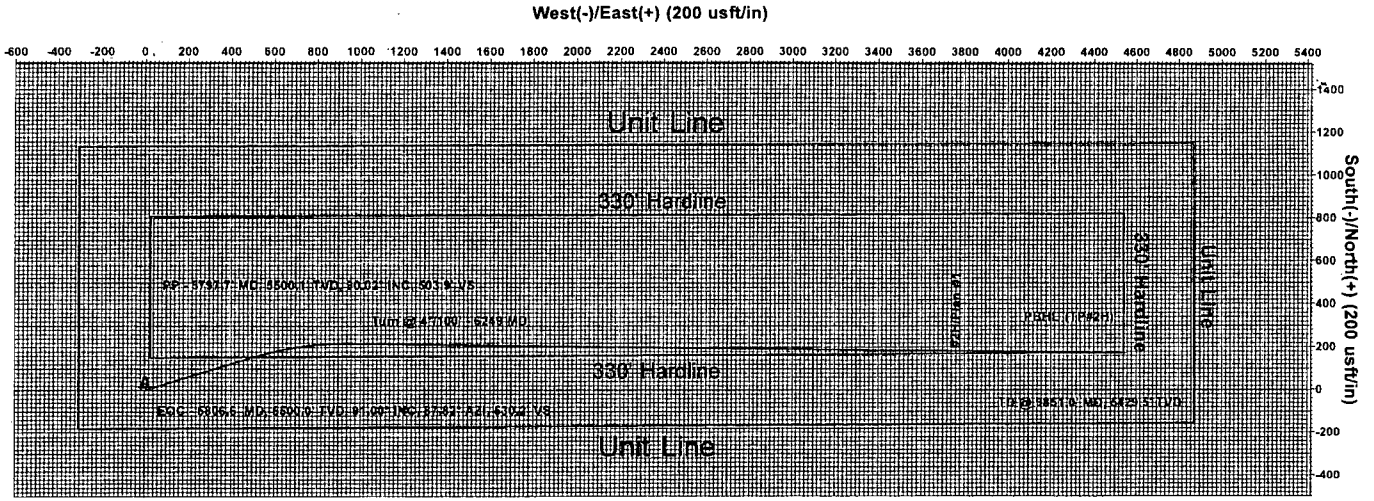
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
4,979.0	4,979.0	0.0	0.0	KOP - 4979.0' MD, 4979.0' TVD, 0.00° INC, 0.00° AZI, 0.0' VS
5,797.7	5,500.1	152.4	498.5	PP - 5797.7' MD, 5500.1' TVD, 90.02° INC, 503.9' VS
5,806.6	5,500.0	155.0	507.0	EOC - 5806.6' MD, 5500.0' TVD, 91.00° INC, 87.82° AZI, 530.2' VS
6,249.0	5,492.2	217.5	943.1	Turn @ 4°/100' - 6249 MD
9,851.0	5,429.5	173.2	4,544.3	TD @ 9851.0' MD, 5429.5' TVD

COG Operating LLC
Project: Eddy County, NM
Site: Twelve-Pack Federal Com
Well: #2H
Wellbore: OH
Plan: Plan #1 (#2H/OH)

CONCHO

Azimuths to Grid North
True North: -0.17°
Magnetic North: 7.50°

Magnetic Field
Strength: 48814.2snT
Dip Angle: 60.67°
Date: 10/31/2012
Model: IGRF2010



Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	4979.0	0.00	0.00	4979.0	0.0	0.0	0.00	0.00	0.0	
3	5806.6	91.00	73.00	5500.0	155.0	507.0	11.00	73.00	512.5	
4	6249.1	91.00	90.70	5492.2	217.5	943.3	4.00	89.85	950.9	
5	9851.0	91.00	90.70	5429.5	173.2	4544.3	0.00	0.00	4547.6	PBHL (TP#2H)

