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-100844
AM

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
Reindeer 21 Fed #6H <36817>

2 Name of Operator
COG Operating LLC <229137>

9 API Well No.
30-015- 40588

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

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

10 Field and Pool, or Exploratory
Crow Flats; Wolfcamp <97102>

4 Location of Well *(Report location clearly and in accordance with any State requirements.*)*
At surface SHL: 990' FNL & 1880' FEL, UL B
At proposed prod zone BHL: 990' FNL & 330' FWL, UL D

11 Sec., T. R. M. or Blk and Survey or Area
Sec 21, T16S, R28E

14 Distance in miles and direction from nearest town or post office*
14 miles Northeast of Artesia, 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
990'	920	120
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**
696'	TVD: 6560' MD: 9361'	NMB000740; NMB000215
21 Elevations (Show whether DF, KDB, RT, GL, etc.)	**22 Approximate date work will start***	**23 Estimated duration**
3590' 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	04/17/2012
Approved by *(Signature)* /s/ James A. Amos	**Name *(Printed/Typed)***	**Date** AUG - 3 2012
Title FIELD MANAGER	**Office** CARLSBAD FIELD OFFICE	

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached

APPROVAL FOR TWO YEARS

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction

(Instructions on page 2)

Roswell Controlled Water Basin

Approval Subject to General Requirements & Special Stipulations Attached

RECEIVED
AUG 09 2012
NMOCD ARTESIA

SEE ATTACHED FOR CONDITIONS OF APPROVAL

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 12th day of April, 2012.

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@concho.com

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240
Phone: (575) 393-6161 Fax: (575) 393-0720
DISTRICT II
811 S. First St, Artesia, NM 88210
Phone: (575) 748-1283 Fax (575) 748-9720
DISTRICT III
1000 Rio Brazos Road, Aztec, NM 87410
Phone: (505) 334-6178 Fax: (505) 334-6170
DISTRICT IV
1220 S St. Francis Dr, Santa Fe, NM 87505
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico
Energy, Minerals & Natural Resources Department
OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised August 1, 2011
Submit one copy to appropriate District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015- 40588	97102	Crow Flats; Wolfcamp

Property Code	Property Name	Well Number
36817	REINDEER 21 FEDERAL	6H

OGRID No.	Operator Name	Elevation
229137	COG OPERATING, LLC	3590'

Surface Location

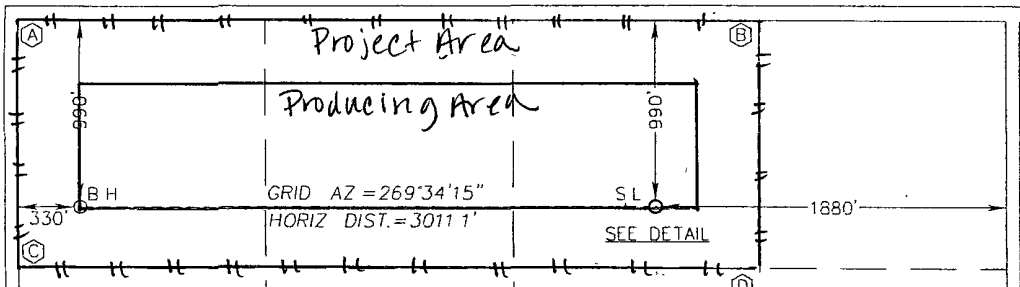
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	21	16-S	28-E		990	NORTH	1880	EAST	EDDY

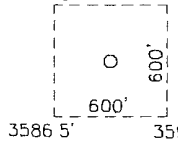
Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
D	21	16-S	28-E		990	NORTH	330	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
120			R-9361 8/3

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

(A) - Y=696687.4 N, X=544336.3 E
(B) - Y=696716.8 N, X=548250.7 E
(C) - Y=695331.7 N, X=544331.4 E
(D) - Y=695361.3 N, X=548246.7 E

GEODETIC COORDINATES
NAD 27 NME

SURFACE LOCATION
Y=695722.6 N
X=547672.9 E
LAT = 32.912523° N
LONG = 104.177989° W

BOTTOM HOLE LOCATION
Y=695700.1 N
X=544662.6 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 — Date: 4-17-12

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.

MARCH 24, 2012
Date of Survey

Signature & Seal of Professional Surveyor:

RONALD J. EIDSON NEW MEXICO 3239 REGISTERED PROFESSIONAL SURVEYOR

Ronald J. Eidson 03/11/2012

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

AF — WSC W.O.: 12.11.0534

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
Reindeer 21 Federal #6H
SL: 990' FNL & 1880' FEL, Unit B
BHL: 990' FNL & 330' FWL, Unit D
Sec 21, T16S, R28E
Eddy County, NM

1. Proration Unit Spacing: 120 Acres

2. Ground Elevation: 3590'

3. Proposed Depths: Horizontal TVD = 6556', MD = 9361'

4. Estimated tops of geological markers:

Quaternary	Surface
Tansil	200'
Yates	330'
Seven Rivers	540'
Queen	1040'
Grayburg	1460'
San Andres	1880'
Glorieta	3340'
Paddock	3400'
Blinebry	3670'
Tubb	4625'
Drinkard	4720'
Abo Shale	5401'
Base Lower Abo	6620'

5. Possible mineral bearing formations:

Water Sand	150'	Fresh Water	
Yates	370'	Oil / Gas	
Queen	1040'	Oil / Gas	
San Andres	1880'	Oil / Gas	
Glorieta	3340'	Oil / Gas	
Tubb	4625'	Oil / Gas	
Lower Abo	6620'	Oil / Gas	*The pool for this well includes the Abo formation*

6. Casing Program - Proposed

Hole size	Interval	OD of Casing	Weight	Cond.	Collar	Grade
17-1/2"	0' - +/-350'	13-3/8"	48#	New	STC	H40/J55 Hybrid
Collapse sf – 3.87, Burst sf – 8.7, Tension sf – 14.91						
8-3/4"	0' – 5900'MD	7"	26#	New	LTC	P110
Collapse sf - 2.19, Burst sf – 3.51, Tension sf – 4.44						
6-1/8"	5800' – 9361'MD	4-1/2"	11.6#	New	LTC	P110
Collapse sf – 2.31, Burst sf – 3.27, Tension sf – 3.63						

If wellbore integrity cannot be maintained, then the 8-3/4" hole will be reamed out to 12-1/4" and new 9-5/8" casing contingency will be run as follows:

12-1/4"	0' - +/- 1925'	9-5/8"	40#	New	LTC	J/K-55
Collapse sf – 3.02, Burst sf – 4.64, Tension sf – 7.22						

Respectfully request permission for 100' liner overlap to set pump as deep as possible.

7. Cement Program

13 3/8" Surface Casing set at +/- 350', Circ to Surf with +/- 400 sx Class "C" w/ 2% CaCl2 w/0.25 pps CF,wt.14.8 ppg, yield 1.35 cu. ft./sk. 138% excess calculated to surface.

7" Production Casing set at +/- 5900', Circ. to Surf with +/- 900 sx Class "C" w/ 4% gel, wt. 13.5 ppg, yield 1.69 cu.ft./sk, & 200 sx Class "C" w/ 0.35% R-3, wt. 14.8 ppg, yield 1.33 cu. ft./sk. 88% excess calculated to surface.

4 ½" Production Liner set at +/- 9183' MD, 6619' TVD, Uncemented, with packers for isolation, and requesting permission for only 100' liner overlap.

9 5/8" Contingency Intrmd. Csg. Set at +/- 1925'. Lead: 300sx 35:65:6 C:Poz:gel w/ 5pps LCM-1 0.2% sodium metasilicate, 0.3% FL5ZA, 5% NaCl, yield 2.05 cu.ft./sk., wt. 12.5 ppg, Tail: 200sx Class "C" w/ 2% CaCl2, yield 1.35 cu.ft./sk., wt. 14.8 ppg. 102% excess, calculated to surface.

