ATS-08-938

OCD-ARTESIA AUG 18 2009

Form 3160-3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

280

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

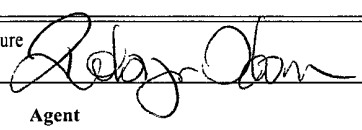
5 Lease Serial No. **NM-118710**	
6 If Indian, Allotee or Tribe Name **N/A**	
1a. Type of work: ☑ DRILL ☐ REENTER	7 If Unit or CA Agreement, Name and No **N/A**
1b. Type of Well ☑ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone	8 Lease Name and Well No. **High Lonesome 23 Fed #2H**
2 Name of Operator **COG Operating LLC**	9 API Well No. 30-015-37321
3a Address **550 W. Texas, Suite 1300 Midland TX 79701**	3b Phone No. *(include area code)* **(432) 685-4385**
	10. Field and Pool, or Exploratory ~~Crow Flats, Abo~~ Paduo Mesa; Abo
4. Location of Well *(Report location clearly and in accordance with any State requirements *)* At surface **1980' FSL & 430' FEL, UL I** At proposed prod. zone **1980' FSL & 430' FWL, UL L**	11 Sec., T R M or Blk. and Survey or Area **Sec 23, T16S, R29E**
14 Distance in miles and direction from nearest town or post office* **2.5 miles north 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) **430'**	16 No. of acres in lease **1560**	17 Spacing Unit dedicated to this well ~~40~~ 160
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft **720'**	19 Proposed Depth **TVD 7330', MD ~~11750~~ 11627 per directional plan** 12/30/08 WWI	20 BLM/BIA Bond No. on file **NMB000215**
21 Elevations (Show whether DF, KDB, RT, GL, etc.) **3708' GL**	22 Approximate date work will start* **12/15/2008**	23. Estimated duration **~~30~~ 10 days.** per drilling plan 12/30/08 WWI

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)* **Robyn Odom**	Date **11/20/2008**
Title **Agent**		
Approved by *(Signature)* **/s/ James Stovall**	Name *(Printed/Typed)*	Date **AUG 12 2009**
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

SEE ATTACHED FOR CONDITIONS OF APPROVAL

DISTRICT I
1625 N. French Dr., Hobbs, NM 88240

DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410

DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

OIL CONSERVATION DIVISION
1220 South St. Francis Dr.
Santa Fe, New Mexico 87505

Form C-102
Revised October 12, 2005

Submit to Appropriate District Office
State Lease - 4 Copies
Fee Lease - 3 Copies

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015- 37221	~~36529~~ 97575	Pavo Mesa; CROW ~~FLATS~~ - ABO

Property Code	Property Name	Well Number
37788	HIGH LONESOME "23" FEDERAL	2H

OGRID No.	Operator Name	Elevation
229137	C.O.G. OPERATING L.L.C.	3708'

Surface Location

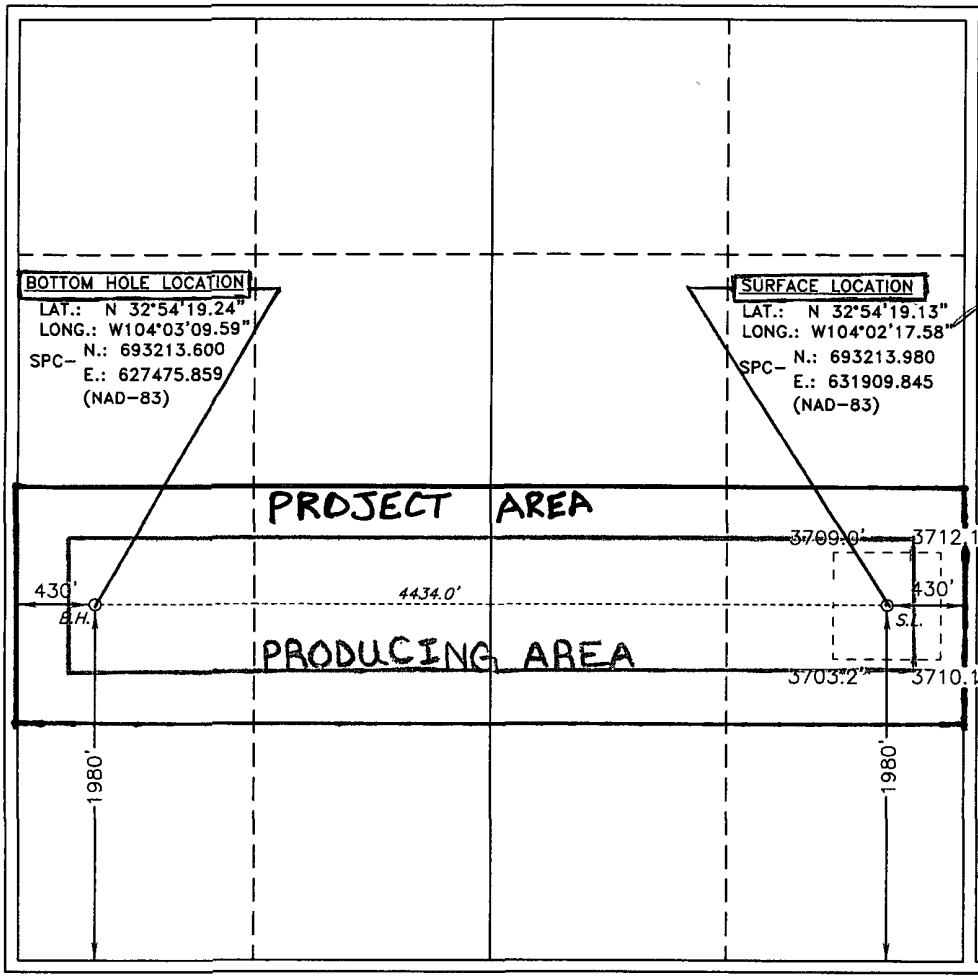
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	23	16 S	29 E		1980	SOUTH	430	EAST	EDDY

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
L	23	16 S	29 E		1980	SOUTH	430	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160			

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 contained 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 pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Robyn Odom 9/19/2008
Signature Date

Robyn Odom
Printed Name

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 supervison, and that the same is true and correct to the best of my belief.

AUGUST 26, 2007
Date Surveyed

Signature & Seal of Professional Surveyor

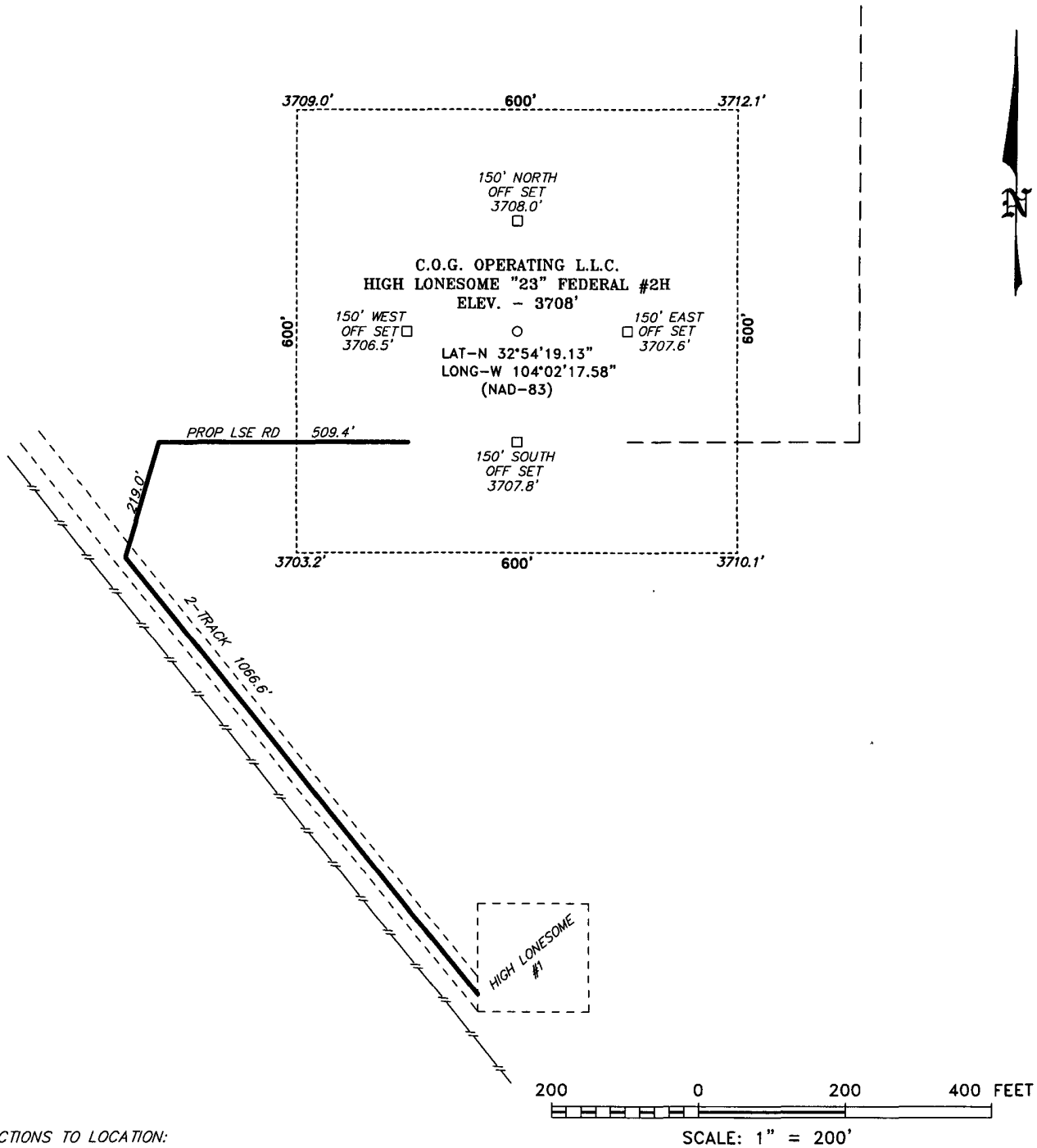
GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL SURVEYOR

W.O. 2[illegible]25

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

SECTION 23, TOWNSHIP 16 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.



DIRECTIONS TO LOCATION:

FROM THE JUNCTION OF HWY 82 AND KEWANEE (216), GO NORTH ON KEWANEE FOR 5.3 MILES TO LEASE ROAD, ON LEASE ROAD GO NORTH 0.5 MILES TO THE HIGH LONESOME #1 LOCATION AND PROPOSED LEASE ROAD.