WELL DETAILS: #2H

Ground Elevation:: 3692.0
RKB Elevation: WELL @ 3706.0usft (UDI #40 - 14' KB)
Rig Name: UDI #40 - 14' KB

Surface Hole Location

Northing	Easting	Latittude	Longitude
679463.30	596779.90	32° 52' 3.109 N	104° 1' 5.274 W

DESIGN TARGET DETAILS

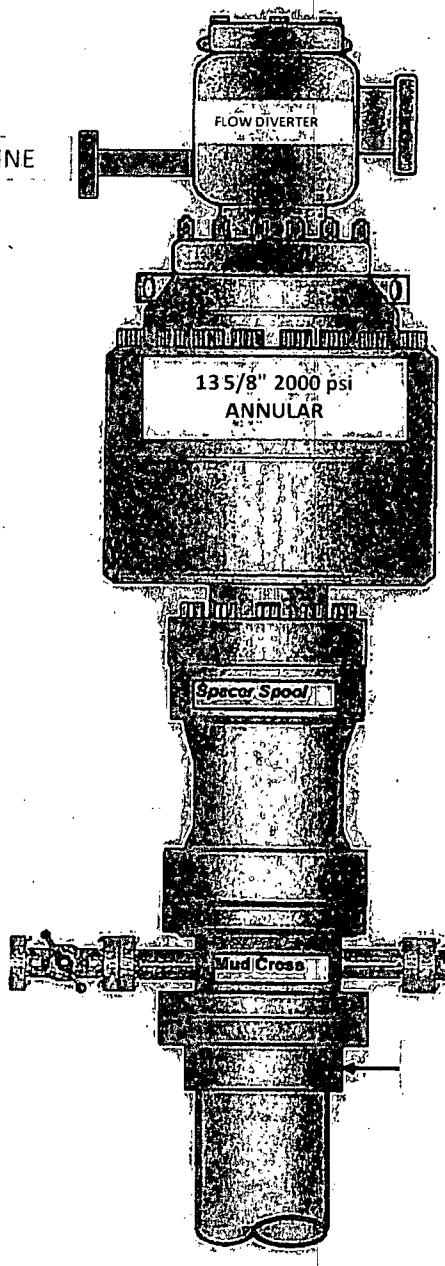
Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL (TP#2H)	5429.5	173.2	4544.3	679636.50	601324.20

PROJECT DETAILS: Eddy County, NM
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
Local North: Grid

CRESCENT DIRECTIONAL DRILLING
Crescent Directional Drilling
7715 West Industrial Ave. Midland, Tx 79706
Phone: 432-618-1135