Note: 7" cement program will not change if 9 5/8" contingency casing string is installed.

8. Pressure Control Equipment:

After setting 13 3/8" casing and installing 13 5/8" x 3000 psi casing head, NU 13 5/8" x 3000 psi annular BOP. Test annular BOP, casing and manifold with clear fluid to 1000 psi w/ independent tester.

After setting 7" casing NU 13 5/8" x 3000 psi double ram BOP and 3000 psi annular BOP. Test double ram BOP and manifold to 3000 psig with clear fluid and annular to 1500 psi using an independent tester, this equipment will be used continuously until TD is reached. Blind rams will be operationally checked on each trip out of hole. Pipe rams will be operationally checked each 24 hour period. These checks will be noted on daily tour sheets. Other accessories to the BOP equipment include a Kelly cock and floor safety valves, choke lines and choke manifold with 3000 psi WP rating.

Pressure Control Equipment for contingency 9 5/8' casing as follows::

The 9 5/8" casing will be landed in the 13 3/8" x 13 5/8" casing head. Then a 13 5/8" 3000 psi x 13 5/8" 3000 psi casing spool will be installed and a 13 5/8" x 3000 psi double ram BOP with 3000 psi annular preventer will be nippled up. Test double ram BOP and and 3000 psi annular to 1500 psig with clear fluids using test plug and independent tester. This BOP equipment will be used continuously until TD is reached. Blind rams will be operationally checked on each trip out of hole. Pipe rams will be operationally checked each 24 hours. These checks will be noted on daily tour sheets. Other accessories to the BOP equipment Include a Kelly cock, floor safety valve, choke lines and choke manifold with 3000 psi WP system.

7" casing will then be landed in the above 13 5/8" x 3000 psi spool. A 13 5/8" x 3000 psi BOP stack with 3000 psi annular as above will be nippled up. This BOP stack will be again tested to 3000 psig (annular 1500 psig) by independent tester. Blind & pipe rams will be operationally checked as described above and results reported in tour sheets. Other accessories to BOP equipment will be as noted above.

9. Proposed Mud Circulating System

Interval	Mud Wt.	Visc.	FL	Type Mud System
0' - 350'	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.

350'- 5900'	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.
5900' – 9361'	9.5	36	10	Drill pilot hole, curve and horizontal section with XCD polymer / cut brine / starch.

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. 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. Production Hole Drilling Summary:

    Set 7" production casing at 5900'. Drill 6-1/8" hole. Kick off 6-1/8" hole at +/- 6079' MD, building curve over +/- 475' to horizontal at +/-6556' TVD. Drill horizontal section in a westerly direction for +/-3,010' lateral to TD @ +/-9361' MD, 6560' TVD. Run 4-1/2" production liner in open hole lateral and set isolation packers and liner top packer @ +/-5800' MD.

12. 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 T.D. in vertical pilot hole inside 7" csng shoe.

    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 4 ½" production casing has been run to 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 at TD is 120 degrees and estimated maximum bottom hole pressure is 3160 psig. Low levels of Hydrogen sulfide have been monitored in producing wells in the area, so H2S may be present while drilling of the well. 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 July 30, 2012 with drilling and completion operations lasting approximately 45 days.

COG Operating, LLC

Eddy County, NM
Reindeer 21 Federal #6H
Reindeer 21 Federal #6H

Lateral #1

Plan: Plan #1

Standard Planning Report

17 April, 2012

SHL :: 990' FNL & 1880' FEL
BHL :: 990' FNL & 330' FWL @ 6560' TVD

BLACK VIPER ENERGY SERVICES, LTD.

Database:	EDM 5000 1 Single User Db	**Local Co-ordinate Reference:**	Site Reindeer 21 Federal #6H
Company:	COG Operating, LLC	**TVD Reference:**	WELL @ 3590 00ft (Original Well Elev)
Project:	Eddy County, NM	**MD Reference:**	WELL @ 3590 00ft (Original Well Elev)
Site:	Reindeer 21 Federal #6H	**North Reference:**	Grid
Well:	Reindeer 21 Federal #6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral #1		
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 Reindeer 21 Federal #6H

Site Position:		**Northing:**	695,722 60 ft	**Latitude:**	32° 54' 45 068 N
From:	Map	**Easting:**	547,672 90 ft	**Longitude:**	104° 10' 40 774 W
Position Uncertainty:	0 00 ft	**Slot Radius:**	13 200 in	**Grid Convergence:**	0 08 °

Well Reindeer 21 Federal #6H

Well Position	**+N/-S**	0 00 ft	**Northing:**	695,722 60 ft	**Latitude:**	32° 54' 45 068 N
	+E/-W	0 00 ft	**Easting:**	547,672 90 ft	**Longitude:**	104° 10' 40 774 W
Position Uncertainty		0 00 ft	**Wellhead Elevation:**		**Ground Level:**	3,590 00 ft

Wellbore Lateral #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	4/16/2012	7 82	60 70	48,878

Design Plan #1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	6,078 54

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0 00	0 00	0.00	269 57

Plan Sections

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	TFO (°)	Target
6,078 54	0 00	0 00	6,078 54	0 00	0 00	0 00	0 00	0 00	0 00	
6,827 79	89 91	269 57	6,556 00	-3 56	-476 70	12 00	12 00	0 00	269 57	
9,361 46	89 91	269 57	6,560 00	-22 50	-3,010 30	0 00	0 00	0 00	0 00	PBHL #1[R21F6H]