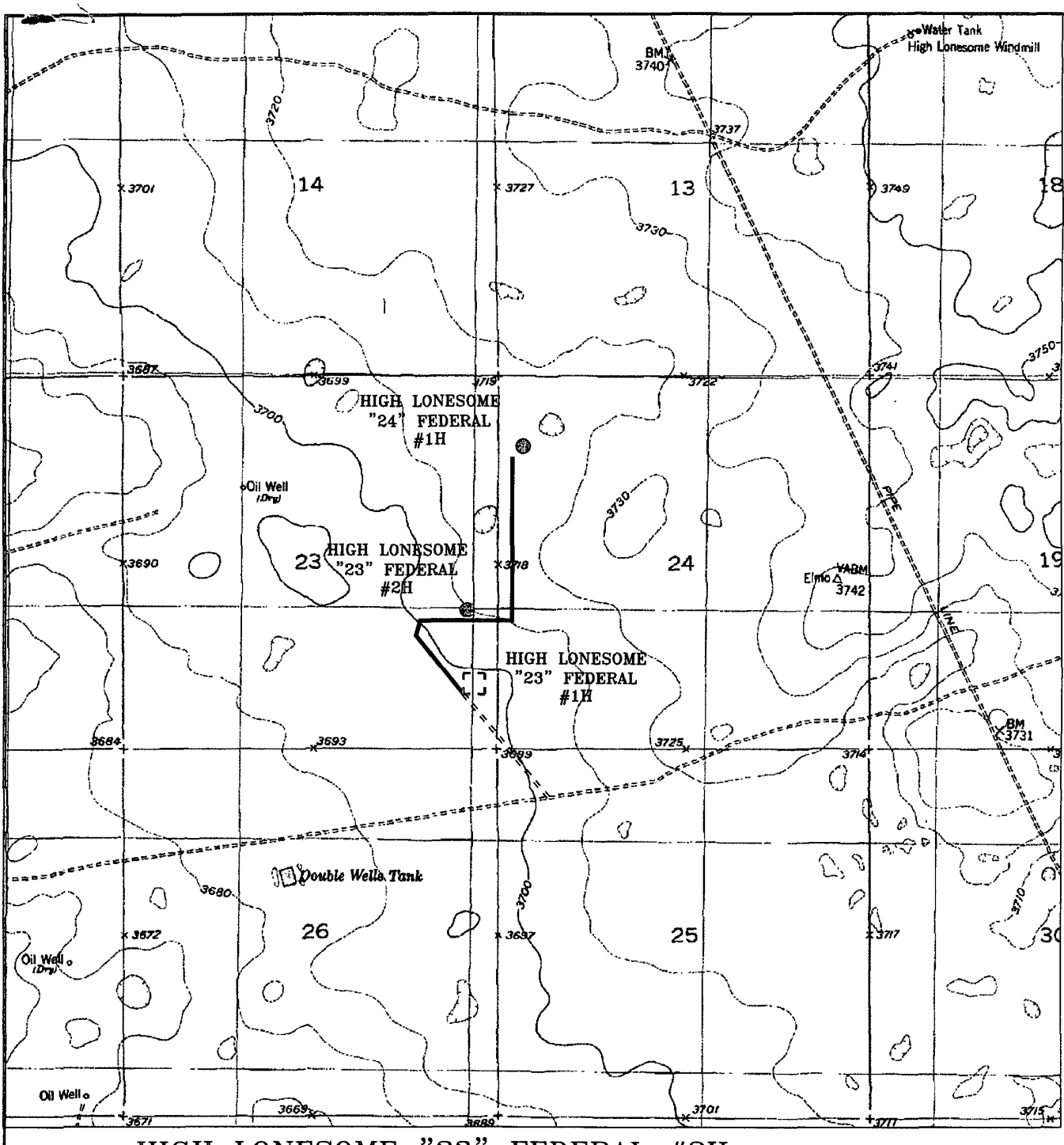
C.O.G. OPERATING L.L.C.

REF: HIGH LONESOME "23" FEDERAL #2H / Well Pad Topo

THE HIGH LONESOME "23" FEDERAL #2H LOCATED 1980' FROM THE SOUTH LINE AND 430' FROM THE EAST LINE OF SECTION 23, TOWNSHIP 16 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

BASIN SURVEYS P.O. BOX 1786 – HOBBS, NEW MEXICO

W.O. Number: 20225	Drawn By: J. M. SMALL		
Date: 09-02-2008	Disk: JMS 20225	Survey Date: 08-26-2008	Sheet 1 of 1 Sheets



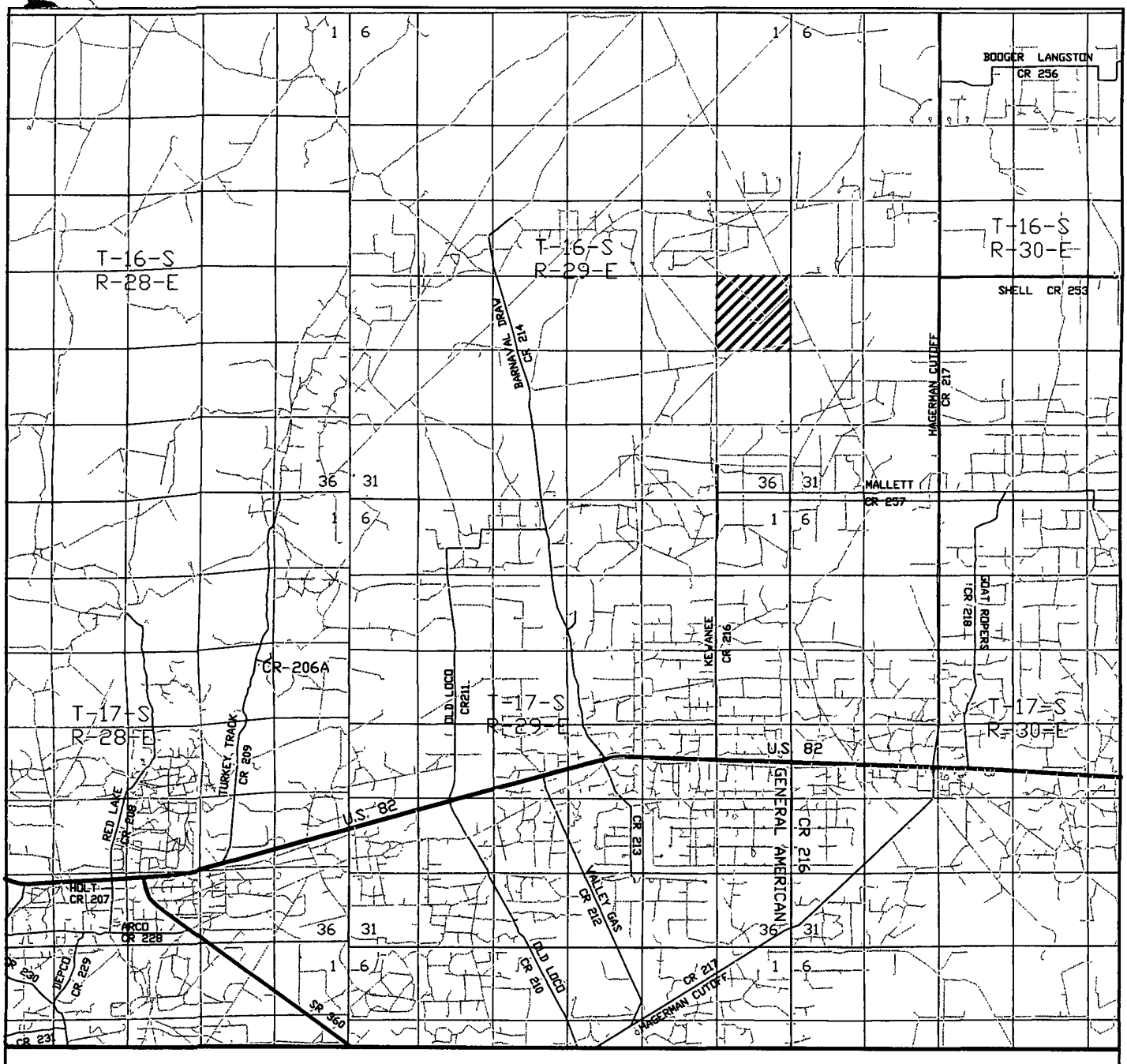
HIGH LONESOME "23" FEDERAL #2H
Located at 1980' FSL and 430' FEL
Section 24, Township 16 South, Range 29 East,
N.M.P.M., Eddy County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number:	JMS 20225
Survey Date:	08-26-2008
Scale:	1" = 2000'
Date:	09-02-2008

C.O.G. OPERATING L.L.C.



HIGH LONESOME "23" FEDERAL #2H
Located at 1980' FSL and 430 FWL
Section 23, Township 16 South, Range 29 East,
N.M.P.M., Eddy County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(575) 393-7316 - Office
(575) 392-2206 - Fax
basinsurveys.com

W.O. Number:	JMS 20225
Survey Date:	08-26-2008
Scale:	1" = 2 MILES
Date:	09-02-2008

C.O.G. OPERATING L.L.C.

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
High Lonesome "23" Federal Com. #2H
SL: 1980' FSL & 430' FEL, Unit I
BHL: 1980' FSL & 430' FEL, Unit L
Sec 23, T16S, R29E
Eddy County, NM

1. Proration Unit Spacing: 160 Acres

2. Ground Elevation: 3708'

3. Proposed Depths: Horizontal TVD = 7330', MD = 11627'

4. Estimated tops of geological markers:

Quaternary	Surface
Yates	1040'
Queen	1840'
San Andres	2600'
Tubb	5340'
Abo	6000'
Top Basal Abo	7310'

5. Possible mineral bearing formations:

Water Sand	150'	Fresh Water
Yates	1040'	Oil / Gas
Queen	1840'	Oil / Gas
San Andres	2600'	Oil / Gas
Tubb	5340'	Oil / Gas
Abo	6000'	Oil / Gas
Top Basal Abo	7310'	Oil / Gas

6. Casing Program - **Proposed**

Hole size	Interval	OD of Casing	Weight	Cond.	Collar	Grade
17-1/2"	0' - +/-400'	13-3/8"	54.5#	New	STC	J-55
Collapse sf – 3.29, Burst sf – 2.75, Tension sf – 15.42						
12 1/4"	0' - 2700'	9-5/8"	40#	New	STC	J-55
Collapse sf - 2. 86, Burst sf – 1.42, Tension sf – 7.22						
8-3/4"	0' – 6800'	7"	26#	New	LTC	P-110
Collapse sf - 2.15, Burst sf – 1.43, Tension sf – 4.15						
6-1/8"	6700' - 11627'	4-1/2"	11.6#	New	LTC	P-110
Collapse sf – 2.35, Burst sf – 1.64, Tension sf – 4.48						

7. Cement Program

13 3/8" Surf. Csg. Set at +/- 400', Circ to Surf with +/- 400 sx Class "C" w/ 2% CaCl2, 1.35 yld.

9 5/8" Intrmd. Csg. Set at +/- 2700'. Circ to Surf with +/- 600 sx 35/65 Poz "C", 2.05 yd. & 200 sx Class "C" w/ 2% CaCl2, 1.35 yld.

7" Production Casing set at +/- 6800' MD, Cement with +/- 400 sx. 50/50/10 "C", 2.45 yd & +/- 200 sx Class "H", 1.18 yd., Est. TOC @ 200'minimum tie back into intermediate casing.

4 ½" Production Liner set from +/- 6700' to +/-11627' MD, 7310' TVD, Liner run with +/- 5 isolation Packers and Sliding sleeves in un-cemented Lateral.

8. Pressure Control Equipment:

See COA

After setting 13 3/8" casing and installing 3000 psi casing head, NU 13 5/8" 3000 psi annular BOP. Test annular BOP, casing and manifold ~~in one single test~~ with clear fluid ~~to 1000 psi w/ rig pump as variance from~~ Onshore Order #2 . After setting 9 5/8" casing and installing 3000 psi casing spool, NU 3000 psi double ram BOP and 3000psi annular BOP. Test double ram BOP and manifold to 3000# with clear fluid and annular to 1500 psi using an independent tester and 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.

