

OCD-HOBBS

1.3 miles

A75-08-832

04A

1207

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

1a Type of work <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5 Lease Serial No. LC-029405B
1b Type of Well <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		6 If Indian, Allottee or Tribe Name N/A
2 Name of Operator COG Operating LLC		7 If Unit or CA Agreement, Name and No. N/A
3a Address 550 W. Texas, Suite 1300 Midland TX 79701		8 Lease Name and Well No. <302498> G C Federal #13
3b Phone No. (include area code) <229137> (432) 685-4340		9 API Well No. 30-025- 39109
4 Location of Well (Report location clearly and in accordance with any State requirements *) At surface 575' FSL & 1915' FWL, UL N At proposed prod zone 990' FSL & 1650' FWL, UL N		10 Field and Pool, or Exploratory Maljamar; Yeso, West 44500
14 Distance in miles and direction from nearest town or post office* 2.5 miles SW of Maljamar, NM		11 Sec., T R M or Blk. and Survey or Area Sec 19, T17S, R32E
15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any) 990'	16 No. of acres in lease 1602	17 Spacing Unit dedicated to this well 40
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft 623'	19 Proposed Depth 6900'	20 BLM/BIA Bond No on file NMB000215
21 Elevations (Show whether DF, KDB, RT, GL, etc.) 3925' GL	22 Approximate date work will start* 07/15/2008	23 Estimated duration 10 days

24. Attachments

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

- | | |
|--|--|
| 1. Well plat certified by a registered surveyor | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above) |
| 2. A Drilling Plan | 5. Operator certification |
| 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) | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25 Signature <i>Phyllis A. Edwards</i>	Name (Printed/Typed) Phyllis A. Edwards	Date 07/25/2008
Title Regulatory Analyst		

Approved by (Signature) /s/ James Stovall	Name (Printed/Typed) James Stovall	Date AUG 19 2008
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)

RECEIVED

KZ

Roswell Controlled Water Basin

AUG 20 2008

HOBBS OCD

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

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number 30-025- 39109	Pool Code 44500	Pool Name MALJAMAR; YESO, WEST
Property Code 302498	Property Name GC FEDERAL	Well Number 13
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3925'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	19	17-S	32-E		575	SOUTH	1915	WEST	LEA

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
N	19	17-S	32-E		990	SOUTH	1650	WEST	LEA

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
40			

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

LOT 1			
40.98 AC LOT 2			
40.98 AC LOT 3			
40.98 AC LOT 4			
40.98 AC			

GEODETIC COORDINATES
NAD 27 NME
SURFACE LOCATION
Y=660381.2 N
X=661474.4 E
LAT.=32.814373° N
LONG.=103.807744° W

BOTTOM LOCATION
Y=660795.0 N
X=661207.2 E

HORIZ. DIST.=492.7'
GRID AZ=327°09'13"

DETAIL
3921.8' 3919.9'
600'
3918.3' 3922.3'

SEE DETAIL

BH

SURF

1650'

1915'

575'

990'

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.