Database:	EDM 5000 1 Single User Db	**Local Co-ordinate Reference:**	Site Reindeer 21 Federal #6H
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Well:	Reindeer 21 Federal #6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,078 54	0.00	0 00	6,078 54	0 00	0 00	0 00	0 00	0 00	0 00
KOP Build 12.00°/100' :: TFO 269.57°									
6,090 00	1 38	269 57	6,090 00	0 00	-0 14	0 14	12 00	12 00	0 00
6,120 00	4.98	269 57	6,119.95	-0 01	-1 80	1 80	12 00	12 00	0 00
6,150 00	8 58	269 57	6,149 73	-0.04	-5 34	5 34	12 00	12 00	0 00
6,180 00	12 18	269 57	6,179 24	-0 08	-10 74	10.74	12 00	12 00	0 00
6,210 00	15 78	269 57	6,208 35	-0 13	-17 98	17 98	12 00	12 00	0 00
6,240 00	19.38	269 57	6,236 94	-0 20	-27 04	27 04	12 00	12 00	0 00
6,270 00	22 98	269 57	6,264 91	-0 28	-37 87	37 88	12 00	12 00	0 00
6,300 00	26 58	269 57	6,292 14	-0 38	-50.44	50 45	12 00	12 00	0 00
6,330 00	30 18	269 57	6,318 54	-0.48	-64 70	64 70	12 00	12 00	0 00
6,360 00	33 78	269 57	6,343 98	-0 60	-80 58	80 58	12 00	12 00	0 00
6,390 00	37 38	269 57	6,368 38	-0 73	-98 03	98 03	12 00	12 00	0 00
6,420 00	40 98	269 57	6,391 63	-0 87	-116 98	116.98	12.00	12 00	0 00
6,450 00	44 58	269 57	6,413 65	-1 03	-137 35	137 35	12 00	12 00	0 00
6,480 00	48 18	269 57	6,434 34	-1.19	-159 06	159.06	12 00	12 00	0 00
6,510 00	51 78	269 57	6,453 63	-1 36	-182 03	182 03	12 00	12 00	0 00
6,540 00	55 38	269 57	6,471 44	-1 54	-206 16	206 17	12 00	12.00	0 00
6,570 00	58 98	269 57	6,487 70	-1 73	-231 37	231 38	12 00	12 00	0 00
6,600 00	62 58	269 57	6,502 35	-1 92	-257 54	257 55	12 00	12 00	0 00
6,630 00	66 18	269 57	6,515 32	-2 13	-284 59	284 60	12 00	12 00	0 00
6,660 00	69 78	269 57	6,526 57	-2 33	-312 39	312 40	12 00	12.00	0 00
6,690 00	73.38	269 57	6,536 05	-2 55	-340 85	340 86	12 00	12 00	0 00
6,720 00	76 98	269 57	6,543 72	-2 76	-369 85	369 86	12 00	12 00	0 00
6,750.00	80 58	269 57	6,549 56	-2 98	-399 27	399 28	12 00	12 00	0 00
6,780.00	84 18	269.57	6,553 54	-3.21	-429 00	429 01	12 00	12 00	0 00
6,810 00	87 78	269 57	6,555 65	-3.43	-458 92	458 93	12 00	12 00	0 00
6,827 79	89 91	269.57	6,556 00	-3 56	-476 70	476 71	12 00	12 00	0 00
EOC Hold 89.91° INC :: 269.57° AZI - 6957.19.04 N :: 547196.20 E									
6,840 00	89.91	269 57	6,556.02	-3 65	-488 91	488 92	0 00	0 00	0 00
6,870 00	89 91	269 57	6,556.07	-3 88	-518 91	518 92	0 00	0.00	0 00
6,900 00	89 91	269 57	6,556 12	-4 10	-548 91	548 92	0 00	0 00	0 00
6,930 00	89 91	269 57	6,556 17	-4 33	-578.91	578 92	0 00	0.00	0 00
6,960 00	89 91	269 57	6,556 21	-4 55	-608 91	608 92	0 00	0 00	0 00
6,990 00	89 91	269 57	6,556 26	-4 78	-638 91	638 92	0 00	0 00	0 00
7,020 00	89 91	269 57	6,556 31	-5.00	-668 91	668 92	0 00	0 00	0 00
7,050 00	89.91	269 57	6,556 35	-5 22	-698 91	698 92	0 00	0 00	0 00
7,080 00	89 91	269.57	6,556 40	-5 45	-728 90	728 92	0 00	0 00	0 00
7,110 00	89 91	269.57	6,556 45	-5 67	-758 90	758 92	0 00	0 00	0 00
7,140 00	89 91	269 57	6,556 50	-5 90	-788 90	788.92	0 00	0 00	0 00
7,170 00	89 91	269 57	6,556.54	-6 12	-818 90	818 92	0 00	0 00	0 00
7,200 00	89 91	269 57	6,556 59	-6 34	-848 90	848 92	0 00	0 00	0 00
7,230 00	89 91	269 57	6,556 64	-6 57	-878 90	878 92	0 00	0 00	0 00
7,260 00	89 91	269 57	6,556 69	-6 79	-908 90	908 92	0.00	0 00	0 00
7,290.00	89 91	269 57	6,556 73	-7 02	-938 90	938 92	0 00	0 00	0 00
7,320 00	89 91	269 57	6,556 78	-7 24	-968 90	968 92	0 00	0 00	0 00
7,350 00	89 91	269 57	6,556 83	-7 47	-998 90	998 92	0 00	0 00	0 00
7,380 00	89 91	269 57	6,556 88	-7 69	-1,028 90	1,028 92	0.00	0.00	0 00
7,410 00	89 91	269 57	6,556 92	-7 91	-1,058 89	1,058 92	0 00	0 00	0 00
7,440 00	89 91	269 57	6,556 97	-8.14	-1,088.89	1,088 92	0 00	0 00	0 00
7,470 00	89 91	269 57	6,557.02	-8 36	-1,118 89	1,118 92	0 00	0 00	0 00
7,500 00	89 91	269 57	6,557.06	-8 59	-1,148 89	1,148.92	0 00	0 00	0 00
7,530 00	89 91	269 57	6,557 11	-8 81	-1,178 89	1,178 92	0 00	0 00	0 00
7,560 00	89 91	269 57	6,557.16	-9.04	-1,208 89	1,208 92	0 00	0 00	0 00

Database:	EDM 5000 1 Single User Db	**Local Co-ordinate Reference:**	Site Reindeer 21 Federal #6H
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Project:	Eddy County, NM	**MD Reference:**	WELL @ 3590 00ft (Original Well Elev)
Site:	Reindeer 21 Federal #6H	**North Reference:**	Grid
Well:	Reindeer 21 Federal #6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
7,590.00	89.91	269 57	6,557 21	-9 26	-1,238 89	1,238 92	0 00	0.00	0.00
7,620 00	89 91	269 57	6,557 25	-9 48	-1,268 89	1,268.92	0 00	0 00	0 00
7,650 00	89 91	269 57	6,557 30	-9 71	-1,298 89	1,298 92	0 00	0 00	0 00
7,680 00	89 91	269 57	6,557 35	-9 93	-1,328 89	1,328 92	0 00	0 00	0 00
7,710 00	89 91	269 57	6,557 40	-10 16	-1,358 89	1,358 92	0 00	0 00	0 00
7,740 00	89 91	269 57	6,557 44	-10 38	-1,388 88	1,388 92	0 00	0 00	0.00
7,770 00	89 91	269 57	6,557 49	-10 61	-1,418 88	1,418 92	0 00	0 00	0 00
7,800.00	89 91	269 57	6,557 54	-10 83	-1,448 88	1,448.92	0 00	0 00	0 00
7,830 00	89 91	269 57	6,557 58	-11 05	-1,478 88	1,478 92	0 00	0 00	0 00
7,860 00	89 91	269 57	6,557 63	-11 28	-1,508 88	1,508 92	0 00	0 00	0 00
7,890 00	89 91	269 57	6,557 68	-11.50	-1,538 88	1,538 92	0 00	0 00	0 00
7,920.00	89 91	269 57	6,557 73	-11.73	-1,568.88	1,568 92	0 00	0 00	0 00
7,950 00	89 91	269 57	6,557 77	-11 95	-1,598 88	1,598 92	0 00	0 00	0 00
7,980 00	89 91	269 57	6,557 82	-12 17	-1,628 88	1,628 92	0 00	0 00	0 00
8,010 00	89 91	269 57	6,557 87	-12 40	-1,658 88	1,658 92	0 00	0 00	0 00
8,040 00	89 91	269 57	6,557 92	-12 62	-1,688 88	1,688 92	0 00	0 00	0 00
8,070 00	89 91	269.57	6,557 96	-12 85	-1,718 88	1,718 92	0 00	0 00	0 00
8,100.00	89 91	269 57	6,558 01	-13 07	-1,748.87	1,748 92	0 00	0 00	0 00
8,130 00	89 91	269 57	6,558 06	-13 30	-1,778 87	1,778 92	0 00	0 00	0 00
8,160 00	89 91	269 57	6,558 11	-13 52	-1,808 87	1,808 92	0 00	0 00	0 00
8,190 00	89 91	269 57	6,558 15	-13.74	-1,838 87	1,838 92	0 00	0 00	0 00
8,220 00	89 91	269 57	6,558 20	-13 97	-1,868 87	1,868 92	0 00	0 00	0.00
8,250 00	89 91	269 57	6,558 25	-14 19	-1,898 87	1,898 92	0 00	0 00	0 00
8,280 00	89 91	269 57	6,558 29	-14 42	-1,928 87	1,928 92	0 00	0 00	0 00
8,310 00	89 91	269 57	6,558 34	-14.64	-1,958 87	1,958 92	0 00	0 00	0 00
8,340.00	89 91	269 57	6,558 39	-14 87	-1,988 87	1,988 92	0 00	0 00	0 00
8,370 00	89 91	269 57	6,558.44	-15.09	-2,018 87	2,018 92	0 00	0.00	0.00
8,400 00	89 91	269 57	6,558 48	-15 31	-2,048 87	2,048 92	0 00	0 00	0 00
8,430 00	89 91	269 57	6,558 53	-15.54	-2,078 86	2,078 92	0 00	0 00	0 00
8,460 00	89 91	269 57	6,558 58	-15 76	-2,108.86	2,108 92	0 00	0 00	0 00
8,490 00	89 91	269 57	6,558 63	-15 99	-2,138 86	2,138 92	0 00	0 00	0 00
8,520 00	89 91	269 57	6,558 67	-16.21	-2,168 86	2,168 92	0 00	0 00	0.00
8,550 00	89 91	269 57	6,558 72	-16 44	-2,198 86	2,198 92	0 00	0 00	0 00
8,580 00	89 91	269 57	6,558 77	-16 66	-2,228 86	2,228 92	0 00	0 00	0.00
8,610 00	89 91	269 57	6,558 82	-16 88	-2,258 86	2,258 92	0.00	0 00	0.00
8,640 00	89 91	269 57	6,558 86	-17 11	-2,288.86	2,288 92	0 00	0 00	0 00
8,670 00	89 91	269.57	6,558 91	-17 33	-2,318 86	2,318 92	0 00	0 00	0 00
8,700 00	89 91	269 57	6,558.96	-17 56	-2,348 86	2,348 92	0 00	0.00	0.00
8,730 00	89 91	269 57	6,559 00	-17 78	-2,378 86	2,378 92	0 00	0 00	0 00
8,760.00	89 91	269 57	6,559 05	-18 00	-2,408.86	2,408 92	0 00	0 00	0 00
8,790 00	89 91	269 57	6,559 10	-18 23	-2,438 85	2,438 92	0 00	0 00	0 00
8,820 00	89 91	269 57	6,559 15	-18 45	-2,468 85	2,468 92	0 00	0 00	0 00
8,850 00	89 91	269 57	6,559 19	-18 68	-2,498 85	2,498 92	0 00	0 00	0 00
8,880 00	89 91	269 57	6,559 24	-18 90	-2,528 85	2,528 92	0.00	0 00	0.00
8,910 00	89 91	269 57	6,559 29	-19 13	-2,558 85	2,558 92	0 00	0 00	0 00
8,940.00	89 91	269 57	6,559 34	-19 35	-2,588 85	2,588 92	0 00	0 00	0 00
8,970 00	89 91	269 57	6,559 38	-19 57	-2,618 85	2,618 92	0 00	0 00	0 00
9,000 00	89 91	269 57	6,559 43	-19 80	-2,648.85	2,648 92	0.00	0 00	0 00
9,030 00	89 91	269 57	6,559 48	-20 02	-2,678 85	2,678 92	0 00	0 00	0.00
9,060.00	89 91	269 57	6,559.52	-20 25	-2,708 85	2,708 92	0 00	0 00	0 00
9,090 00	89 91	269 57	6,559 57	-20 47	-2,738 85	2,738 92	0 00	0 00	0 00
9,120 00	89 91	269 57	6,559 62	-20 70	-2,768.84	2,768 92	0 00	0 00	0 00
9,150.00	89 91	269 57	6,559 67	-20 92	-2,798.84	2,798 92	0 00	0 00	0 00
9,180 00	89 91	269 57	6,559 71	-21 14	-2,828 84	2,828 92	0 00	0 00	0 00