9. Proposed Mud Circulating System

Interval	Mud Wt.	Visc.	FL	Type Mud System
0' - 400'	8.5	28	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
400'- 2700'	9.1	30	NC	Cut brine mud, lime for PH and paper for seepage and sweeps.
2700'- 6800'	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.
6800' - 11627'	9.5	36	10	Drill 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.

ATTACHMENT TO FORM 3160-3
COG Operating, LLC
High Lonesome "23" Federal Com. #2H

11. Production Hole Drilling Summary:

Drill 6-1/8" hole and kick off at +/- 7000', building curve over +/- 500' to horizontal at 7330' TVD. Drill horizontal section in a westerly direction for +/-4400' lateral to TD at +/-11627' MD, 7330' TVD. Run 4-1/2" production liner in open hole lateral and set isolation packers. COG requests a variance to the 200' minimum tie back in order to set the pump as close to the formation as possible. The Liner top and horizontal are all located in the Abo Formation.

12. Logging, Testing and Coring Program:

A. No open hole logs are planned, cased hole GR/CNL will be run in vertical hole.

B. The mud logging program will consist of lagged 10' samples from intermediate casing point to T.D., 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 Liner has been run at TD based on drill shows and log evaluation.

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

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 120 degrees and estimated maximum bottom hole pressure is 2300 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 January 1, 2009 with drilling and completion operations lasting approximately 90 days.

COG Operating LLC

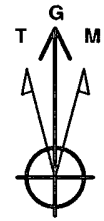
Eddy County
High Lonesome "23" Federal #2H
#2H
STO1

Plan: STO1

Pathfinder X & Y Survey

09 October, 2008

COG Operating, L.L.C.



Azimuths to Grid North
True North: -0.16°
Magnetic North: 8.00°

Magnetic Field
Strength: 49267.2snT
Dip Angle: 60.82°
Date: 10/8/2008
Model: IGRF200510

PATHFINDER ENERGY SERVICES

WELL DETAILS: #2H

Ground Elevation: 3708.00
RKB Elevation: WELL @ 3726.00ft (Est. RKB=18')
Rig Name: Est. RKB=18'

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	693213.980	631909.845	32° 54' 19.128 N	104° 2' 17.582 W	

Project: Eddy County
Site: High Lonesome "23" Federal #2H
Well: #2H
Wellbore: STO1
Plan: STO1 (#2H/STO1)

FORMATION TOP DETAILS

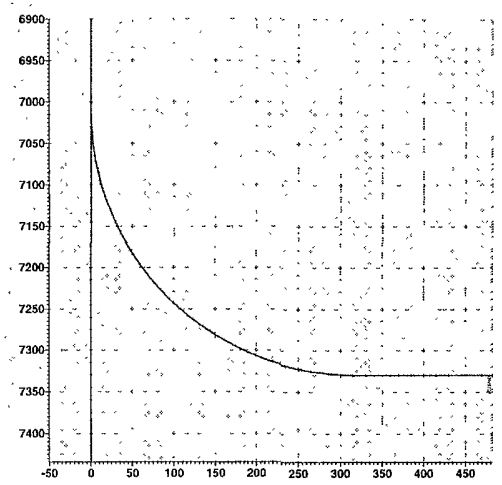
TVDPath	MDPath	Formation
1040.00	1040.00	Yates
1840.00	1840.00	Queen
2600.00	2600.00	San Andres D
5340.00	5340.00	Tubb
6000.00	6000.00	Abo Shale
7310.00	7398.25	Lower Abo
7330.00	7511.69	Lower Abo

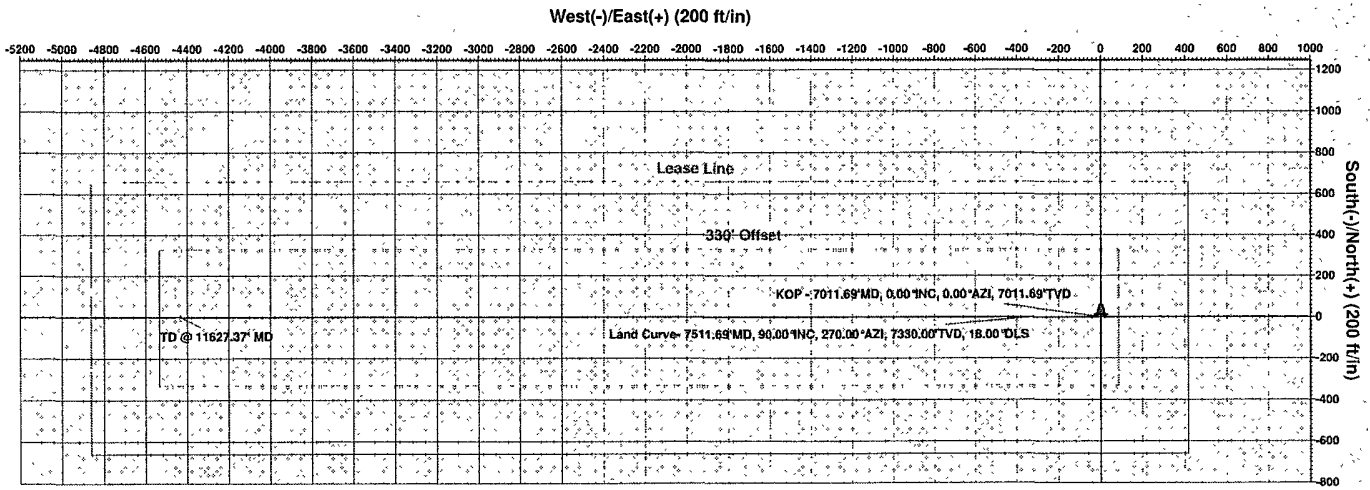
SECTION DETAILS

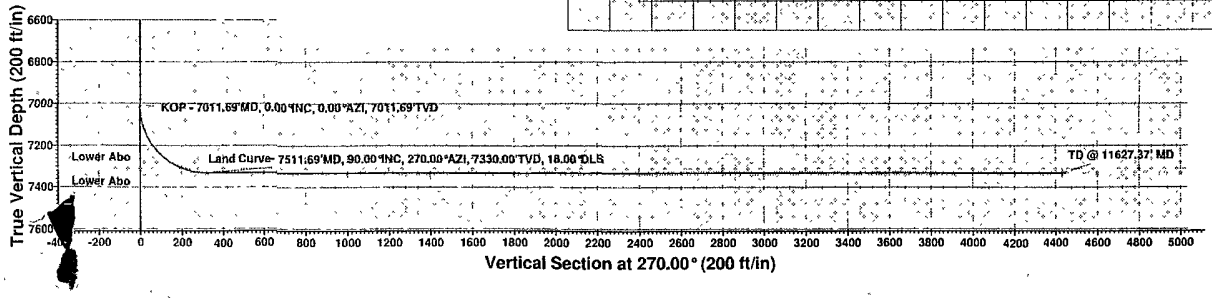
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	7011.69	0.00	0.00	7011.69	0.00	0.00	0.00	0.00	0.00	
2	7511.69	90.00	270.00	7330.00	0.00	-318.31	18.00	270.00	318.31	
3	11627.37	90.00	270.00	7330.00	0.00	-4433.99	0.00	0.00	4433.99	PBHL HL #2H@7330' TVD

WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
PBHL HL #2H@7330' TVD	7330.00	-0.38	-4433.99	693213.600	627475.859	Point







PROJECT DETAILS: Eddy County
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid

Plan: STO1 (#2H/STO1)

Created By: Nate Bingham Date: 14:30, December 05 2008

Checked: _____ Date _____

Pathfinder X & Y Survey

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County	**TVD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Site:	High Lonesome "23" Federal #2H	**MD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Well:	#2H	**North Reference:**	Grid
Wellbore:	STO1	**Survey Calculation Method:**	Minimum Curvature
Design:	STO1	**Database:**	EDM 2003.16 Single user database

Project Eddy County

Map System:	US State Plane 1983	**System Datum:**	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site High Lonesome "23" Federal #2H

Site Position:		**Northing:**	693,213.980 ft	**Latitude:**	32° 54' 19.128 N
From:	Map	**Easting:**	631,909.845 ft	**Longitude:**	104° 2' 17.582 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	"	**Grid Convergence:**	0.16 °

Well #2H

Well Position	**+N/-S**	0.00 ft	**Northing:**	693,213.980 ft	**Latitude:**	32° 54' 19.128 N
	+E/-W	0.00 ft	**Easting:**	631,909.845 ft	**Longitude:**	104° 2' 17.582 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	3,708.00 ft

Wellbore STO1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF200510	10/8/2008	8.16	60.82	49,267

Design STO1

Audit Notes:

Version:		**Phase:**	PLAN	**Tie On Depth:**	7,011.69

Vertical Section:	**Depth From (TVD) (ft)**	**+N/-S (ft)**	**+E/-W (ft)**	**Direction (°)**
	0.00	0.00	0.00	270.00

Pathfinder X & Y Survey

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County	**TVD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Site:	High Lonesome "23" Federal #2H	**MD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Well:	#2H	**North Reference:**	Grid
Wellbore:	STO1	**Survey Calculation Method:**	Minimum Curvature
Design:	STO1	**Database:**	EDM 2003.16 Single user database

Survey Tool Program **Date** 10/9/2008

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
0.00	7,011.69	Pilot Hole (Pilot Hole)		
7,011.69	11,627.37	STO1 (STO1)		

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
0.00	0.00	0.00	0.00	-3,726.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
100.00	0.00	0.00	100.00	-3,626.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
200.00	0.00	0.00	200.00	-3,526.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
300.00	0.00	0.00	300.00	-3,426.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
400.00	0.00	0.00	400.00	-3,326.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
500.00	0.00	0.00	500.00	-3,226.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
600.00	0.00	0.00	600.00	-3,126.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
700.00	0.00	0.00	700.00	-3,026.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
800.00	0.00	0.00	800.00	-2,926.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
900.00	0.00	0.00	900.00	-2,826.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
1,000.00	0.00	0.00	1,000.00	-2,726.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
1,100.00	0.00	0.00	1,100.00	-2,626.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
1,200.00	0.00	0.00	1,200.00	-2,526.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
1,300.00	0.00	0.00	1,300.00	-2,426.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
1,400.00	0.00	0.00	1,400.00	-2,326.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
1,500.00	0.00	0.00	1,500.00	-2,226.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
1,600.00	0.00	0.00	1,600.00	-2,126.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
1,700.00	0.00	0.00	1,700.00	-2,026.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
1,800.00	0.00	0.00	1,800.00	-1,926.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
1,900.00	0.00	0.00	1,900.00	-1,826.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
2,000.00	0.00	0.00	2,000.00	-1,726.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85