Phyllis A. Edwards 7-22-08
Signature Date

Phyllis A. Edwards
Printed Name Regulatory Analyst

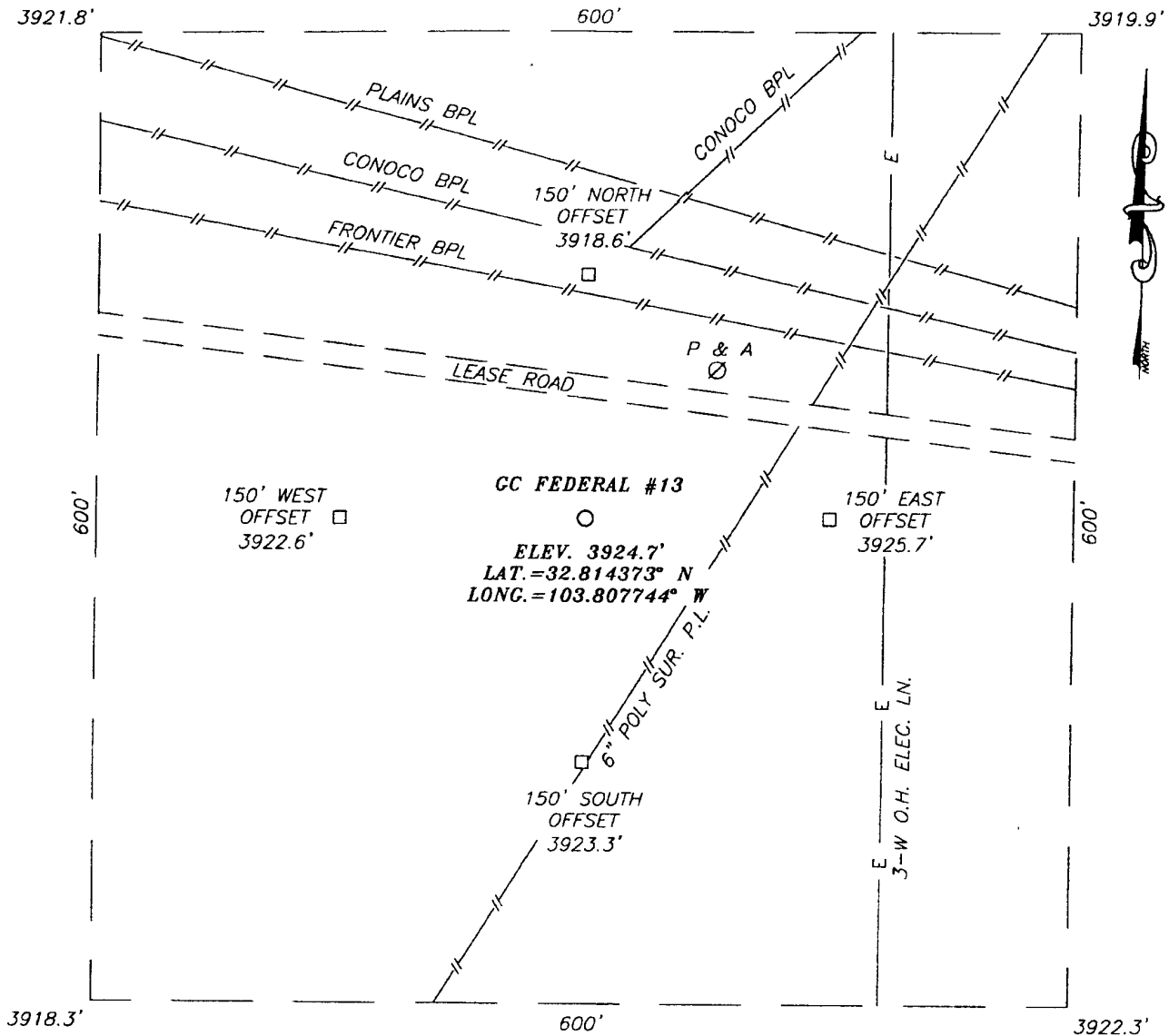
SURVEYOR CERTIFICATION

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.

RONALD J. EIDSON
Date Surveyed 7/14/08
Signature & Seal of Professional Surveyor
3239
7/14/08
08-01-0956

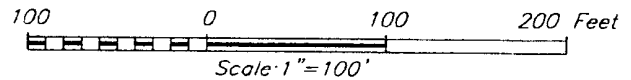
Certificate No. GARY EIDSON 12641
RONALD J. EIDSON 3239

SECTION 19, TOWNSHIP 17 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO



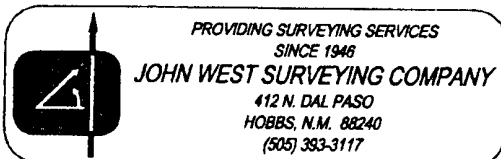
DIRECTIONS TO LOCATION

FROM THE INTERSECTION OF CO. RD. L126 (MALJAMAR RD.) AND CO. RD. L126 (CONOCO RD.), GO WEST ON CONOCO RD. APPROX. 1.2 MILES TO LEASE ROAD. CONTINUE WEST ON LEASE ROAD APPROX. 1.6 MILES. THIS LOCATION IS APPROX. 50 FEET SOUTH OF LEASE ROAD.