Database:	EDM 5000 1 Single User Db	**Local Co-ordinate Reference:**	Site Reindeer 21 Federal #6H
Company:	COG Operating, LLC	**TVD Reference:**	WELL @ 3590 00ft (Original Well Elev)
Project:	Eddy County, NM	**MD Reference:**	WELL @ 3590 00ft (Original Well Elev)
Site:	Reindeer 21 Federal #6H	**North Reference:**	Grid
Well:	Reindeer 21 Federal #6H	**Survey Calculation Method:**	Minimum Curvature
Wellbore:	Lateral #1		
Design:	Plan #1		

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
9,210 00	89 91	269 57	6,559 76	-21 37	-2,858 84	2,858 92	0 00	0 00	0 00
9,240.00	89 91	269 57	6,559 81	-21 59	-2,888 84	2,888.92	0 00	0 00	0 00
9,270 00	89 91	269 57	6,559 86	-21 82	-2,918 84	2,918 92	0 00	0 00	0 00
9,300 00	89 91	269 57	6,559 90	-22 04	-2,948 84	2,948 92	0 00	0 00	0 00
9,330 00	89 91	269 57	6,559 95	-22 26	-2,978 84	2,978.92	0.00	0 00	0 00
9,360 00	89 91	269 57	6,560 00	-22 49	-3,008 84	3,008 92	0 00	0.00	0 00
9,361 46	89 91	269.57	6,560 00	-22.50	-3,010 30	3,010 38	0 00	0.00	0 00
695700.10 N :: 544662.60 E - PBHL #1[R21F6H]									

Design Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL #1[R21F6H] - plan hits target center - Point	0 00	0 00	6,560 00	-22 50	-3,010 30	695,700 10	544,662 60	32° 54' 44 888 N	104° 11' 16 087 W

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
6,078 54	6,078 54	0 00	0 00	KOP Build 12.00°/100' . TFO 269 57°
6,827 79	6,556 00	-3 56	-476 70	EOC Hold 89 91° INC . 269 57° AZI
6,827 79	6,556 00	-3.56	-476 70	695719 04 N 547196 20 E
9,361 46	6,560 00	-22 50	-3,010 30	695700 10 N 544662 60 E

Reindeer 21 Federal #6H
Eddy County, NM
Lateral #1
-990.00 FNL
-1880.00 FEL

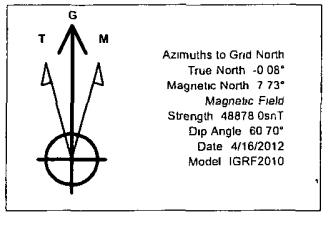
Well Name	Reindeer 21 Federal #6H
System	US State Plane 1927 (Exact solution)
Zone	New Mexico East 3001
System Datum	Mean Sea Level
Northing	695722.60
Easting	547672.90
Ground Level	3590.00
Depth Reference	WELL @ 3590.00ft (Original Well Elev)

SECTION DETAILS

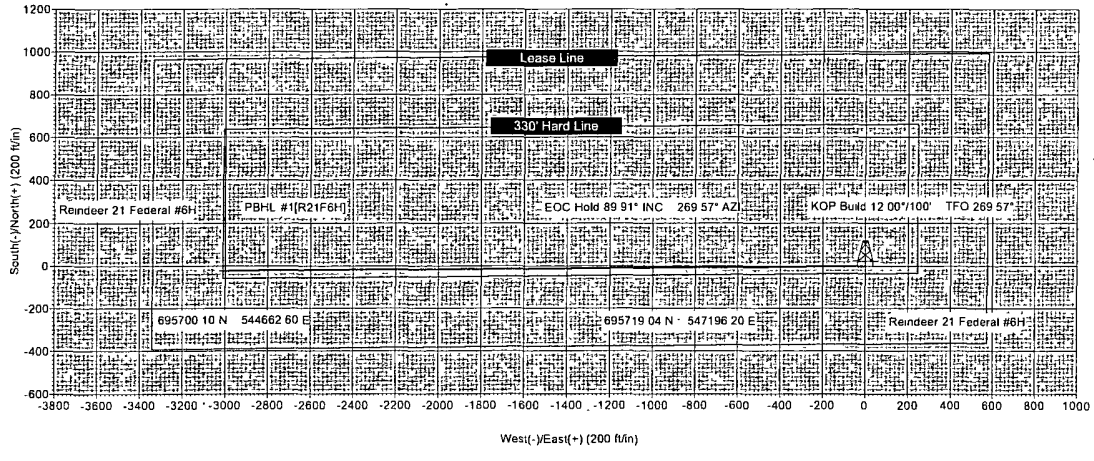
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	VSect	Target
6078.54	0.00	0.00	6078.54	0.00	0.00	0.00	0.00	
6827.79	89.91	269.57	6556.00	-3.56	-476.70	12.00	476.71	
9361.46	89.91	269.57	6560.00	-22.50	-3010.30	0.00	3010.38	PBHL #1[R21F6H]