Pathfinder X & Y Survey

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County	**TVD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Site:	High Lonesome "23" Federal #2H	**MD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Well:	#2H	**North Reference:**	Grid
Wellbore:	STO1	**Survey Calculation Method:**	Minimum Curvature
Design:	STO1	**Database:**	EDM 2003.16 Single user database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
2,100.00	0.00	0.00	2,100.00	-1,626.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
2,200.00	0.00	0.00	2,200.00	-1,526.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
2,300.00	0.00	0.00	2,300.00	-1,426.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
2,400.00	0.00	0.00	2,400.00	-1,326.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
2,500.00	0.00	0.00	2,500.00	-1,226.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
2,600.00	0.00	0.00	2,600.00	-1,126.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
2,700.00	0.00	0.00	2,700.00	-1,026.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
2,800.00	0.00	0.00	2,800.00	-926.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
2,900.00	0.00	0.00	2,900.00	-826.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
3,000.00	0.00	0.00	3,000.00	-726.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
3,100.00	0.00	0.00	3,100.00	-626.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
3,200.00	0.00	0.00	3,200.00	-526.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
3,300.00	0.00	0.00	3,300.00	-426.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
3,400.00	0.00	0.00	3,400.00	-326.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
3,500.00	0.00	0.00	3,500.00	-226.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
3,600.00	0.00	0.00	3,600.00	-126.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
3,700.00	0.00	0.00	3,700.00	-26.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
3,800.00	0.00	0.00	3,800.00	74.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
3,900.00	0.00	0.00	3,900.00	174.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
4,000.00	0.00	0.00	4,000.00	274.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
4,100.00	0.00	0.00	4,100.00	374.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
4,200.00	0.00	0.00	4,200.00	474.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
4,300.00	0.00	0.00	4,300.00	574.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
4,400.00	0.00	0.00	4,400.00	674.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
4,500.00	0.00	0.00	4,500.00	774.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
4,600.00	0.00	0.00	4,600.00	874.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
4,700.00	0.00	0.00	4,700.00	974.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County	**TVD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Site:	High Lonesome "23" Federal #2H	**MD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Well:	#2H	**North Reference:**	Grid
Wellbore:	STO1	**Survey Calculation Method:**	Minimum Curvature
Design:	STO1	**Database:**	EDM 2003.16 Single user database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
4,800.00	0.00	0.00	4,800.00	1,074.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
4,900.00	0.00	0.00	4,900.00	1,174.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
5,000.00	0.00	0.00	5,000.00	1,274.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
5,100.00	0.00	0.00	5,100.00	1,374.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
5,200.00	0.00	0.00	5,200.00	1,474.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
5,300.00	0.00	0.00	5,300.00	1,574.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
5,400.00	0.00	0.00	5,400.00	1,674.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
5,500.00	0.00	0.00	5,500.00	1,774.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
5,600.00	0.00	0.00	5,600.00	1,874.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
5,700.00	0.00	0.00	5,700.00	1,974.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
5,800.00	0.00	0.00	5,800.00	2,074.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
5,900.00	0.00	0.00	5,900.00	2,174.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
6,000.00	0.00	0.00	6,000.00	2,274.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
6,100.00	0.00	0.00	6,100.00	2,374.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
6,200.00	0.00	0.00	6,200.00	2,474.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
6,300.00	0.00	0.00	6,300.00	2,574.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
6,400.00	0.00	0.00	6,400.00	2,674.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
6,500.00	0.00	0.00	6,500.00	2,774.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
6,600.00	0.00	0.00	6,600.00	2,874.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
6,700.00	0.00	0.00	6,700.00	2,974.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
6,800.00	0.00	0.00	6,800.00	3,074.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
6,900.00	0.00	0.00	6,900.00	3,174.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
7,000.00	0.00	0.00	7,000.00	3,274.00	0.00	0.00	0.00	0.00	693,213.98	631,909.85
7,011.69	0.00	0.00	7,011.69	3,285.69	0.00	0.00	0.00	0.00	693,213.98	631,909.85
KOP @ 7011.69' MD/ Start Build @ 18 Deg/100' Inclination										
7,025.00	2.40	270.00	7,025.00	3,299.00	0.00	-0.28	0.28	18.00	693,213.98	631,909.57
7,050.00	6.90	270.00	7,049.91	3,323.91	0.00	-2.30	2.30	18.00	693,213.98	631,907.54

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County	**TVD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Site:	High Lonesome "23" Federal #2H	**MD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Well:	#2H	**North Reference:**	Grid
Wellbore:	STO1	**Survey Calculation Method:**	Minimum Curvature
Design:	STO1	**Database:**	EDM 2003.16 Single user database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
7,075.00	11.40	270.00	7,074.58	3,348.58	0.00	-6.28	6.28	18.00	693,213.98	631,903.57
7,100.00	15.90	270.00	7,098.87	3,372.87	0.00	-12.17	12.17	18.00	693,213.98	631,897.67
7,125.00	20.40	270.00	7,122.62	3,396.62	0.00	-19.96	19.96	18.00	693,213.98	631,889.89
7,150.00	24.90	270.00	7,145.69	3,419.69	0.00	-29.58	29.58	18.00	693,213.98	631,880.27
7,175.00	29.40	270.00	7,167.93	3,441.93	0.00	-40.98	40.98	18.00	693,213.98	631,868.86
7,200.00	33.90	270.00	7,189.21	3,463.21	0.00	-54.10	54.10	18.00	693,213.98	631,855.75
7,225.00	38.40	270.00	7,209.39	3,483.39	0.00	-68.84	68.84	18.00	693,213.98	631,841.01
7,250.00	42.90	270.00	7,228.35	3,502.35	0.00	-85.12	85.12	18.00	693,213.98	631,824.73
7,275.00	47.40	270.00	7,245.98	3,519.98	0.00	-102.84	102.84	18.00	693,213.98	631,807.01
7,300.00	51.90	270.00	7,262.16	3,536.16	0.00	-121.88	121.88	18.00	693,213.98	631,787.96
7,325.00	56.40	270.00	7,276.80	3,550.80	0.00	-142.14	142.14	18.00	693,213.98	631,767.70
7,350.00	60.90	270.00	7,289.81	3,563.81	0.00	-163.48	163.48	18.00	693,213.98	631,746.36
7,375.00	65.40	270.00	7,301.10	3,575.10	0.00	-185.78	185.78	18.00	693,213.98	631,724.06
7,400.00	69.90	270.00	7,310.60	3,584.60	0.00	-208.90	208.90	18.00	693,213.98	631,700.95
7,425.00	74.40	270.00	7,318.27	3,592.27	0.00	-232.69	232.69	18.00	693,213.98	631,677.16
7,450.00	78.90	270.00	7,324.04	3,598.04	0.00	-257.01	257.01	18.00	693,213.98	631,652.84
7,475.00	83.40	270.00	7,327.89	3,601.89	0.00	-281.70	281.70	18.00	693,213.98	631,628.14
7,500.00	87.90	270.00	7,329.79	3,603.79	0.00	-306.62	306.62	18.00	693,213.98	631,603.22
7,511.69	90.00	270.00	7,330.00	3,604.00	0.00	-318.31	318.31	18.00	693,213.98	631,591.54
LP@7330' TVD Inc. 90 Deg, Azi 270 Deg										
7,600.00	90.00	270.00	7,330.00	3,604.00	0.00	-406.62	406.62	0.00	693,213.98	631,503.23
7,700.00	90.00	270.00	7,330.00	3,604.00	0.00	-506.62	506.62	0.00	693,213.98	631,403.23
7,800.00	90.00	270.00	7,330.00	3,604.00	0.00	-606.62	606.62	0.00	693,213.98	631,303.23
7,900.00	90.00	270.00	7,330.00	3,604.00	0.00	-706.62	706.62	0.00	693,213.98	631,203.23
8,000.00	90.00	270.00	7,330.00	3,604.00	0.00	-806.62	806.62	0.00	693,213.98	631,103.23
8,100.00	90.00	270.00	7,330.00	3,604.00	0.00	-906.62	906.62	0.00	693,213.98	631,003.23
8,200.00	90.00	270.00	7,330.00	3,604.00	0.00	-1,006.62	1,006.62	0.00	693,213.98	630,903.23

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County	**TVD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Site:	High Lonesome "23" Federal #2H	**MD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Well:	#2H	**North Reference:**	Grid
Wellbore:	STO1	**Survey Calculation Method:**	Minimum Curvature
Design:	STO1	**Database:**	EDM 2003.16 Single user database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
8,300.00	90.00	270.00	7,330.00	3,604.00	0.00	-1,106.62	1,106.62	0.00	693,213.98	630,803.23
8,400.00	90.00	270.00	7,330.00	3,604.00	0.00	-1,206.62	1,206.62	0.00	693,213.98	630,703.23
8,500.00	90.00	270.00	7,330.00	3,604.00	0.00	-1,306.62	1,306.62	0.00	693,213.98	630,603.23
8,600.00	90.00	270.00	7,330.00	3,604.00	0.00	-1,406.62	1,406.62	0.00	693,213.98	630,503.23
8,700.00	90.00	270.00	7,330.00	3,604.00	0.00	-1,506.62	1,506.62	0.00	693,213.98	630,403.23
8,800.00	90.00	270.00	7,330.00	3,604.00	0.00	-1,606.62	1,606.62	0.00	693,213.98	630,303.23
8,900.00	90.00	270.00	7,330.00	3,604.00	0.00	-1,706.62	1,706.62	0.00	693,213.98	630,203.23
9,000.00	90.00	270.00	7,330.00	3,604.00	0.00	-1,806.62	1,806.62	0.00	693,213.98	630,103.23
9,100.00	90.00	270.00	7,330.00	3,604.00	0.00	-1,906.62	1,906.62	0.00	693,213.98	630,003.23
9,200.00	90.00	270.00	7,330.00	3,604.00	0.00	-2,006.62	2,006.62	0.00	693,213.98	629,903.23
9,300.00	90.00	270.00	7,330.00	3,604.00	0.00	-2,106.62	2,106.62	0.00	693,213.98	629,803.23
9,400.00	90.00	270.00	7,330.00	3,604.00	0.00	-2,206.62	2,206.62	0.00	693,213.98	629,703.23
9,500.00	90.00	270.00	7,330.00	3,604.00	0.00	-2,306.62	2,306.62	0.00	693,213.98	629,603.23
9,600.00	90.00	270.00	7,330.00	3,604.00	0.00	-2,406.62	2,406.62	0.00	693,213.98	629,503.23
9,700.00	90.00	270.00	7,330.00	3,604.00	0.00	-2,506.62	2,506.62	0.00	693,213.98	629,403.23
9,800.00	90.00	270.00	7,330.00	3,604.00	0.00	-2,606.62	2,606.62	0.00	693,213.98	629,303.23
9,900.00	90.00	270.00	7,330.00	3,604.00	0.00	-2,706.62	2,706.62	0.00	693,213.98	629,203.23
10,000.00	90.00	270.00	7,330.00	3,604.00	0.00	-2,806.62	2,806.62	0.00	693,213.98	629,103.23
10,100.00	90.00	270.00	7,330.00	3,604.00	0.00	-2,906.62	2,906.62	0.00	693,213.98	629,003.23
10,200.00	90.00	270.00	7,330.00	3,604.00	0.00	-3,006.62	3,006.62	0.00	693,213.98	628,903.23
10,300.00	90.00	270.00	7,330.00	3,604.00	0.00	-3,106.62	3,106.62	0.00	693,213.98	628,803.23
10,400.00	90.00	270.00	7,330.00	3,604.00	0.00	-3,206.62	3,206.62	0.00	693,213.98	628,703.23
10,500.00	90.00	270.00	7,330.00	3,604.00	0.00	-3,306.62	3,306.62	0.00	693,213.98	628,603.23
10,600.00	90.00	270.00	7,330.00	3,604.00	0.00	-3,406.62	3,406.62	0.00	693,213.98	628,503.23
10,700.00	90.00	270.00	7,330.00	3,604.00	0.00	-3,506.62	3,506.62	0.00	693,213.98	628,403.23
10,800.00	90.00	270.00	7,330.00	3,604.00	0.00	-3,606.62	3,606.62	0.00	693,213.98	628,303.23
10,900.00	90.00	270.00	7,330.00	3,604.00	0.00	-3,706.62	3,706.62	0.00	693,213.98	628,203.23