Plan: Plan #1 (#2H/OH)
Created By: Matt Higgins Date: 13:38, October 31 2012

13 5/8" 2K ANNULAR



FILL LINE

See COA

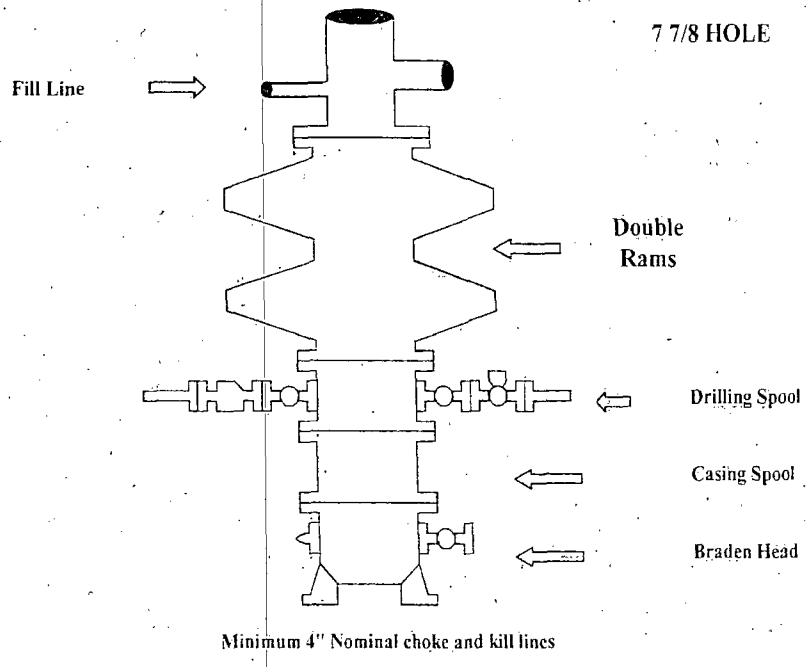
4-1/16",2K VALVES

13 5/8" 3K "A" SECTION

COG Operating LLC

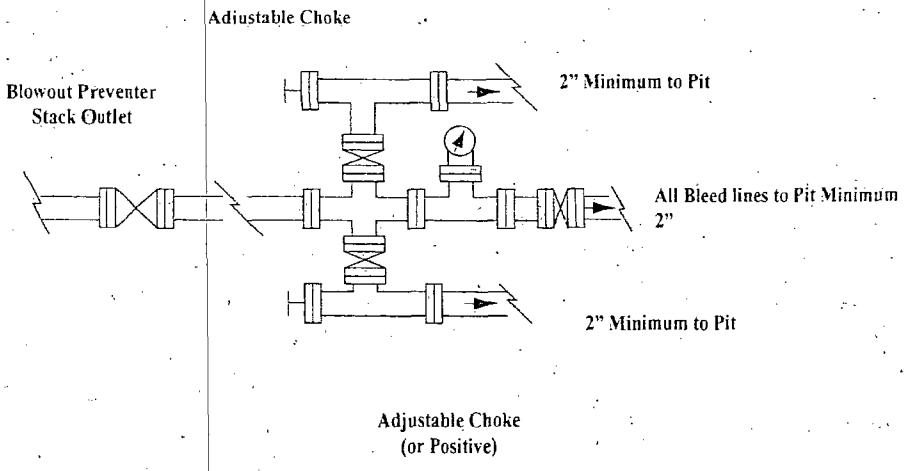
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required