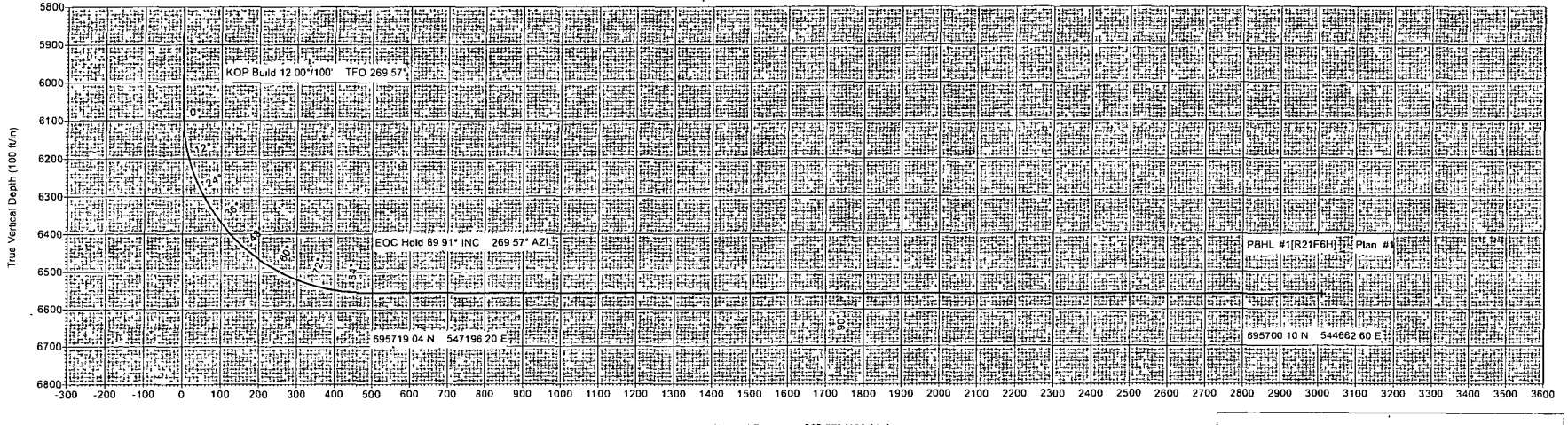
ANNOTATIONS

TVD	MD	Annotation
6078.54	6078.54	KOP Build 12.00°/100' TFO 269.57°
6556.00	6827.79	EOC Hold 89.91° INC 269.57° AZI
6556.00	6827.79	695719.04 N 547196.20 E
6560.00	9361.46	695700.10 N : 544662.60 E



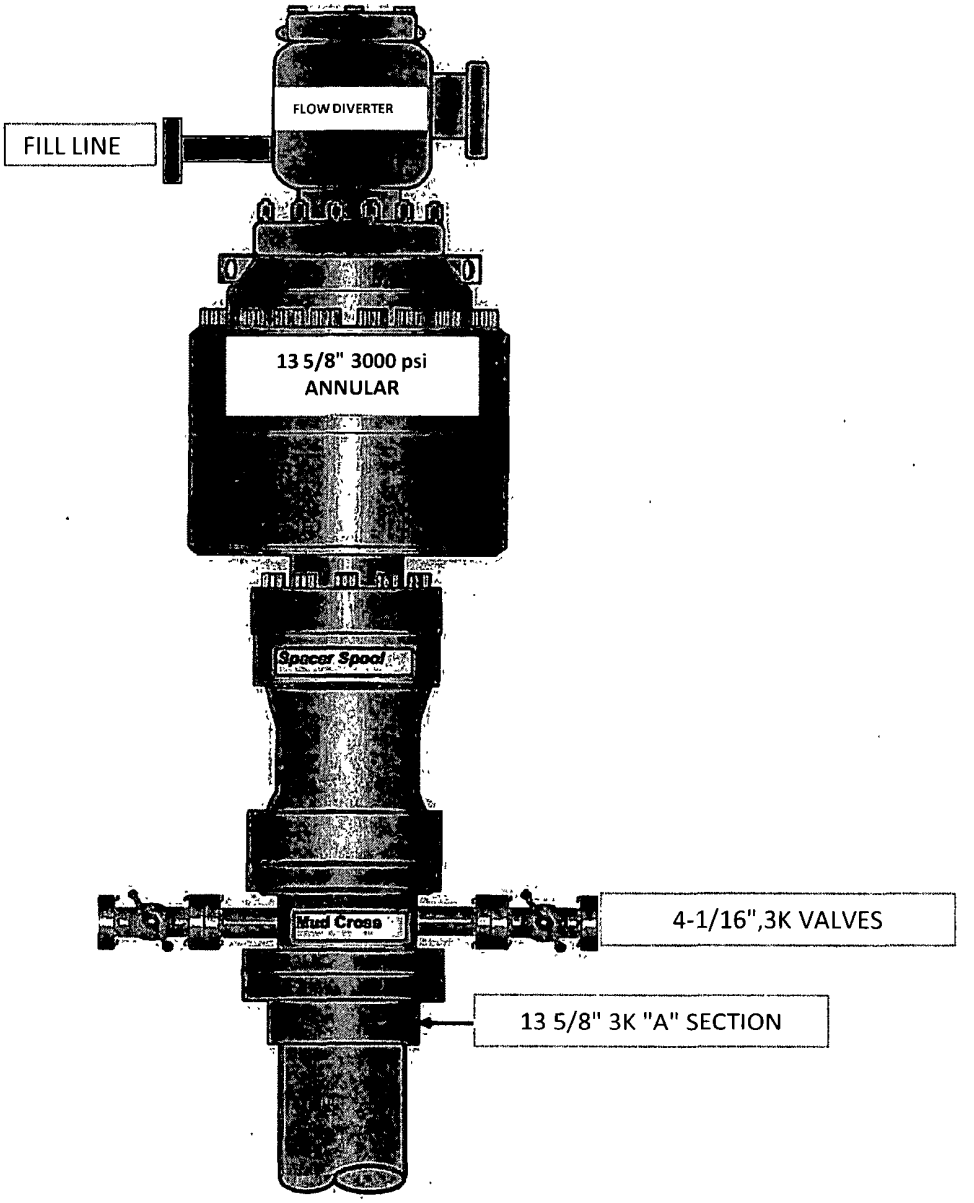
Azimuths to Grid North
True North -0.08°
Magnetic North 7.73°
Magnetic Field
Strength 48878.0snT
Dip Angle 60.70°
Date 4/16/2012
Model IGRF2010