Pathfinder X & Y Survey

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County	**TVD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Site:	High Lonesome "23" Federal #2H	**MD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Well:	#2H	**North Reference:**	Grid
Wellbore:	STO1	**Survey Calculation Method:**	Minimum Curvature
Design:	STO1	**Database:**	EDM 2003.16 Single user database

Planned Survey

MD (ft)	Inc (°)	Azi (°)	TVD (ft)	TVDSS (ft)	N/S (ft)	E/W (ft)	V. Sec (ft)	DLeg (°/100ft)	Northing (ft)	Easting (ft)
11,000.00	90.00	270.00	7,330.00	3,604.00	0.00	-3,806.62	3,806.62	0.00	693,213.98	628,103.23
11,100.00	90.00	270.00	7,330.00	3,604.00	0.00	-3,906.62	3,906.62	0.00	693,213.98	628,003.23
11,200.00	90.00	270.00	7,330.00	3,604.00	0.00	-4,006.62	4,006.62	0.00	693,213.98	627,903.23
11,300.00	90.00	270.00	7,330.00	3,604.00	0.00	-4,106.62	4,106.62	0.00	693,213.98	627,803.23
11,400.00	90.00	270.00	7,330.00	3,604.00	0.00	-4,206.62	4,206.62	0.00	693,213.98	627,703.23
11,500.00	90.00	270.00	7,330.00	3,604.00	0.00	-4,306.62	4,306.62	0.00	693,213.98	627,603.23
11,600.00	90.00	270.00	7,330.00	3,604.00	0.00	-4,406.62	4,406.62	0.00	693,213.98	627,503.23
11,627.37	90.00	270.00	7,330.00	3,604.00	0.00	-4,433.99	4,433.99	0.00	693,213.98	627,475.86

Company:	COG Operating LLC	**Local Co-ordinate Reference:**	Well #2H
Project:	Eddy County	**TVD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Site:	High Lonesome "23" Federal #2H	**MD Reference:**	WELL @ 3726.00ft (Est. RKB=18')
Well:	#2H	**North Reference:**	Grid
Wellbore:	STO1	**Survey Calculation Method:**	Minimum Curvature
Design:	STO1	**Database:**	EDM 2003.16 Single user database

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 HL #2H@7330' - plan hits target - Point	0.00	0.00	7,330.00	-0.38	-4,433.99	693,213.600	627,475.859	32° 54' 19.244 N	104° 3' 9.593 W

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
7,511.69	7,330.00	Lower Abo		0.00	
6,000.00	6,000.00	Abo Shale		0.00	
1,040.00	1,040.00	Yates		0.00	
1,840.00	1,840.00	Queen		0.00	
5,340.00	5,340.00	Tubb		0.00	
2,600.00	2,600.00	San Andres D		0.00	
7,398.25	7,310.00	Lower Abo		0.00	

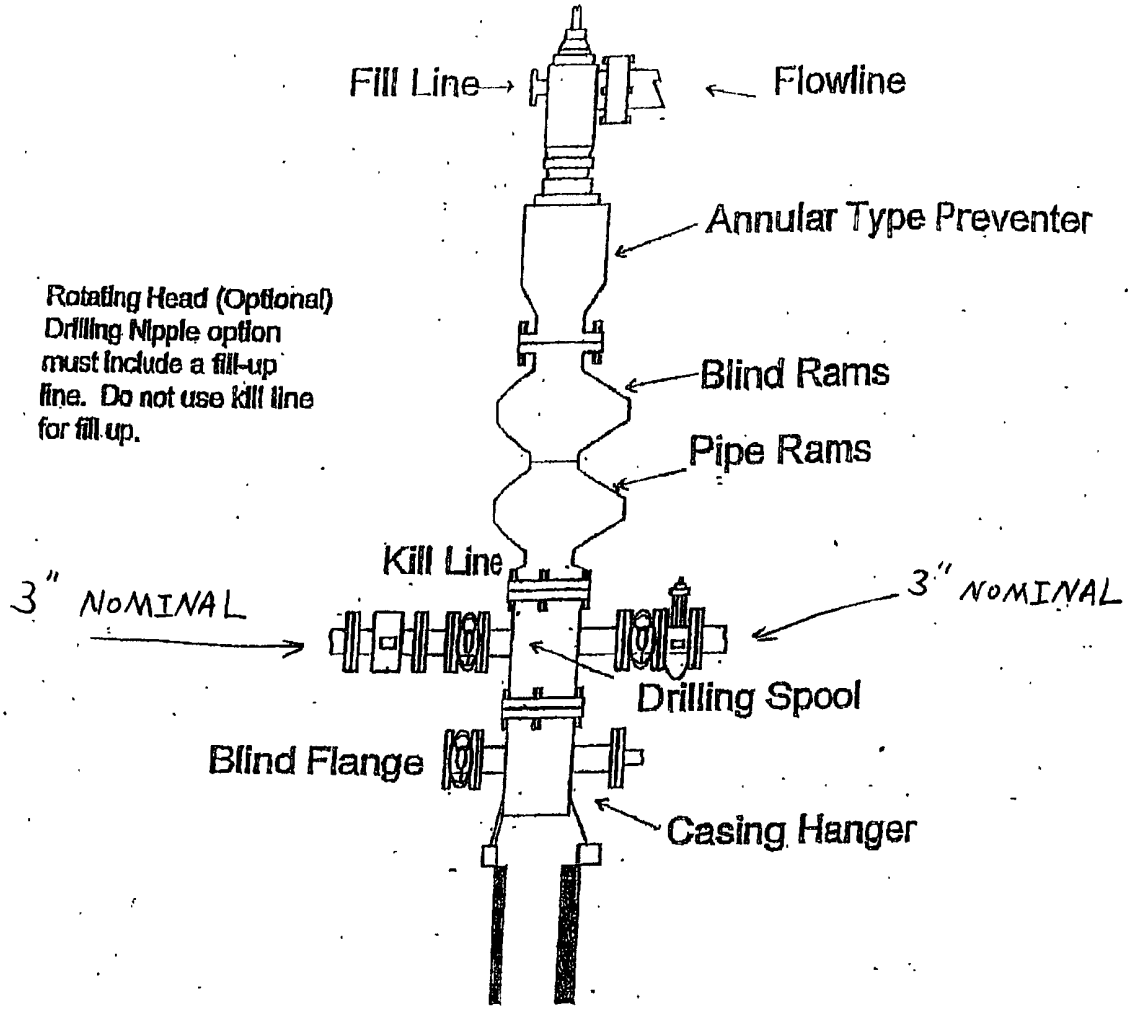
Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
7,011.69	7,011.69	0.00	0.00	KOP @ 7011.69' MD/ Start Build @ 18 Deg/100' Inclination
7,511.69	7,330.00	0.00	-318.31	LP@7330' TVD Inc. 90 Deg, Azi 270 Deg

Checked By: _____ Approved By: _____ Date: _____

EXHIBIT "F"