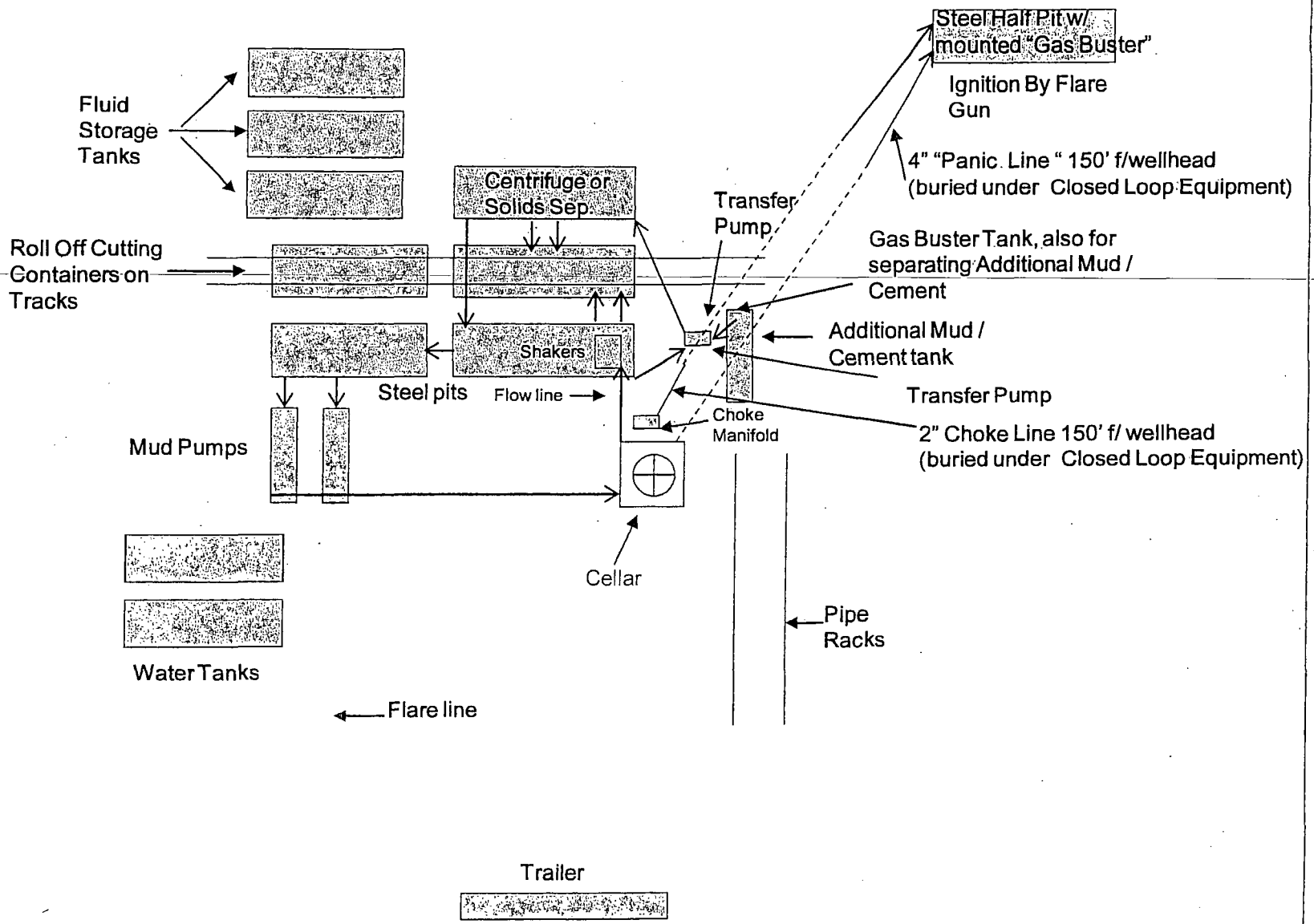


NOTES REGARDING THE BLOWOUT PREVENTERS
Master Drilling Plan
Eddy County, New Mexico

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



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. Closed Loop Blow Down Tank

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

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

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

   A. SCBA (Self contained breathing apparatus) 30-minute units located in the doghouse and at briefing areas, as indicated on well site diagram.