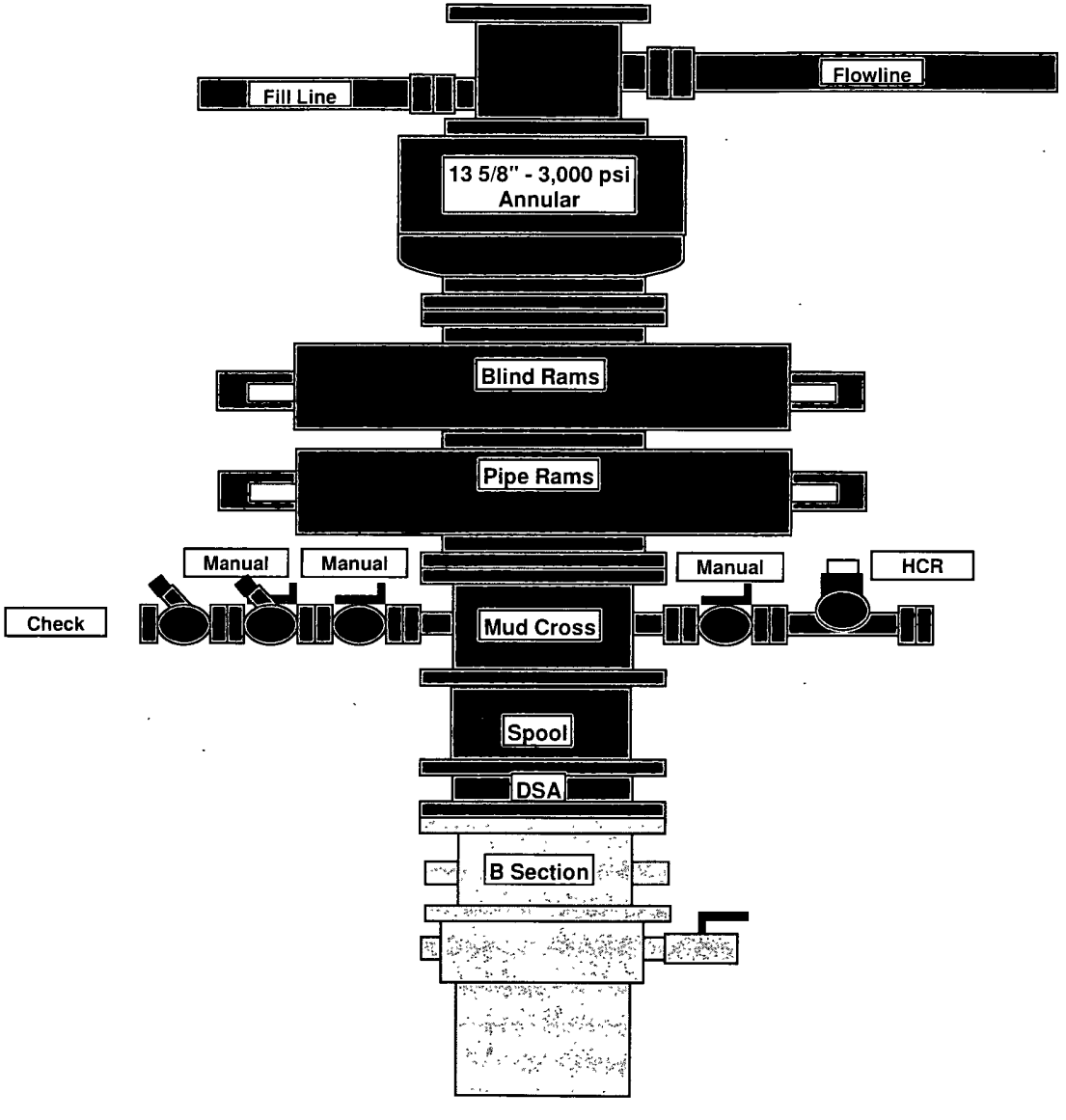


Plan: Plan #1 (Reindeer 21 Federal #6H/Lateral #1)
Created By: Michael Herrera Date: April 17 2012