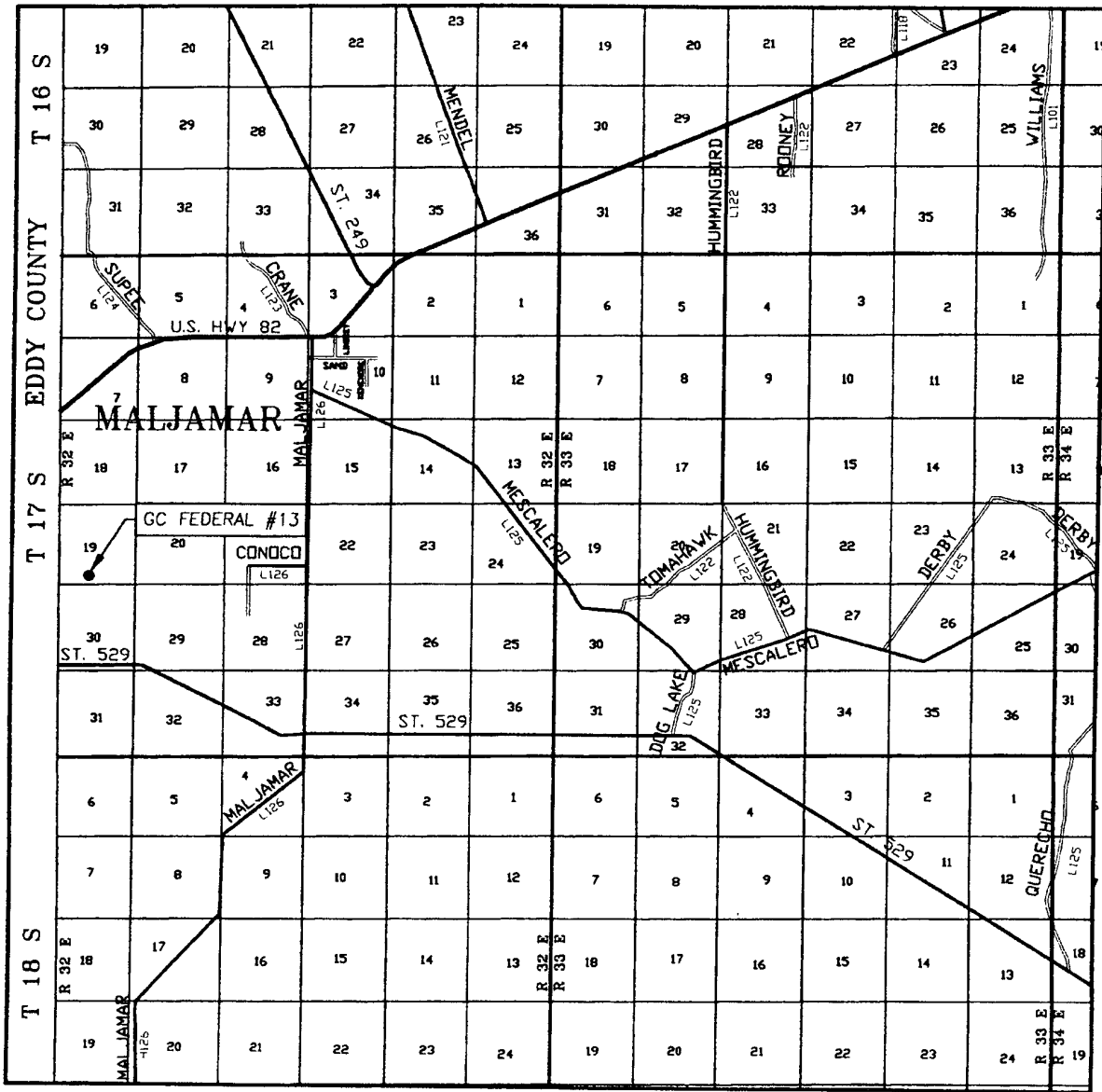
COG OPERATING, LLC

GC FEDERAL #13 WELL
LOCATED 575 FEET FROM THE SOUTH LINE
AND 1915 FEET FROM THE WEST LINE OF SECTION 19,
TOWNSHIP 17 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.



Survey Date. 7/01/08	Sheet 1 of 1 Sheets
W.O. Number: 08.11.0956	Dr By: AR
Date: 7/09/08	Rev 1-N/A
Disk:	08110956
	Scale: 1"=100'

VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 19 TWP. 17-S RGE. 32-E

SURVEY _____ N.M.P.M. _____

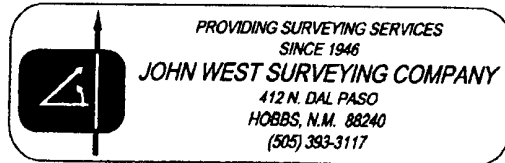
COUNTY LEA STATE NEW MEXICO

DESCRIPTION 575' FSL & 1915' FWL

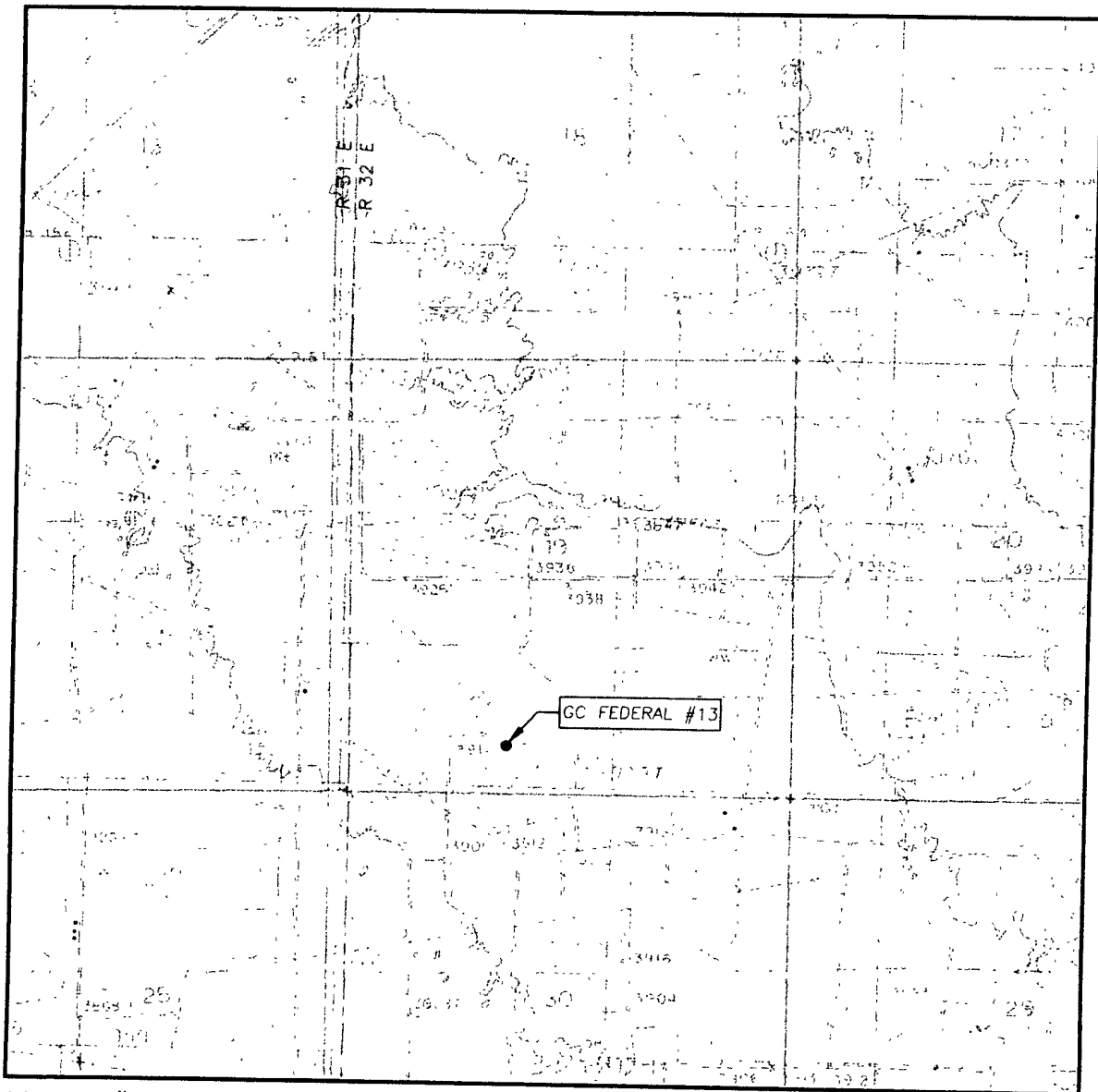
ELEVATION 3925'

OPERATOR COG OPERATING, LLC

LEASE GC FEDERAL



LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:
MALJAMAR, N.M. - 10'

SEC. 19 TWP 17-S RGE. 32-E

SURVEY N.M.P.M.