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

   A. 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.

   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

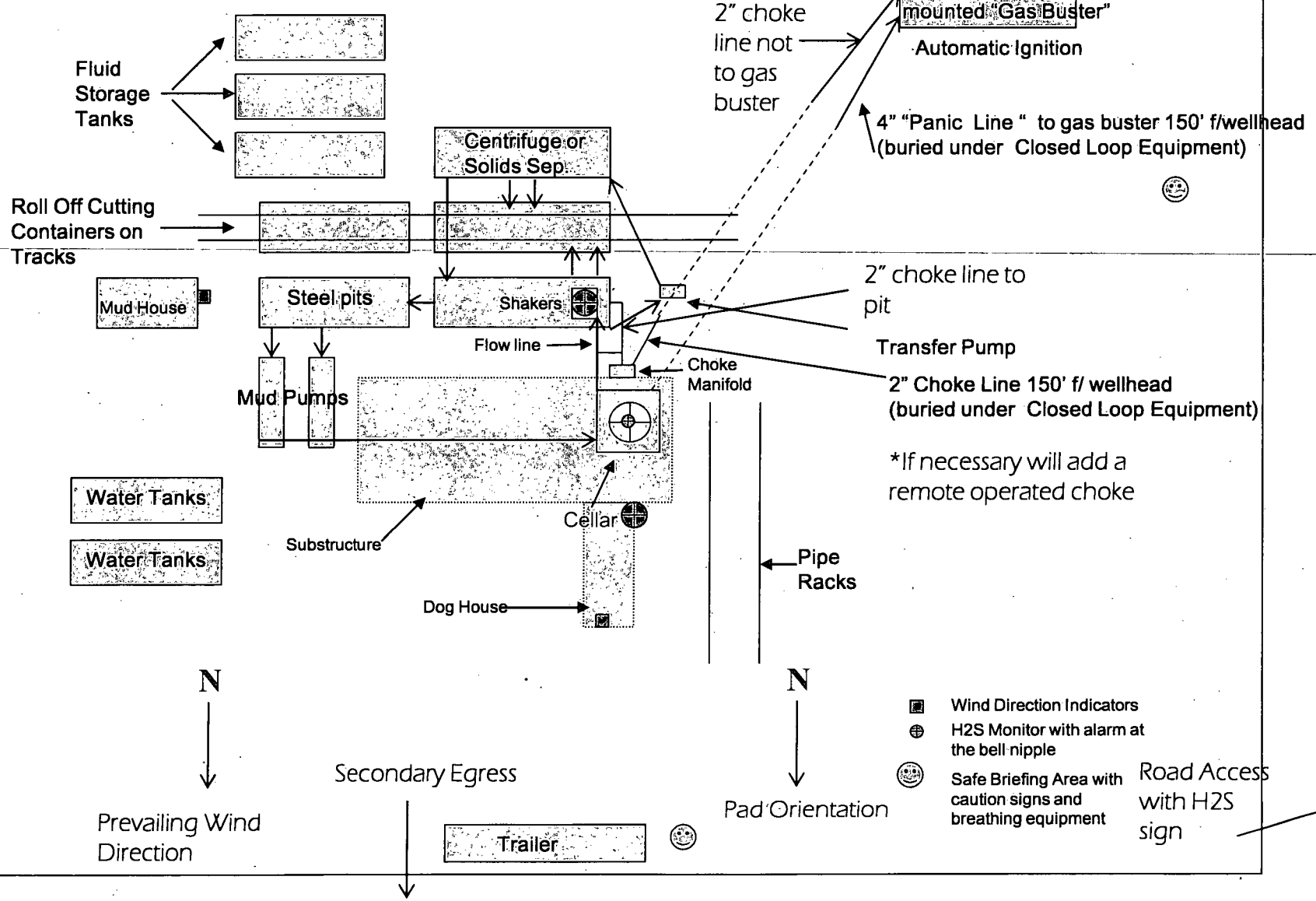
EDDY COUNTY EMERGENCY NUMBERS
ARTESIA FIRE DEPT. 575-746-5050
ARTESIA POLICE DEPT. 575-746-5000
EDDY CO. SHERIFF DEPT. 575-746-9888