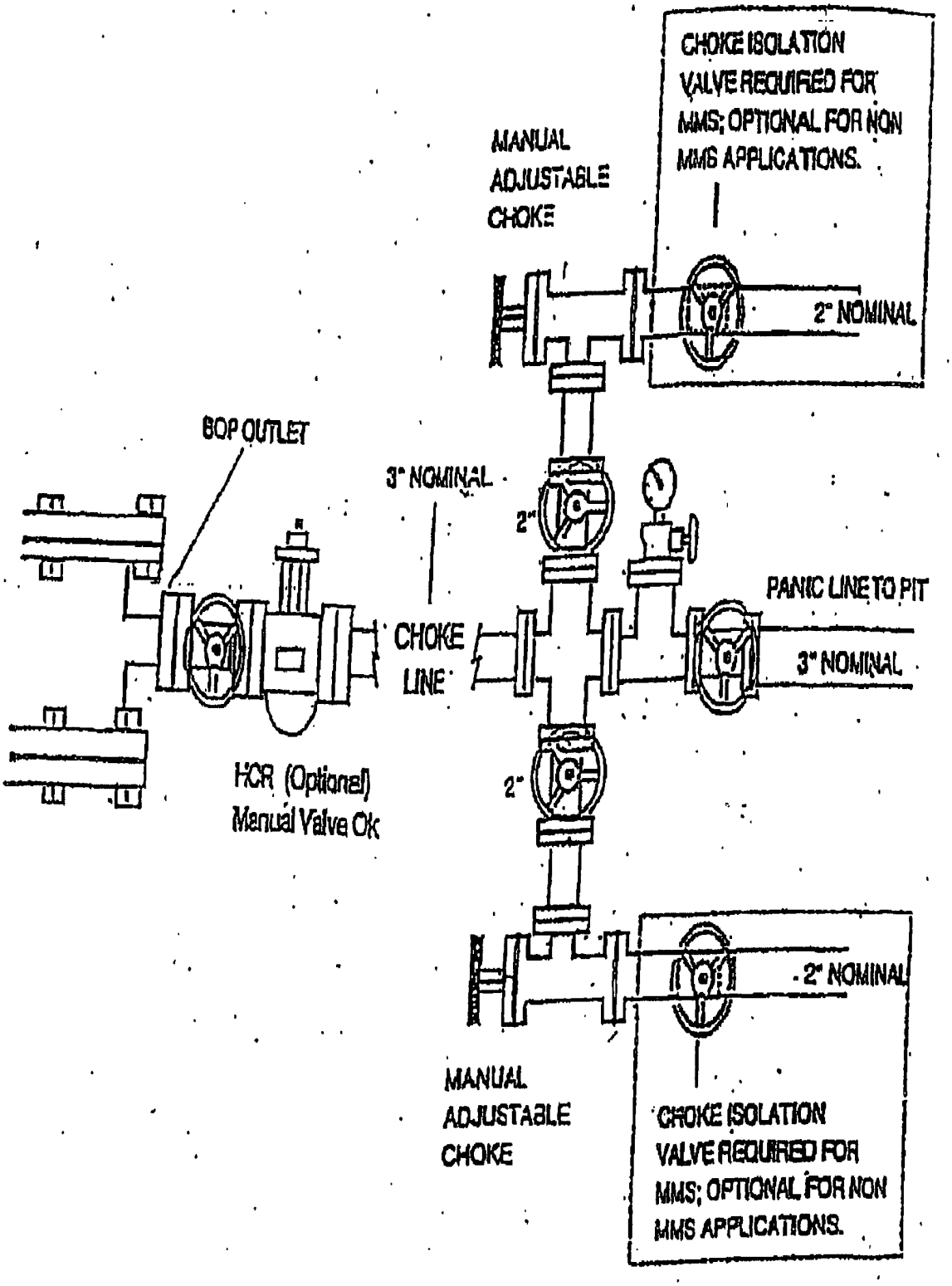
13 5/8" 3K ANNULAR BOP



13 5/8" 3M BOP
FOR 8 3/4" HOLE SECTION



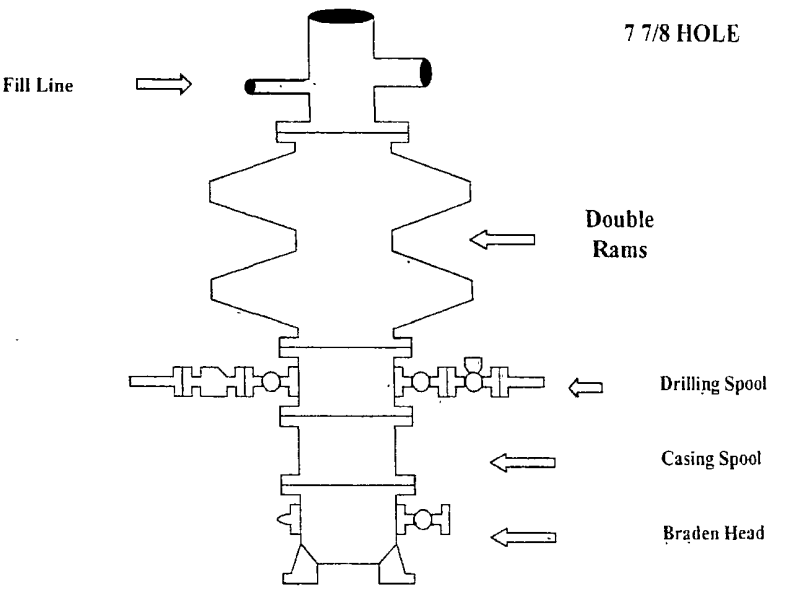
3M SERVICE


CHOKE ISOLATION VALVE REQUIRED FOR MMS; OPTIONAL FOR NON MMS APPLICATIONS.
MANUAL ADJUSTABLE CHOKE
2" NOMINAL
BOP OUTLET
3" NOMINAL
2"
PANIC LINE TO PIT
CHOKE LINE
3" NOMINAL
HCR (Optional) Manual Valve Ok
2"
2" NOMINAL
MANUAL ADJUSTABLE CHOKE
CHOKE ISOLATION VALVE REQUIRED FOR MMS; OPTIONAL FOR NON MMS APPLICATIONS.

COG Operating LLC

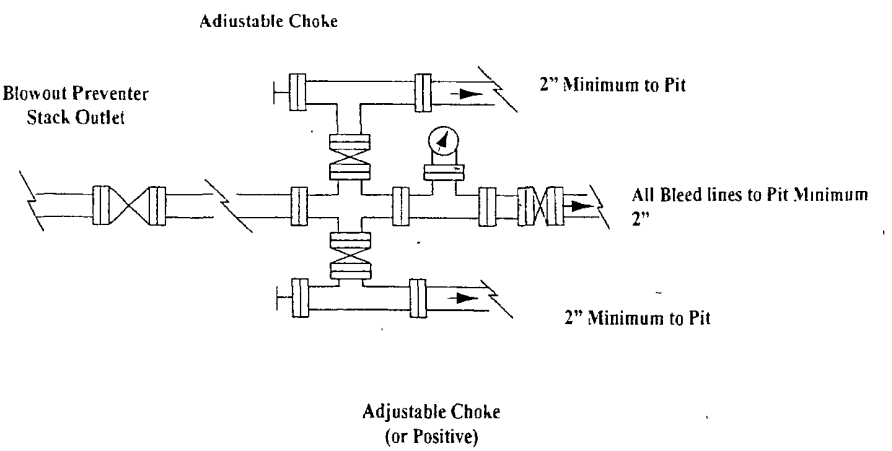
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required

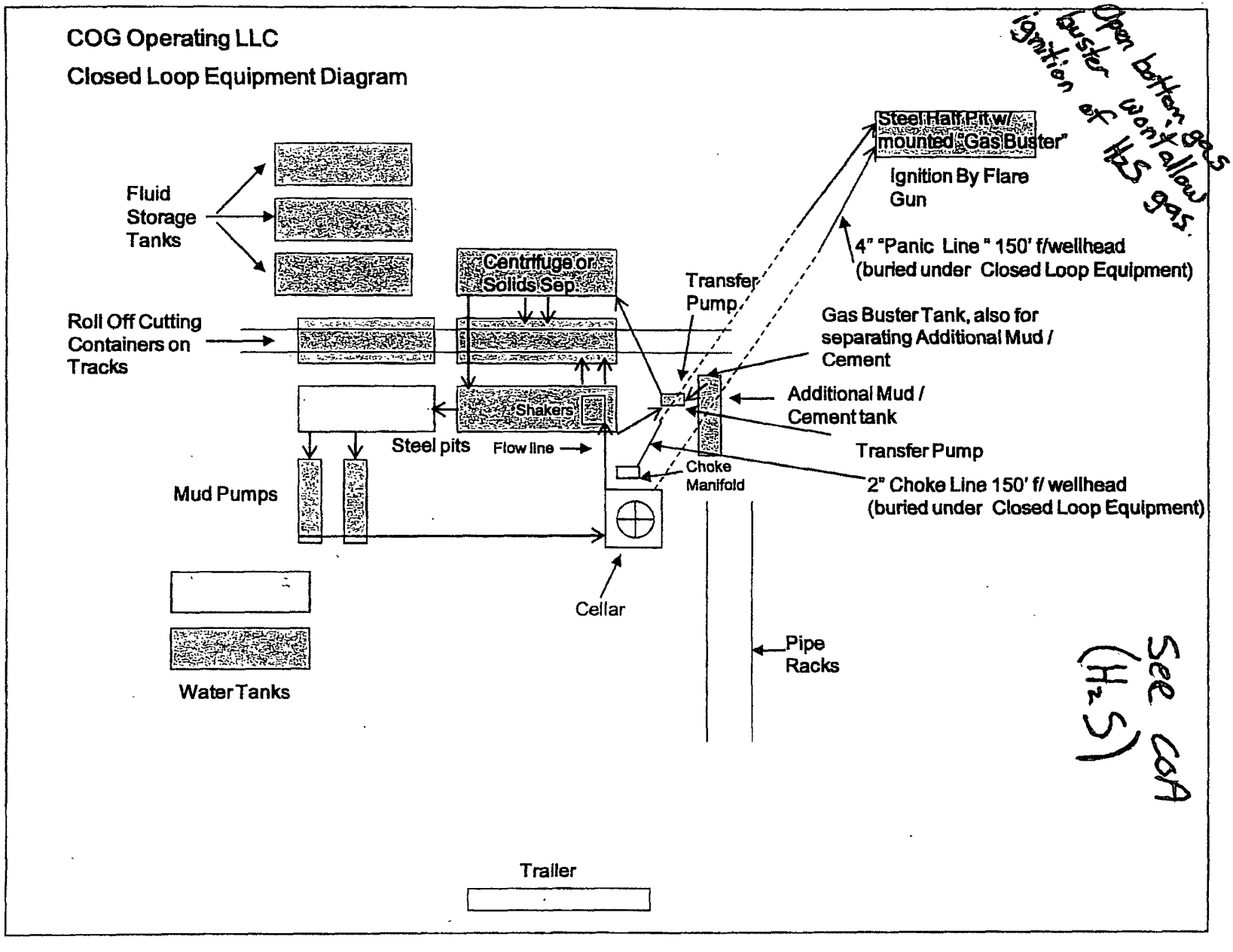


NOTES REGARDING THE BLOWOUT PREVENTERS
Master Drilling Plan
Eddy County, New Mexico