BOPE SCHEMATIC

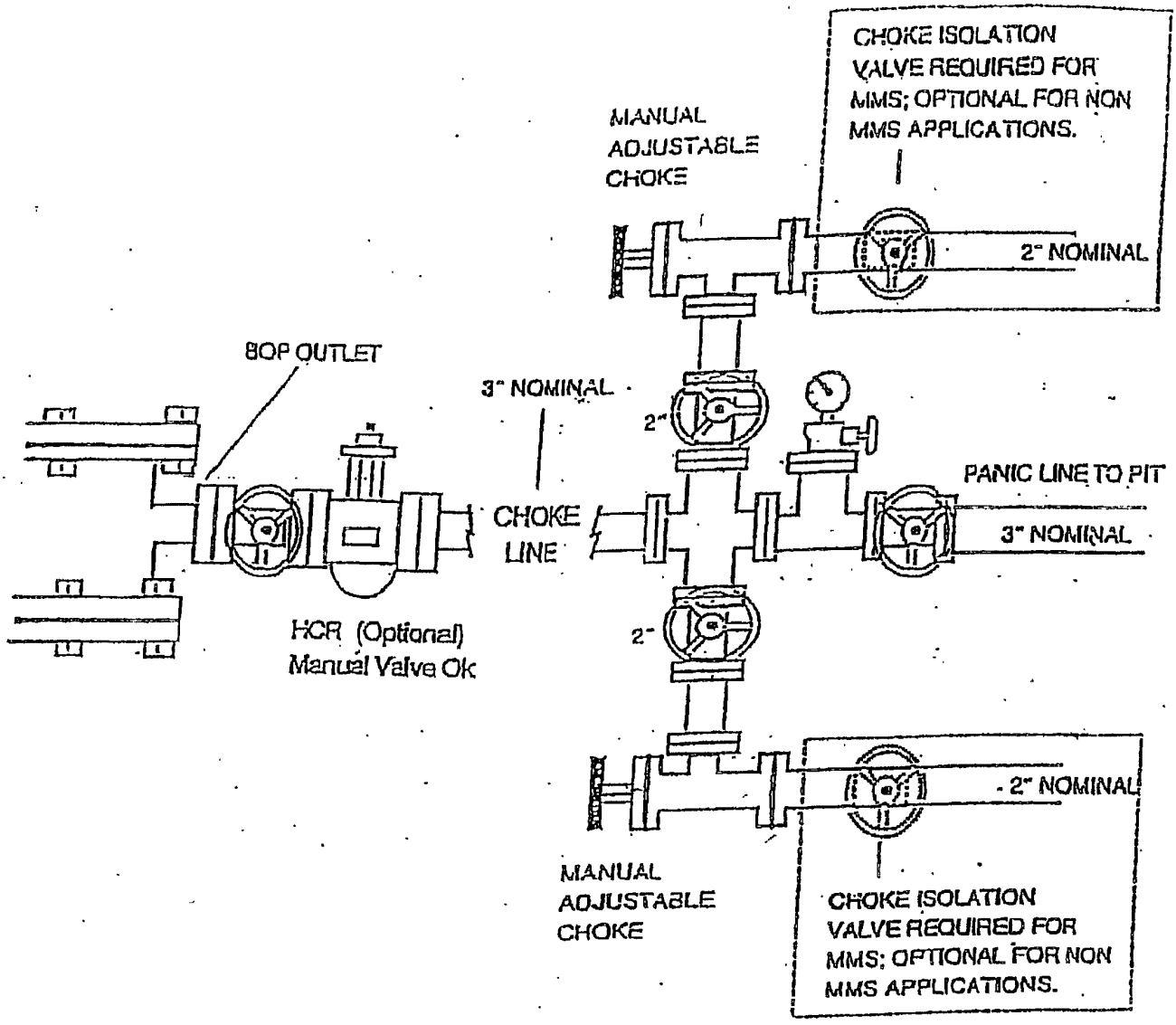


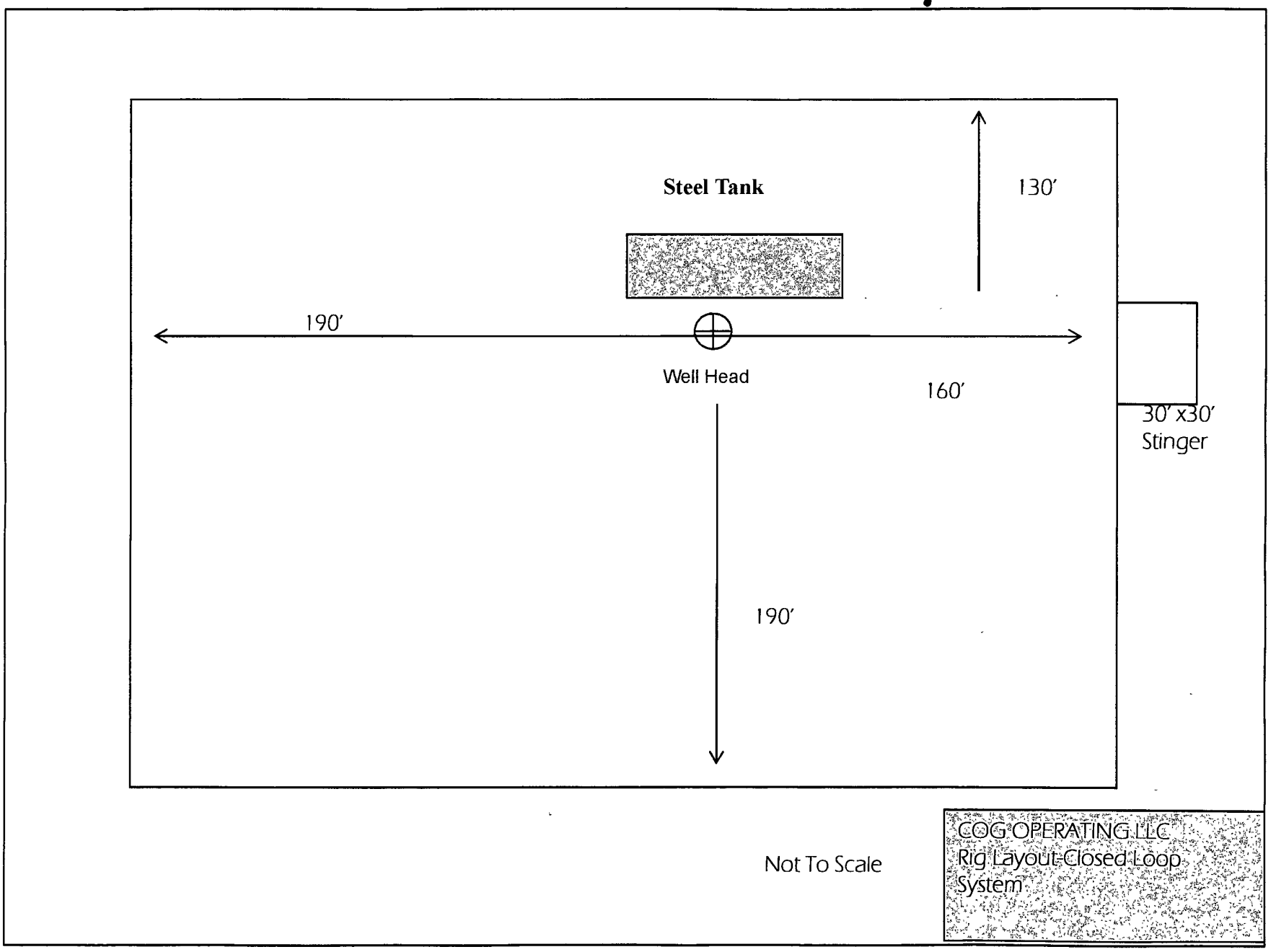
900 SERIES

EXHIBIT "G"

CHOKE MANIFOLD

3M SERVICE




N
Steel Tank
130'
190'
Well Head
160'
30' x30'
Stinger
190'
Not To Scale
COG OPERATING LLC
Rig Layout-Closed Loop
System

COG OPERATING, LLC

HYDROGENSULFIDE (H2S) CONTINGENCY PLAN
FOR DRILLING / COMPLETING / WORKOVER / FACILITY
WITH THE EXPECTATION OF H2S IN EXCESS OF 100 PPM

C.O.G. Operating, LLC
NEW DRILL WELL
High Lonesome 23 Federal #2
SHL: 1980' FSL & 430' FEL, Unit I
BHL: 1980' FSL & 430' FWL, Unit L
Sec 23, T16S, R29E
Eddy County, New Mexico

This well / facility is not expected to have H2S, but the following is submitted as requested.

TABLE OF CONTENTS

GENERAL H2S EMERGENCY ACTIONS

In the event of any evidence of H2S emergency, the following plan will be initiated:

1. All personnel will immediately evacuate to an up-wind and if possible up-hill "safe area."
2. If for any reason a person must enter the hazardous area, they must wear a SCBA (self-contained breathing apparatus).
3. Always use the "buddy system."
4. Isolate the well / problem if possible.
5. Account for all personnel.
6. Display the proper colors warning all unsuspecting personnel of the danger at hand.
7. Contact the company representative as soon as possible if not at the location (use the enclosed call list as instructed).

At this point the company representative will evaluate the situation and coordinate the necessary duties to bring the situation under control, and if necessary, the notification of emergency response agencies and residents.

EMERGENCY PROCEDURES FOR AN UNCONTROLLABLE RELEASE OF H2S

1. All personnel will don the self-contained breathing apparatus.
2. Remove all personnel to the "safe area": (always use the "buddy system").
3. Contact company representative if not on location.
4. Set in motion the steps to protect and / or remove the general public to any upwind "safe area." Maintain strict security and safety procedures while dealing with the source.
5. No entry to any unauthorized personnel.
6. Notify the appropriate agencies:
   City Police – City Streets
   State Police – State Roads
   County Sheriff – County Roads
7. Call the NMOCD.

If at this time the supervising person determines the release of H2S cannot be contained to the site location and the general public is in harms way, he will immediately notify public safety personnel.

EMERGENCY CALL LIST

	Office	Cell	Home
John Coffman	432-683-7443	432-631-9762	432-699-5552
Erick Nelson	432-683-7443	432-238-7591	
Matt Corser	432-683-7443	432-413-0071	

EMERGENCY RESPONSE NUMBERS

Eddy County, New Mexico (Area code 575)

State Police	505-748-9718
Eddy County Sheriff	505-746-2701
Emergency Medical Services (Ambulance)	911 or 505-746-2701
Eddy County Emergency Management (Harry Burgess)	505-887-9511
State Emergency Response Center (SERC)	505-476-9620
Carlsbad Police Department	505-885-2111
Carlsbad Fire Department	505-885-3125
New Mexico Oil Conservation Division	505-748-1283
Callaway Safety Equipment, Inc.	505-392-2973

PROTECTION OF THE GENERAL (ROE) RADIUS OF EXPOSURE

In the event greater than 100 ppm H2S is present, the ROE calculations will be done to determine if the following is warranted:

* 100 ppm at any public area (any place not associated with this site).
* 500 ppm at any public road (any road which the general public may travel).
* 100 ppm radius of 3000' will be assumed if there is insufficient data to do the calculations, and there is a reasonable expectation that H2S could be present in concentrations greater than 100 ppm in the gas mixture.

Calculation for the 100 ppm ROE:

X = [(1.589)(concentration)(Q)] (0.6258)

Calculation for the 500 ppm ROE:

X = [(0.4546)(concentration)(Q)] (.06258)

(H2S concentrations in decimal form)

10,000 ppm + = .01
1,000 ppm + = .001
100 ppm + = .0001
10 ppm + = .00001

EXAMPLE: If a well / facility has been determined to have 150 ppm H2S in the gas mixture and the well / facility is producing at a gas rate of 200 MCFD then:

ROE for 100 ppm X=[(1.589)(.00010)(200,000)] (0.6258)
X=8.8'
ROE for 500 ppm X=[(.4546)(.00050)(200,000)] (0.6258)
X=10.9'

These calculations will be forwarded to the appropriate NMOCD district office when applicable.

PUBLIC EVACUATION PLAN

When the supervisor has determined that the general public will be involved, the following plan will be implemented.

1. Notification of the emergency response agencies of the hazardous condition and implement evacuation procedures.

2. A trained person in H2S safety shall monitor with detection equipment the H2S concentration, wind and area of exposure. This person will determine the outer perimeter of the hazardous area. The extent of the evacuation area will be determined from the data being collected. Monitoring shall continue until the situation has been resolved. All monitoring equipment shall be UL approved for use in Class I Groups A, B, C, & D, Division I hazardous locations. All monitors will have a minimum capability of measuring H2S, oxygen, and flammable values.

3. Law enforcement shall be notified to set up necessary barriers and maintain such for the duration of the situation as well as aid in the evacuation procedure.

4. The company representative shall stay in communication with all agencies throughout the duration of the situation and inform such agencies when the situation has been contained and the effected area is safe to enter.

PROCEDURE FOR IGNITING AN UNCONTROLLABLE CONDITION

The decision to ignite a well should be a last resort and one, if not both, of the following pertain:

1. Human life and / or property are endangered.

2. There is no hope of bringing the situation under control with the prevailing conditions at the site.

Instructions for Igniting the Well:

1. Two people are required. They must be equipped with positive pressure, self-contained breathing apparatus and "D"-ring style, full body, OSHA approved safety harness. Non-flammable rope will be attached.

2. One of the people will be a qualified safety person who will test the atmosphere for H2S, oxygen and LFL. The other person will be the company representative.

3. Ignite upwind from a distance no closer than necessary. Make sure that where you ignite from has the maximum escape avenue available. A 25mm flare gun with a range of approximately +/- 500 feet shall be used to ignite the gas.

4. Before igniting, check for the presence of combustible gases.

5. After igniting, continue emergency actions and procedures as before.

REQUIRED EMERGENCY EQUIPMENT

1. Breathing Apparatus

* Rescue Packs (SCBA) – 1 unit shall be placed at each breathing area, 2 shall be stored in the safety trailer.

* Work / Escape Packs – 4 packs shall be stored on the rig floor with sufficient air hose not to restrict work activity.

* Emergency Escape Packs – 4 packs shall be stored in the doghouse for emergency evacuation.

2. Signage and Flagging

* One Color Code Condition Sign will be placed at the entrance to the site reflecting the possible conditions at the site.

* A Colored Condition flag will be on display reflecting the condition at the site at that time.

3. Briefing Area

* Two perpendicular areas will be designated by signs and readily accessible.

4. Windsocks

* Two windsocks will be placed in strategic locations, visible from all angles.

5. H2S Detectors and Alarms

* The stationary detector with three (3) sensors will be placed in the upper dog house if equipped, set to visually alarm @ 10 ppm and audible alarm @ 15 ppm. Calibrate a minimum of every 30 days or as needed. The three sensors will be placed in the following places: (Gas sample tubes will be stored in the safety trailer):

* Rig Floor
* Bell Nipple
* End of flow line or where will bore fluid is being discharged

6. Auxiliary Rescue Equipment

* Stretcher
* Two OSHA full body harnesses
* 100' of 5/8" OSHA approved rope
* One 20 lb. Class ABC fire extinguisher
* Communication via cell phones on location and vehicles on location

USING SELF-CONTAINED BREATHING AIR EQUIPMENT (SCBA)

1. SCBA should be worn when any of the following are preformed:

    * Working near the top or on top of a tank.
    * Disconnecting any line where H2S can reasonably be expected.
    * Sampling air in the area to determine if toxic concentrations of H2S exist.
    * Working in areas where over 10 ppm of H2S has been detected.
    * At any time there is a doubt of the level of H2S in the area.