COUNTY LEA STATE NEW MEXICO

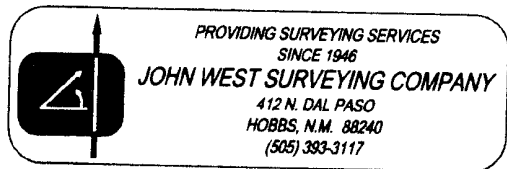
DESCRIPTION 575' FSL & 1915' FWL

ELEVATION 3925'

OPERATOR COG OPERATING, LLC

LEASE GC FEDERAL

U.S.G.S. TOPOGRAPHIC MAP
MALJAMAR, N.M.



PROVIDING SURVEYING SERVICES
SINCE 1946

JOHN WEST SURVEYING COMPANY

412 N. DAL PASO
HOBBS, N.M. 88240
(505) 393-3117

MASTER DRILLING PROGRAM

1. Geologic Name of Surface Formation

Quaternary

2. Estimated Tops of Important Geologic Markers:

Quaternary	Surface
Top of Salt	900'
Base of Salt	1700'
Yates	2000'
Seven Rivers	2375'
Queen	2975'
Grayburg	3475'
San Andres	3775'
Glorietta	5225'
Yeso Group	5325'

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

Water Sand	150'	Fresh Water
Grayburg	3475'	Oil/Gas
San Andres	3775'	Oil/Gas
Glorietta	5225'	Oil/Gas
Yeso Group	5325'	Oil/Gas

No other formations are expected to give up oil, gas or fresh water in measurable quantities. Setting 13 3/8" casing to 650' and circulating cement back to the surface will protect the surface fresh water sand. The Salt Section will be protected by setting 8 5/8" casing to 2100' and circulating cement back to the surface. Any shallower zones above TD, which contain commercial quantities of oil and/or gas, will have cement circulated across them by cementing 5 1/2" production casing back to 200' into the intermediate casing, to be run at TD.

4. Casing Program

Hole Size	Interval	OD Casing	Weight	Grade	Jt., Condition	burst/collapse/tension
17 1/2"	0-650'	13 3/8"	48#	H-40	ST&C/New	6.03/2.578/10.32
11" or 12 1/4"	0-2100'	8 5/8"	24 or 32#	J-55	ST&C/New	1.85/1.241/4.78
7 7/8"	0-T.D.	5 1/2"	17#	J-55 or L-80	LT&C/New	1.59/1.463/2.05

See
COP



5. Cement Program

- 13 3/8" Surface Casing: Class C, 500 sx lead, yield-1.98 + 200 sx tail, yield-1.32.
- 8 5/8" Intermediate Casing: 11" Hole: Class C, 500 sx lead, yield-2.45 + 200 sx tail, yield-1.32, back to surface.
12-1/4" Hole: Class C, 700 sx lead, yield-2.45 + 200 sx tail, yield-1.32, back to surface.
- 5 1/2" Production Casing: Class C, 700 sx Lead, yield-1.97 + 400 sx Tail, yield-1.37, to 200' minimum tie back to intermediate casing.

6. Minimum Specifications for Pressure Control

The blowout preventer equipment (BOP) shown in Exhibit #9 will consist of a double ram-type (2000 psi WP) preventer. This unit will be hydraulically operated and the ram type preventer will be equipped with blind rams on top of 4 1/2" drill pipe rams on the bottom. The BOP will be nipped up on the 13 3/8" surface casing with BOP equipment and tested together to 1000 psi by rig pump in one test. The BOP will then be nipped up on the 8 5/8" intermediate casing and tested by a third party to 2000 psi and used continuously until total depth is reached. All BOP's and accessory equipment will be tested to 2000 psi before drilling out of the intermediate casing. Pipe rams will be operationally checked each 24-hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment (Exhibit #10) will include a Kelly cock and floor safety valve, choke lines and a choke manifold (Exhibit #11) will a 2000 psi WP rating.

See
COA

7. Types and Characteristics of the Proposed Mud System

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

DEPTH	TYPE	WEIGHT	VISCOSITY	WATERLOSS
0-650'	Fresh Water	8.5	28	N.C.
650-2100'	Brine	10	30	N.C.
2100'-TD	Cut Brine	8.7-9.1	29	N.C.

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

8. Auxiliary Well Control and Monitoring Equipment

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

9. Logging, Testing and Coring Program

- A. The electric logging program will consist of GR-Dual Laterolog, Spectral Density, Dual Spaced Neutron, CSNG Log and will be run from TD to 8 5/8" casing shoe.
- B. Drill Stem test is not anticipated.
- C. No conventional coring is anticipated.
- D. Further testing procedures will be determined after the 5 1/2" production casing has been cemented at TD, based on drill shows and log evaluation.

10. Abnormal Conditions, Pressure, Temperatures and Potential Hazards

No abnormal pressures or temperatures are anticipated. The estimated bottom hole at TD is 110 degrees and the estimated maximum bottom hold 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 the well. A Hydrogen Sulfide Drilling Operation Plan is attached to this program. No major loss of circulation zones has been reported in offsetting wells.

11. Anticipated Starting Date and Duration of Operations

Road and location work will not begin until approval has been received from the BLM. As this is a Master Drilling plan, please refer to the Form 3160-3 for the anticipated start date. Once commenced, drilling operations should be finished in approximately 15 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.