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

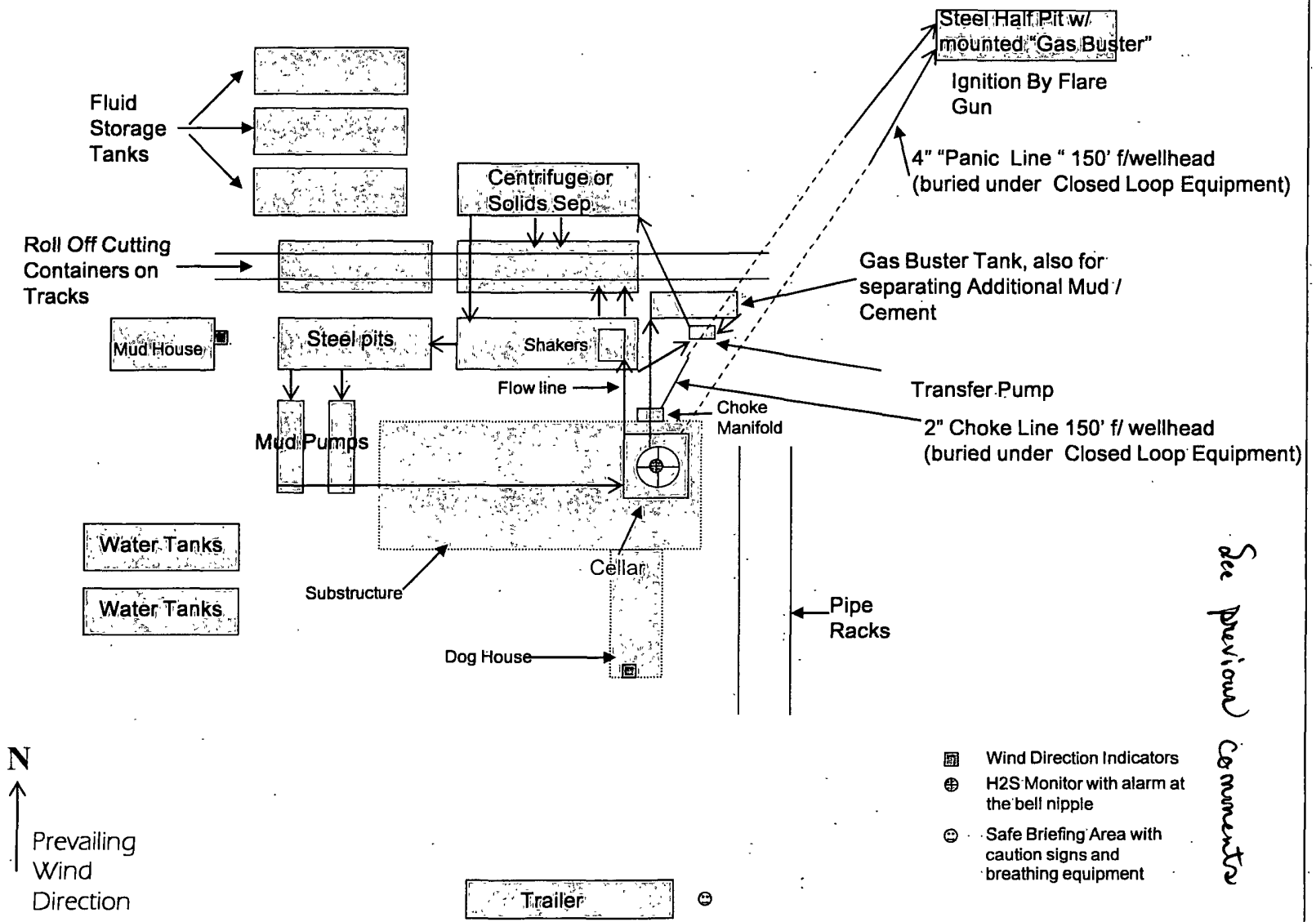
EDDY COUNTY EMERGENCY NUMBERS
ARTESIA FIRE DEPT. 575-746-5050
ARTESIA POLICE DEPT. 575-746-5000
EDDY CO. SHERIFF DEPT. 575-746-9888

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

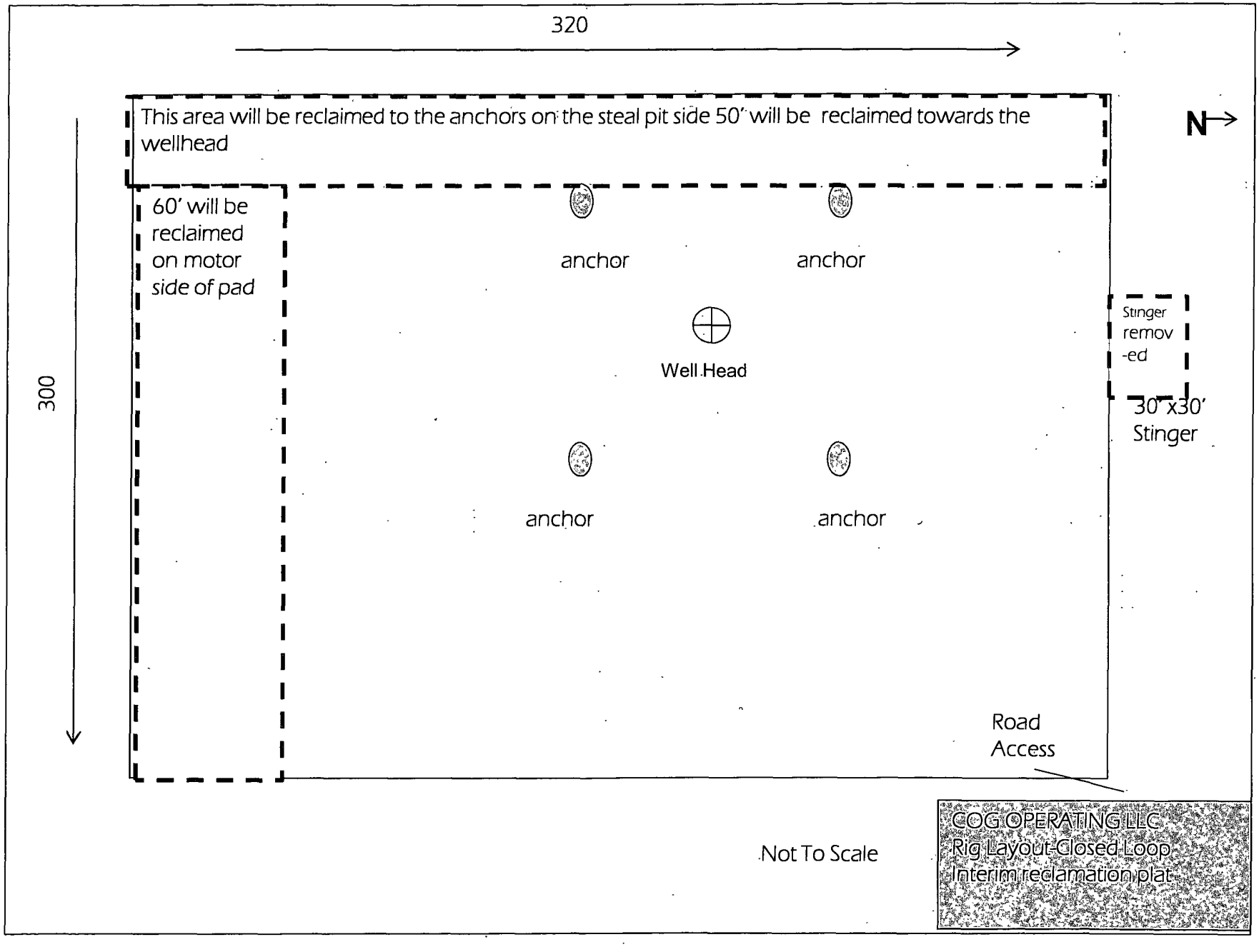
COG Operating LLC

EXHIBIT 8

Drilling Location - H2S Safety Equipment Diagram



See previous Comments


320
This area will be reclaimed to the anchors on the steal pit side 50' will be reclaimed towards the wellhead
N
60' will be reclaimed on motor side of pad
anchor
anchor
Well Head
Stinger removed
30' x30' Stinger
300
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
LEASE NO.:	NM100844
WELL NAME & NO.:	6H Reindeer 21 Fed
SURFACE HOLE FOOTAGE:	990' FNL & 1880' FEL
BOTTOM HOLE FOOTAGE	990' FNL & 330' FWL
LOCATION:	Section 21, T.16 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.