2. All personnel shall be trained in the use of SCBA prior to working in a potentially hazardous location.

3. Facial hair and standard eyeglasses are not allowed with SCBA.

4. Contact lenses are never allowed with SCBA.

5. When breaking out any line where H2S can reasonably be expected.

6. After each use, the SCBA unit shall be cleaned, disinfected, serviced and inspected.

7. All SCBA shall be inspected monthly.

RESCUE & FIRST AID FOR VICTIMS OF H2S POISONING

* Do not panic.

* Remain calm and think.

* Get on the breathing apparatus.

* Remove the victim to the safe breathing area as quickly as possible, upwind and uphill from source or crosswind to achieve upwind.

* Notify emergency response personnel.

* Provide artificial respiration and / or CPR as necessary.

* Remove all contaminated clothing to avoid further exposure.

* A minimum of two (2) personnel on location shall be trained in CPR and First Aid.

Toxic Effects of H2S Poisoning

Hydrogen Sulfide is extremely toxic. The acceptable ceiling concentration for eight-hour exposure is 10 PPM, which is .001% by volume. Hydrogen Sulfide is heavier than air (specific gravity – 1.192) and is colorless and transparent. Hydrogen Sulfide is almost as toxic as Hydrogen Cyanide and is 5-6 times more toxic than Carbon Monoxide. Occupational exposure limits for Hydrogen Sulfide and other gases are compared below in Table I. Toxicity table for H2S and physical effects are shown in Table II.

Table I
Permissible Exposure Limits of Various Gases

Common Name	Symbol	Sp. Gravity	TLV	STEL	IDLH
Hydrogen Cyanide	HCN	.94	4.7 ppm	C	
Hydrogen Sulfide	H2S	1.192	10 ppm	15 ppm	100ppm
Sulfide Dioxide	SO2	2.21	2 ppm	5 ppm	
Chlorine	CL	2.45	.5 ppm	1 ppm	
Carbon Monoxide	CO	.97	25 ppm	200 ppm	
Carbon Dioxide	CO2	1.52	5000 ppm	30,000 ppm	
Methane	CH4	.55	4.7% LEL	14% UEL	

Definitions

A. TVL – Threshold Limit Value is the concentration employees may be exposed to based on a TWA (time weighed average) for eight (8) hours in one day for 40 hours in one (1) week. This is set by ACGIH (American Conference of Government Hygienists) and regulated by OSHA.

B. STEL – Short Term Exposure Limit is the 15 minute average concentration an employee may be exposed to providing that the highest exposure never exceeds the OEL (Occupational Exposure Limit). The OEL for H2S is 19 PPM.

C. IDLH – Immediately Dangerous to Life and Health is the concentration that has been determined by the ACGIH to cause serious health problems or death if exposed to this level. The IDLH for H2S is 100 PPM.

D. TWA – Time Weighted Average is the average concentration of any chemical or gas for an eight (8) hour period. This is the concentration that any employee may be exposed to based on a TWA.

TABLE II
Toxicity Table of H2S

Percent %	PPM	Physical Effects
.0001	1	Can smell less than 1 ppm.
.001	10	TLV for 8 hours of exposure.
.0015	15	STEL for 15 minutes of exposure.
.01	100	Immediately Dangerous to Life & Health. Kills sense of smell in 3 to 5 minutes.
.02	200	Kills sense of smell quickly, may burn eyes and throat.
.05	500	Dizziness, cessation of breathing begins in a few minutes.
.07	700	Unconscious quickly, death will result if not rescued promptly.
.10	1000	Death will result unless rescued promptly. Artificial resuscitation may be necessary.

PHYSICAL PROPERTIES OF H2S

The properties of all gases are usually described in the context of seven major categories:

COLOR
ODOR
VAPOR DENSITY
EXPLOSIVE LIMITS
FLAMMABILITY
SOLUBILITY (IN WATER)
BOILING POINT

Hydrogen Sulfide is no exception. Information from these categories should be considered in order to provide a fairly complete picture of the properties of the gas.

COLOR – TRANSPARENT

Hydrogen Sulfide is colorless so it is invisible. This fact simply means that you can't rely on your eyes to detect its presence, a fact that makes the gas extremely dangerous to be around.

ODOR – ROTTEN EGGS

Hydrogen Sulfide has a distinctive offensive smell, similar to "rotten eggs." For this reason it earned its common name "sour gas." However, H2S, even in low concentrations, is so toxic that it attacks and quickly impairs a victim's sense of smell, so it could be fatal to rely on your nose as a detection device.

VAPOR DENSITY – SPECIFIC GRAVITY OF 1.192

Hydrogen Sulfide is heavier than air so it tends to settle in low-lying areas like pits, cellars or tanks. If you find yourself in a location where H2S is known to exist, protect yourself. Whenever possible, work in an area upwind and keep to higher ground.

EXPLOSIVE LIMITS – 4.3% TO 46%

Mixed with the right proportion of air or oxygen, H2S will ignite and burn or explode, producing another alarming element of danger besides poisoning.

FLAMMABILITY

Hydrogen Sulfide will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide (SO2), another hazardous gas that irritates the eyes and lungs.

SOLUBILITY – 4 TO 1 RATIO WITH WATER

Hydrogen Sulfide can be dissolved in liquids, which means that it can be present in any container or vessel used to carry or hold well fluids including oil, water, emulsion and sludge. The solubility of H2S is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing H2S may release the gas into the air.

BOILING POINT – (-76 degrees Fahrenheit)

Liquefied Hydrogen Sulfide boils at a very low temperature, so it is usually found as a gas.

SURFACE USE AND OPERATING PLAN

1. Existing & Proposed Access Roads

A. The well site survey and elevation plat for the proposed well is shown in Exhibit #1. It was staked by Basin Surveying, Hobbs, NM.

B. All roads to the location are shown in the topographic map Exhibit #2. The existing lease roads are illustrated and are adequate for travel during drilling and production operations. Upgrading existing roads prior to drilling the well will be done where necessary

C. Directions to location: From the intersection of Us Hwy. 82 and Kawanee, Go north on Kewanee for 5.3 miles to lease road, on lease road go north 0.5 miles to the high lonesome #1 location and proposed lease road.

D. Routine grading and maintenance of existing roads will be conducted as necessary to maintain their condition as long as any operations continue on this lease.

2. Proposed Access Road:

Exhibit #4 shows that the location, when constructed will be on the edge of the existing lease road. 509.4' of new access road will be constructed. .

A. The maximum width of the running surface will be 14'. The road will be crowned, ditched and constructed of 6" rolled and compacted caliche. Ditches will be at 3:1 slope and 4 feet wide. Water will be diverted where necessary to avoid ponding, prevent erosion, maintain good drainage, and to be consistent with local drainage patterns.

B. The average grade will be less than 1%.

C. No turnouts are planned.

D. No culverts, cattleguard, gates, low water crossings or fence cuts are necessary.

E. Surfacing material will consist of native caliche. Caliche will be obtained from the nearest BLM approved caliche pit or reserve pit area.

3. Location of Existing Well:

Exhibit #5 shows all existing wells within a one-mile radius of this well. As shown on this plat there are numerous wells producing from the San Andres and Yeso formations.

4. Location of Existing and/or Proposed Facilities:

A. COG Operating LLC does operate a production facility on this lease.

B. If the well is productive, contemplated facilities will be as follows:

1) Production will be sent to the High Lonesome "23" Fed #2H tank battery located on location. The facility location is shown in Exhibit #5.

2) The tank battery and facilities including all flow lines and piping will be installed according to API specifications.

3) Any additional caliche will be obtained from a BLM approved caliche pit. Any additional construction materials will be purchased from contractors.

4) Proposed flow lines, will follow an archaeologically approved route to the High Lonesome 2H Tank Battery located at the proposed well location. The flowline will be SDR 7 3" poly line laid on the surface and will be approximately 10in length. (All on location site.)

5) It will be necessary to run electric power if this well is productive. Power will be provided by Lea County Electric and they will submit a separate plan and ROW for service to the well location.

6) If the well is productive, rehabilitation plans will include the following:
   a) The original topsoil from the well site will be returned to the location. And the site will be re-contoured to as close to possible to the original site.

5. Location and Type of Water Supply:

The well will be drilled with combination brine and fresh water mud system as outlined in the drilling program. The water will be obtained from commercial water stations in the area and hauled to location by transport truck over the existing and proposed access roads shown in Exhibit #2. If a commercial fresh water source is nearby, fast line may be laid along

existing road ROW's and fresh water pumped to the well. No water well will be drilled on the location.

6. Source of Construction Materials:

All caliche required for construction of the drill pad and proposed new access road (approximately 2500 cubic yards) will be obtained from a BLM approved caliche pit .

7. Methods of Handling Water Disposal:

Methods of Handling Water Disposal:

A. The well will be drilled utilizing a closed loop mud system. Drill cuttings will be held in roll-off style mud boxes and taken to an NMOCD approved disposal site.

B. Drilling fluids will be contained in steel mud pits.

C. Water produced from the well during completion will be held temporally in steel tanks and then taken to an NMOCD approved commercial disposal facility.

D. Garbage and trash produced during drilling or completion operations will be collected in a trash bin and hauled to an approved landfill. No toxic waste or hazardous chemicals will be produced by this operation.

E. After the rig is moved out and the well is either completed or abandoned, all waste materials will be cleaned up within 30 days. In the event of a dry hole, only a dry hole marker will remain.

8. Ancillary Facilities:

No airstrip, campsite or other facilities will be built as a result of the operation on this well.

9. Well Site Layout:

A. The drill pad layout, with elevations staked by Asel Surveying, is shown in Exhibit #4. Dimensions of the pad and pits are shown on Exhibit #6. Topsoil, if available, will be stockpiled per BLM specifications. Because the pad is almost level no major cuts will be required.

B. Exhibit #6 also shows the proposed orientation of reserve pit, working pit and access road. No permanent living facilities are planned, but a temporary foreman/toolpusher's trailer will be on location during the drilling operations.

10. Plans for Restoration of the Surface:

A. Upon completion of the drilling and/or completion operations, it the well is found to be non-commercial, the caliche will be removed from the pad and transported to the original caliche pit or used for other drilling locations in the area. The road will be reclaimed as directed by the BLM. The original top soil will again be returned to the pad and contoured, as close as possible, to the original topography.

B. The location and road will be rehabilitated as recommended by the BLM.

C. Upon completion of proposed operations, if the well is completed, the reserve pit area will be closed as outlined in Section 4.6 above within the same prescribed time. Any additional caliche required for facilities will be obtained from a BLM approved caliche pit. Topsoil removed from the drill site will be used to re-contour the pit area to its original natural level and reseeded as per BLM specifications.

11. Surface Ownership:

A. The surface is owned by the U.S. Government and is administered by the Bureau of Land Management. The surface is multiple uses with the primary uses of the region for grazing of livestock and the production of oil and gas.