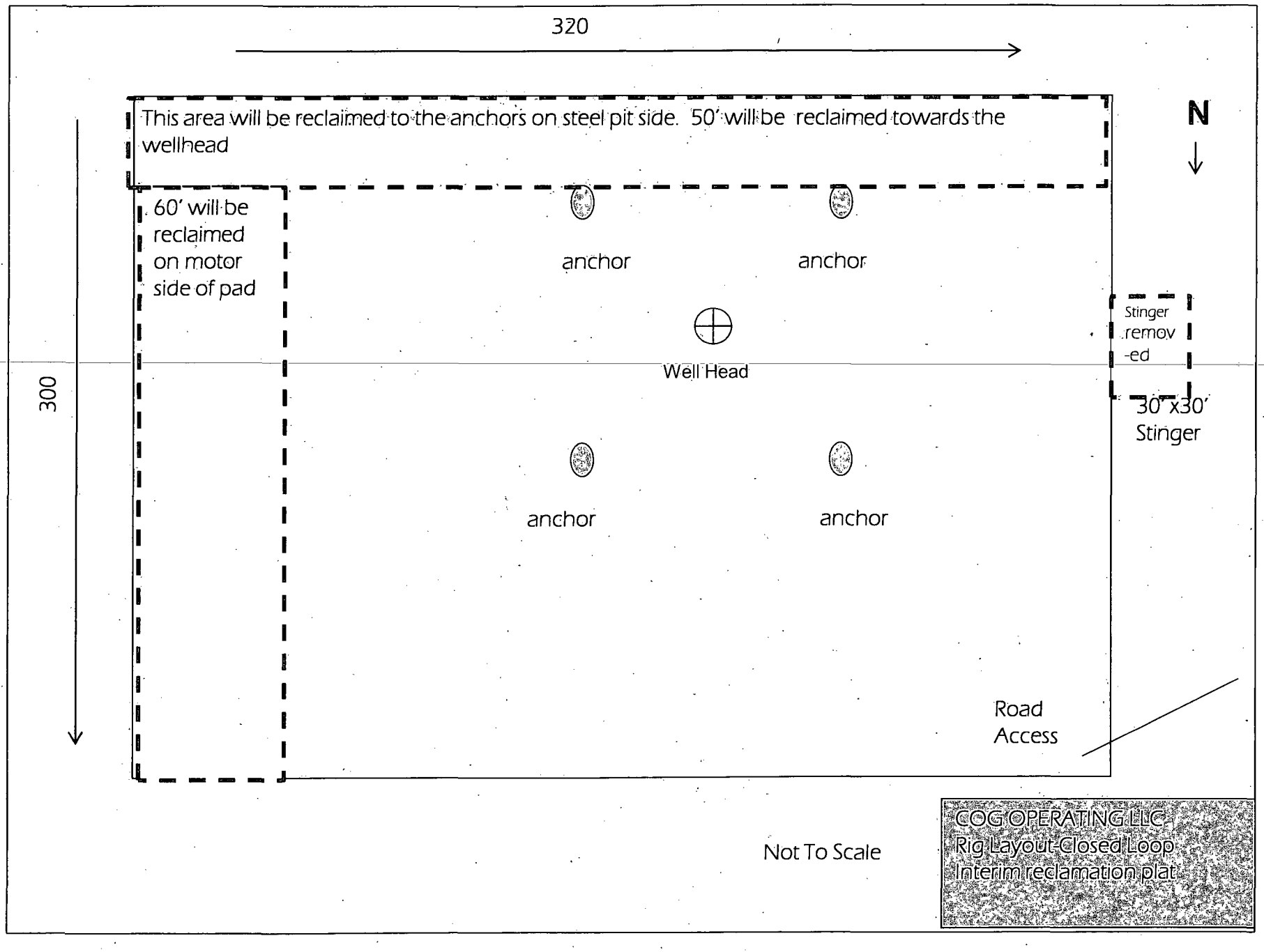
LEA COUNTY EMERGENCY NUMBERS
HOBBS FIRE DEPT. 575-397-9308
HOBBS POLICE DEPT. 575-397-9285
LEA CO. SHERIFF DEPT. 575-396-1196

COG Operating LLC

Drilling Location - H2S Safety Equipment Diagram

EXHIBIT 8- Twelve Pack Fed 2H




320
This area will be reclaimed to the anchors on steel pit side. 50' will be reclaimed towards the wellhead
N
60' will be reclaimed on motor side of pad
anchor
anchor
Stinger remov -ed
Well Head
300
30' x30' Stinger
anchor
anchor
Road Access
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.:	NM013814
WELL NAME & NO.:	2H-TWELVE PACK FEDERAL COM
SURFACE HOLE FOOTAGE:	1140'/N. & 305'/W.
BOTTOM HOLE FOOTAGE	980'/N. & 330'/E.
LOCATION:	Section 6, T. 17 S., R. 30 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.