COG Operating

Lea County, NM (NAD27 NME)

GC Federal #13

GC Federal #13

OH

Plan: Plan #1 - 7-7/8" Hole

Standard Planning Report

23 July, 2008



Scientific Drilling

Planning Report



Database: EDM 2003 16 Single User Db
Company: COG Operating
Project: Lea County, NM (NAD27 NME)
Site: GC Federal #13
Well: GC Federal #13
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole

Local Co-ordinate Reference: Well GC Federal #13
TVD Reference: Ground Elev @ 3925.00ft (Rig ?)
MD Reference: Ground Elev @ 3925.00ft (Rig ?)
North Reference: Gnd
Survey Calculation Method: Minimum Curvature

Project:	Lea County, NM (NAD27 NME)	System Datum:	Mean Sea Level
Map System:	US State Plane 1927 (Exact solution)		
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site:	GC Federal #13				
Site Position:		Northing:	660,381 200 ft	Latitude:	32° 48' 51 742 N
From:	Map	Easting:	661,474 400 ft	Longitude:	103° 48' 27 878 W
Position Uncertainty:	0 00 ft	Slot Radius:	"	Grid Convergence:	0 28 °

Well	GC Federal #13					
Well Position	+N/-S	0 00 ft	Northing:	660,381 200 ft	Latitude:	32° 48' 51 742 N
	+E/-W	0 00 ft	Easting:	661,474.400 ft	Longitude:	103° 48' 27.878 W
Position Uncertainty		0 00 ft	Wellhead Elevation:	ft	Ground Level:	3,925 00 ft

Wellbore:	OH				
Magnetics	Model Name	Sample Date	Declination	Dip Angle	Field Strength
			(°)	(°)	(nT)
	IGRF200510	7/23/2008	8 08	60 78	49,257

Design:	Plan #1 - 7-7/8" Hole				
Audit Notes:					
Version:	Phase:	PLAN	Tie On Depth:	0 00	
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(ft)	(ft)	(ft)	(°)	
	0 00	0 00	0 00	327 15	

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
0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	0 00	
2,400 00	0 00	0 00	2,400 00	0 00	0 00	0 00	0 00	0 00	0 00	
2,723 91	6 48	327 15	2,723 22	15 37	-9 92	2 00	2 00	-10 14	327 15	
6,927 53	6 48	327 15	6,900 00	413 80	-267 20	0 00	0 00	0 00	0 00	PBHL-GC Fed #13

Scientific Drilling

Planning Report



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Well: GC Federal #13
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Design: Plan #1 - 7-7/8" Hole

Local Co-ordinate Reference: Well GC Federal #13
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MD Reference: Ground Elev @ 3925 00ft (Rig ?)
North Reference: Grid
Survey Calculation Method: Minimum Curvature

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)
0 00	0 00	0 00	0.00	0 00	0 00	0 00	0 00	0 00	0 00
2,300 00	0 00	0 00	2,300.00	0 00	0 00	0 00	0 00	0 00	0 00
8 5/8" Casing									
2,400 00	0 00	0 00	2,400 00	0 00	0 00	0 00	0 00	0 00	0 00
KOP Start 2.00°/100'									
2,500 00	2 00	327 15	2,499 98	1 47	-0 95	1 75	2 00	2 00	0 00
2,600 00	4 00	327.15	2,599.84	5.86	-3 79	6.98	2 00	2 00	0 00
2,700 00	6 00	327 15	2,699 45	13 18	-8 51	15 69	2 00	2 00	0 00
2,723 91	6 48	327 15	2,723 22	15 37	-9 92	18 29	2 00	2 00	0 00
EOC hold 6.48°									
2,800 00	6 48	327 15	2,798 82	22 58	-14 58	26 88	0 00	0 00	0 00
2,900 00	6 48	327 15	2,898 19	32.06	-20 70	38 16	0 00	0 00	0 00
3,000 00	6 48	327.15	2,997 55	41 54	-26 82	49 44	0 00	0 00	0 00
3,100 00	6 48	327 15	3,096 91	51 01	-32 94	60 72	0 00	0 00	0 00
3,200.00	6 48	327 15	3,196 27	60.49	-39 06	72 01	0 00	0 00	0 00
3,300 00	6 48	327 15	3,295 63	69 97	-45 18	83 29	0 00	0 00	0 00
3,400 00	6 48	327 15	3,394 99	79 45	-51.30	94 57	0 00	0 00	0 00
3,500 00	6 48	327 15	3,494 35	88 93	-57 42	105 86	0.00	0 00	0 00
3,600 00	6 48	327 15	3,593 72	98 41	-63 54	117 14	0 00	0 00	0 00
3,700 00	6 48	327 15	3,693 08	107 88	-69 66	128 42	0 00	0 00	0 00
3,800 00	6 48	327 15	3,792 44	117.36	-75 78	139 70	0 00	0 00	0 00
3,900 00	6 48	327 15	3,891 80	126 84	-81 90	150 99	0 00	0 00	0 00
4,000 00	6 48	327.15	3,991 16	136 32	-88 02	162 27	0.00	0 00	0 00
4,100 00	6 48	327 15	4,090 52	145 80	-94 14	173 55	0 00	0 00	0 00
4,200 00	6 48	327 15	4,189.89	155 28	-100 26	184 83	0 00	0 00	0 00
4,300 00	6 48	327 15	4,289 25	164.75	-106 39	196 12	0 00	0 00	0 00
4,400 00	6 48	327 15	4,388 61	174 23	-112 51	207 40	0 00	0 00	0 00
4,500 00	6 48	327 15	4,487 97	183 71	-118 63	218 68	0 00	0 00	0 00
4,600 00	6 48	327 15	4,587 33	193.19	-124 75	229 96	0 00	0 00	0 00
4,700 00	6 48	327 15	4,686 69	202 67	-130.87	241 25	0 00	0 00	0 00
4,800 00	6 48	327 15	4,786 05	212 15	-136 99	252 53	0 00	0 00	0 00
4,900 00	6 48	327 15	4,885 42	221 62	-143 11	263 81	0 00	0 00	0 00
5,000 00	6 48	327 15	4,984 78	231 10	-149 23	275 09	0 00	0 00	0 00
5,100 00	6 48	327 15	5,084 14	240 58	-155 35	286 38	0 00	0 00	0 00
5,200 00	6 48	327 15	5,183 50	250 06	-161 47	297 66	0 00	0 00	0 00
5,300 00	6 48	327 15	5,282 86	259 54	-167 59	308 94	0 00	0 00	0 00
5,400 00	6 48	327 15	5,382 22	269.02	-173 71	320 23	0 00	0 00	0 00
5,500 00	6 48	327 15	5,481 58	278 49	-179 83	331 51	0 00	0 00	0 00
5,600 00	6 48	327 15	5,580 95	287 97	-185 95	342 79	0 00	0 00	0 00
5,700 00	6 48	327 15	5,680 31	297 45	-192 07	354 07	0 00	0 00	0 00
5,800 00	6 48	327 15	5,779 67	306 93	-198 19	365 36	0 00	0 00	0 00
5,900.00	6 48	327 15	5,879 03	316 41	-204 31	376 64	0 00	0 00	0 00
6,000 00	6 48	327 15	5,978 39	325 89	-210 43	387 92	0 00	0 00	0 00
6,100 00	6 48	327 15	6,077 75	335 36	-216 55	399 20	0.00	0 00	0 00
6,200 00	6 48	327 15	6,177 11	344 84	-222 67	410 49	0 00	0 00	0 00
6,300 00	6 48	327 15	6,276 48	354 32	-228 79	421 77	0 00	0 00	0 00
6,400 00	6 48	327 15	6,375 84	363 80	-234 91	433 05	0 00	0 00	0 00
6,500 00	6 48	327 15	6,475 20	373 28	-241 03	444 33	0 00	0 00	0 00
6,600 00	6 48	327 15	6,574 56	382 76	-247 15	455 62	0 00	0 00	0 00
6,700 00	6 48	327 15	6,673 92	392 23	-253 27	466 90	0 00	0 00	0 00
6,800 00	6 48	327 15	6,773 28	401 71	-259 39	478 18	0 00	0 00	0 00
6,900 00	6 48	327 15	6,872 64	411 19	-265 52	489 46	0 00	0 00	0 00
6,927 53	6 48	327 15	6,900 00	413 80	-267 20	492 57	0 00	0 00	0 00