B. The surface tenant for this site is Bogel Farms, Lewis Derrick, PO Box 441, Artesia, NM.

C. The proposed road routes and surface location will be restored as directed by the BLM.

12. Other Information:

A. The area around the well site is grassland and the topsoil is sandy. The vegetation is moderately sparse with native prairie grasses, some mesquite and shinnery oak. No wildlife was observed but it is likely that mule deer, rabbits, coyotes and rodents traverse the area.

B. There is no permanent or live water in the immediate area.

C. There are no dwellings within 2 miles of this location.

D. A Cultural Resources Examination is being prepared by Southern New Mexico Archaeological Services, Inc. P.O. Box 1, Bent New Mexico, 88314, phone # 505-671-4797 and the results will be forwarded to your office in the near future.

13. Bond Coverage:

Bond Coverage is Nationwide Bond # 000215

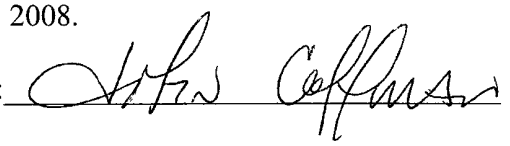
14. Lessee's and Operator's Representative:

The COG Operating LLC representative responsible for assuring compliance with the surface use plan is as follows:

John Coffman,
Drilling Superintendent
COG Operating LLC
550 W. Texas, Suite 1300
Midland, TX 79701
Phone (432) 683-7443 (office)
(432) 631-9762 (cell)

Erick Nelson.
Division Operations Manager
COG Operating LLC
550 W. Texas, Suite 1300
Midland, TX 79701
Phone (505) 746-2210 (office)
(432) 238-7591 (cell)

I hereby certify that I, or persons under my direct supervision, have inspected the drill site and access road proposed herein; that I am familiar with the conditions that presently exist; that I have full knowledge of State and Federal laws applicable to this operation; that the statements make in this APD package are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed in conformity with this APD package and the terms and conditions under which it is approved. I also certify that I, or COG Operating, LLC, am responsible for the operations conducted under this application. These statements are subject to the provisions of 18 U.S.C. 1001 for the filing of false statements. Executed this 18th day of November, 2008.

Signed: 

Printed Name: John Coffman
Position: Drilling Superintendent
Address: 550 W. Texas, Suite 1300, Midland, Texas 79701
Telephone: (432) 683-7443
Field Representative (if not above signatory): Same
Address (if different from above):
Telephone (if different from above):
E-mail: JCoffman@conchoresources.com

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating
LEASE NO.:	NM118710
WELL NAME & NO.:	2 High Lonesome 23 Fed
SURFACE HOLE FOOTAGE:	1980' FSL & 430' FEL
BOTTOM HOLE FOOTAGE	1980' FSL & 430' FWL
LOCATION:	Section 23, T. 16 S., R 29 E., NMPM
COUNTY:	Eddy County, New Mexico

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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.

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Reporting

1. **Subsequent sundries to be filed with drilling details about spud, casing and completion work.**
2. **Completion report to be sent within 30 days of completion. Completion report to have all items completed.**

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5972 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall stockpile the topsoil of the well pad. The topsoil to be stripped is approximately 8 inches in depth. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

C. RESERVE PITS

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

If the operator elects to surface the access road and/or well pad, mineral materials extracted during construction of the reserve pit may be used for surfacing the well pad and access road and other facilities on the lease.

Payment shall be made to the BLM prior to removal of any additional federal mineral materials from any site other than the reserve pit. Call theCarlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. ON LEASE ACCESS ROADS

Road Width
The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) feet.

Surfacing
Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

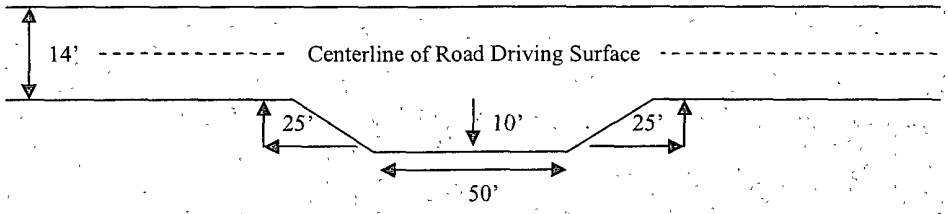
Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:

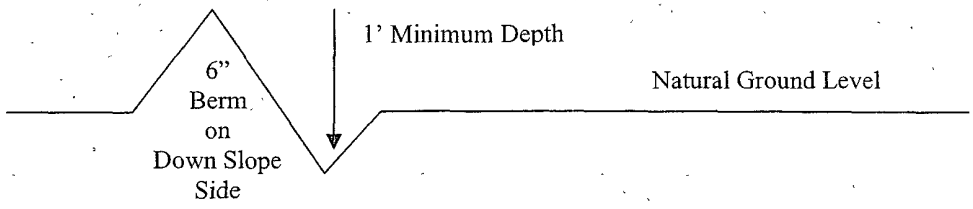
Standard Turnout – Plan View



Drainage
Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

400 foot road with 4% road slope: $\frac{400'}{4\%} + 100' = 200'$ lead-off ditch interval

Culvert Installations

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

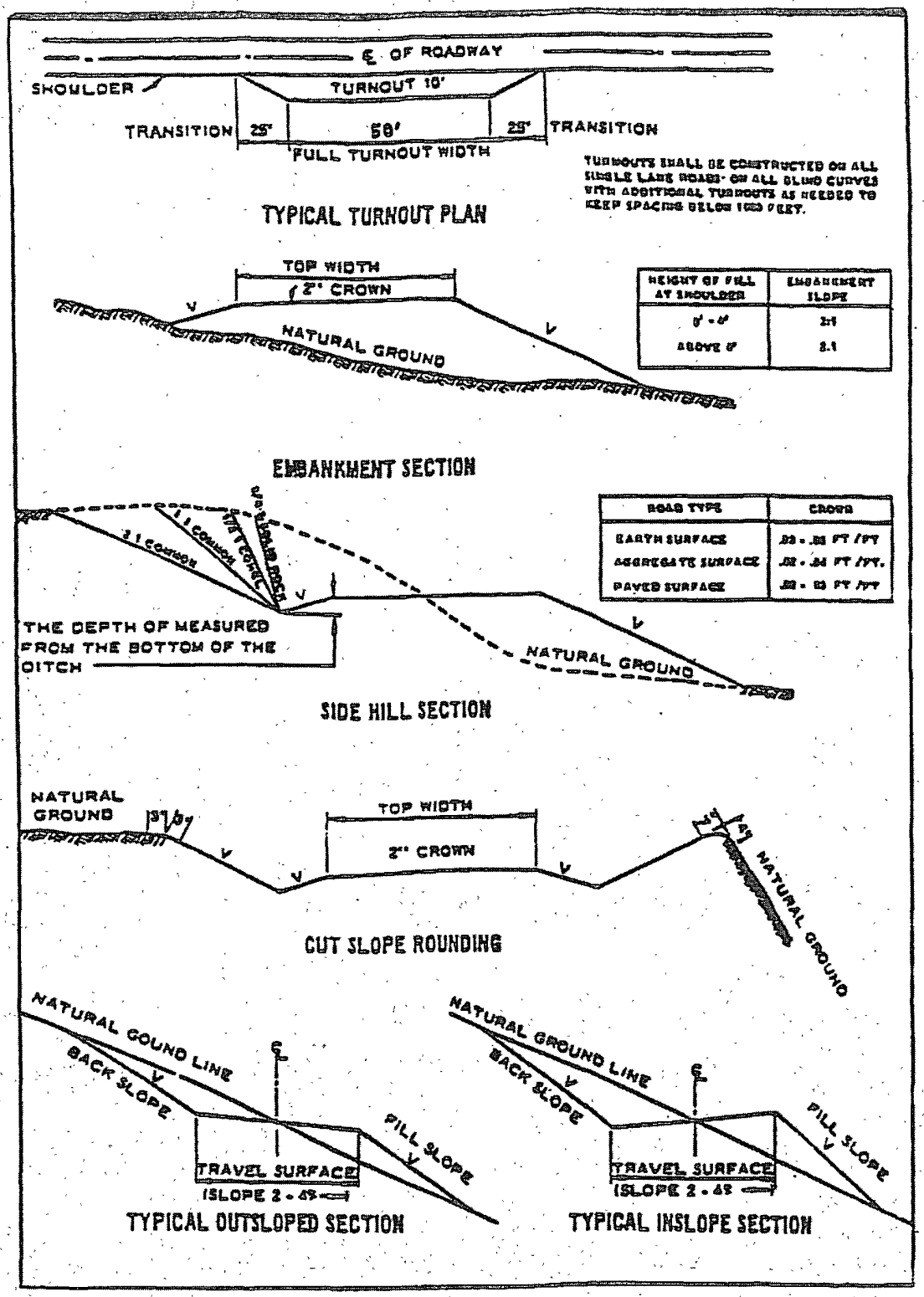
A gate shall be constructed and fastened securely to H-braces.

Fence Requirement
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Public Access
Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Figure 1 – Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

a. Spudding well
b. Setting and/or Cementing of all casing strings
c. BOPE tests

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. **Although Hydrogen Sulfide has not been reported in this section, it is always a potential hazard. If Hydrogen Sulfide is encountered, please report measured amounts and formations to the BLM.**

2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

B. CASING

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work. Failure to obtain approval prior to work will result in an Incident of Non-Compliance being issued.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. See individual casing strings for details regarding lead cement slurry requirements.

No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

Possible lost circulation in the Grayburg and San Andres formations.

1. The **13-3/8** inch surface casing shall be set **at approximately 400 feet (a minimum of 25 feet into the Rustler Anhydrite and above the salt)** and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

    b. Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry. This is not applicable if the proposed cementing program is used.

    c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

    d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

    ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above.

3. The minimum required fill of cement behind the **7** inch production casing is:

    ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

4. The minimum required fill of cement behind the **4-1/2** inch production casing is:

    ☒ Cement not required as packer system is being used. **Tie back of 100' approved.**

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

    a. The tests shall be done by an independent service company.

    b. The results of the test shall be reported to the appropriate BLM office.

    c. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

    d. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

    e. **Effective November 1, 2008, no variances will be granted on reduced pressure tests on the surface casing and BOP/BOPE. Onshore Order 2 requirements will be in effect.**

D. DRILL STEM TEST

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

WWI 122008

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities
Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Containment Structures
The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

Painting Requirement
All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color
Shale Green, Munsell Soil Color Chart # 5Y 4/2

IX. INTERIM RECLAMATION & RESERVE PIT CLOSURE

A. INTERIM RECLAMATION

If the well is a producer, interim reclamation shall be conducted on the well site in accordance with the orders of the Authorized Officer. The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

The operators should work with BLM surface management specialists to devise the best strategies to reduce the size of the location. Any reductions should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

Seed Mixture 4, for Gypsum Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

Species	lb/acre
Alkali Sacaton (Sporobolus airoides)	1.0
DWS Four-wing saltbush (Atriplex canescens)	5.0

DWS: DeWinged Seed

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

(Insert Seed Mixture Here)

X. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

Upon abandonment of the well and/or when the access road is no longer in service the Authorized Officer shall issue instructions and/or orders for surface reclamation and restoration of all disturbed areas.

On private surface/federal mineral estate land the reclamation procedures on the road and well pad shall be accomplished in accordance with the private surface land owner agreement.