Scientific Drilling

Planning Report



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PBHL-GC Fed #13									

Targets

Target Name	hit/miss target	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL-GC Fed #13	- plan hits target - Circle (radius 10 00)	0.00	0 00	6,900 00	413 80	-267 20	660,795 000	661,207 200	32° 48' 55 849 N	103° 48' 30 985 W

Casing Points

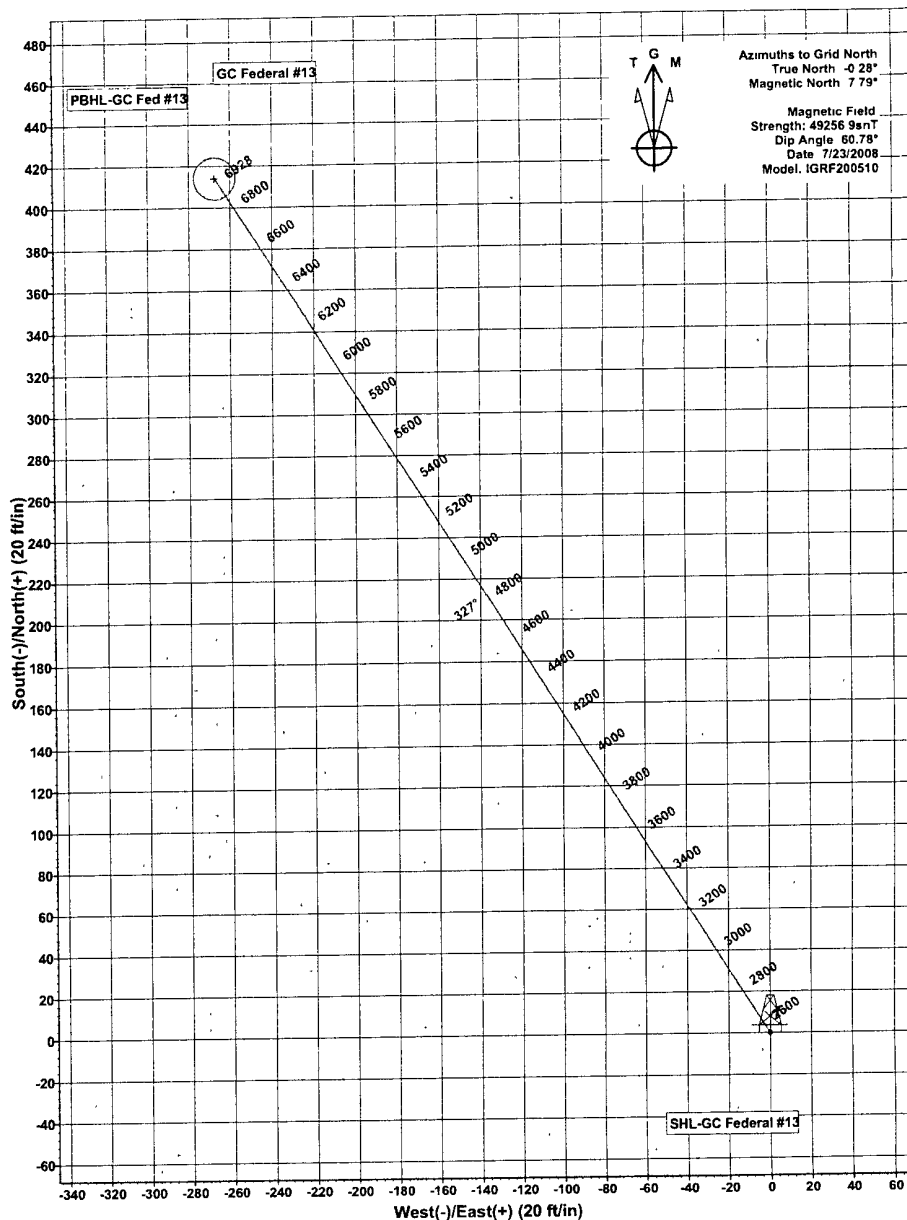
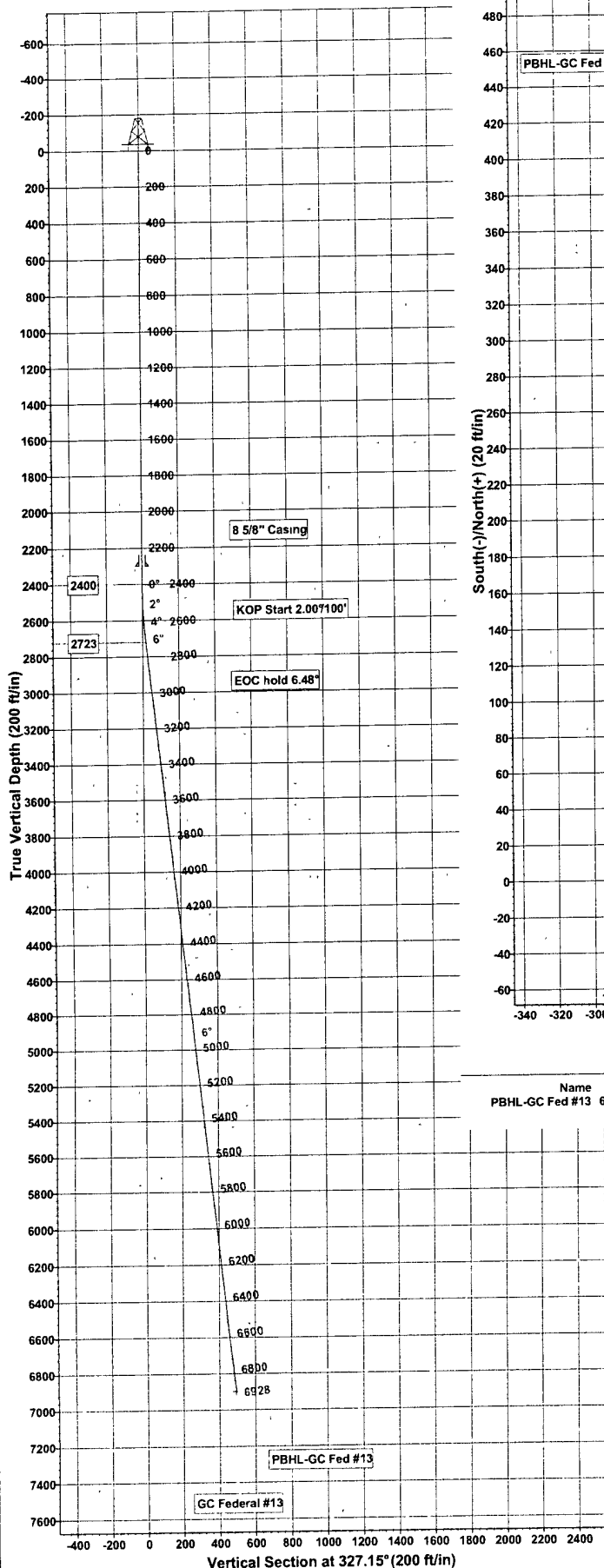
Measured Depth (ft)	Vertical Depth (ft)	Name	Casing Diameter (")	Hole Diameter (")
2,300 00	2,300 00	8 5/8" Casing	8-5/8	10-5/8

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Comment
2,400 00	2,400 00	0 00	0 00	KOP Start 2 00°/100'
2,723 91	2,723 22	15 37	-9 92	EOC hold 6 48°

COG Operating

Scientific Drilling for COG Operating
Site: Lea County, NM (NAD27 NME)
Well: GC Federal #13
Wellbore: OH
Design: Plan #1 - 7-7/8" Hole



WELLBORE TARGET DETAILS (MAP CO-ORDINATES)

Name	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Shape
PBHL-GC Fed #13	6900.00	413.80	-267.20	660795.000	661207.200	32°48' 55.849 N	103°48' 30.985 W	Circle (Radius : 10.00)

AZIMUTH CORRECTIONS

ALL AZIMUTHS MUST BE CORRECTED TO GRID
GRID CORRECTIONS MUST BE APPLIED BEFORE PLOTTING
To convert a Magnetic Direction to a Grid Direction, Add 7.79°
To convert a True Direction to a Grid Direction, Subtract 0.28°

SECTION DETAILS

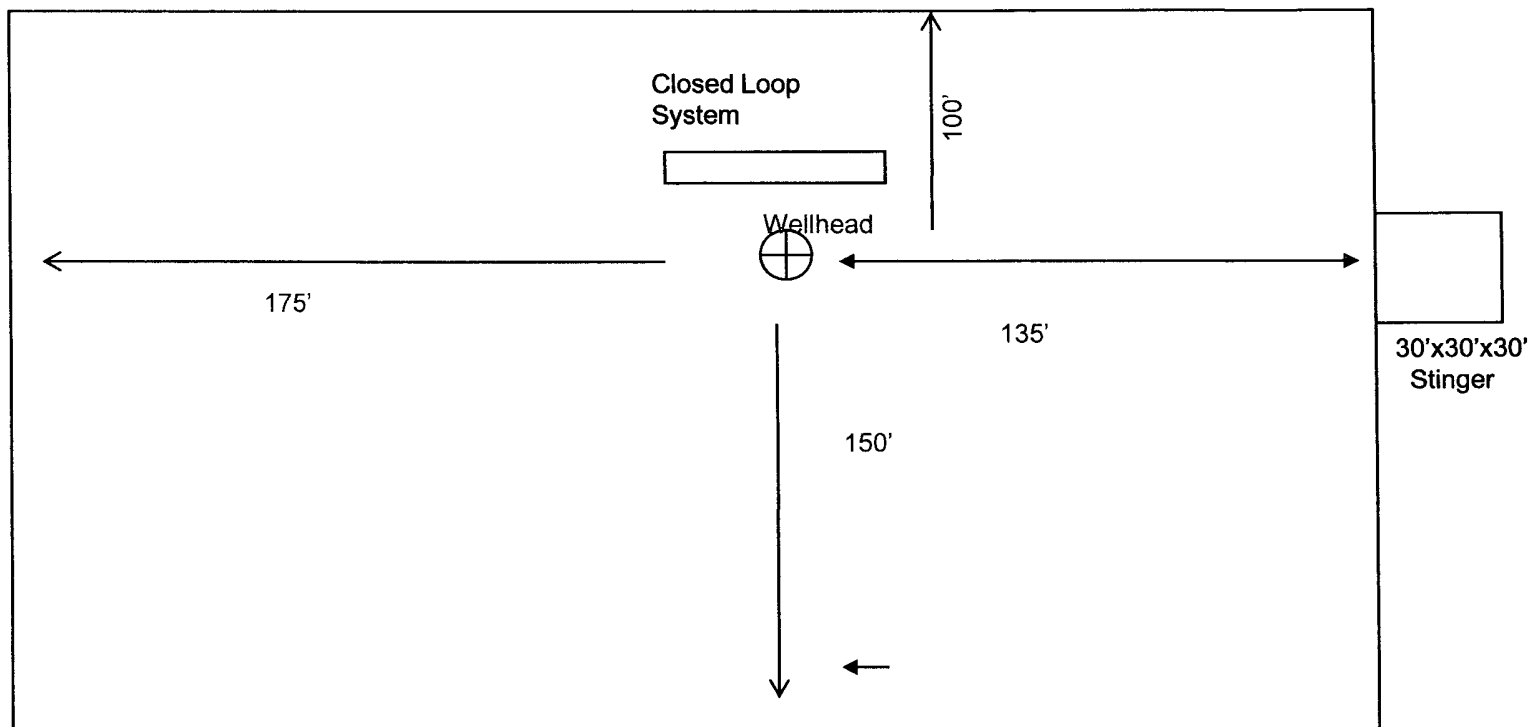
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
2	2400.00	0.00	0.00	2400.00	0.00	0.00	0.00	0.00	0.00	
3	2723.91	6.48	327.15	2723.22	15.37	-9.92	2.00	327.15	18.29	
4	6927.53	6.48	327.15	6900.00	413.80	-267.20	0.00	0.00	492.57	PBHL-GC Fed #13

WELL DETAILS GC Federal #13

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.00	0.00	660381.200	661474.400	32°48' 51.742 N	103°48' 27.878 W	

PROJECT DETAILS Lea County, NM (NAD27 NME) Plan. Plan #1 - 7-7/8" Hole (GC Federal #13/OH)

Geodetic System:	US State Plane 1927 (Exact solution)	Created By:	Julio Pina	Date:	23-Jul-08
Datum:	NAD 1927 (NADCON CONUS)	Checked:		Date:	
Ellipsoid:	Clarke 1866	Reviewed:		Date:	
Zone:	New Mexico East 3001	Approved:		Date:	
System Datum:	Mean Sea Level				



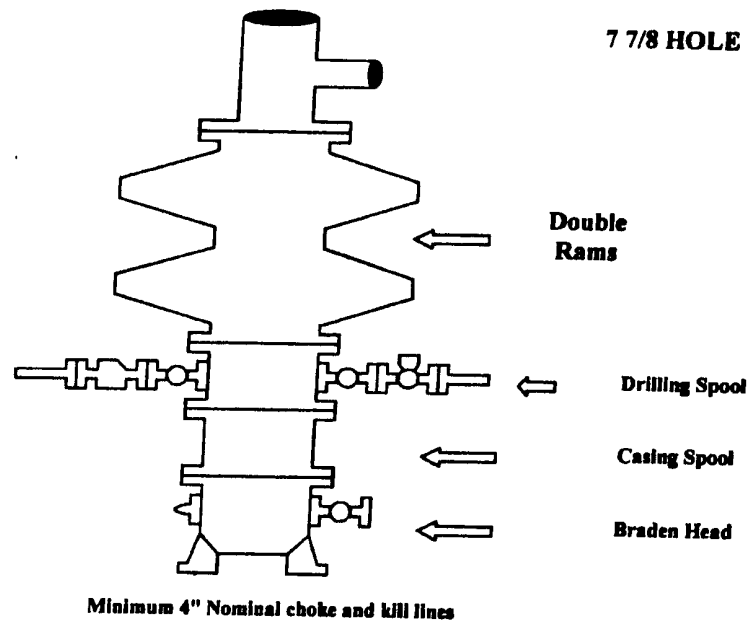
Not To Scale

Exhibit 6
COG OPERATING, LLC
Rig Layout- Closed Loop System

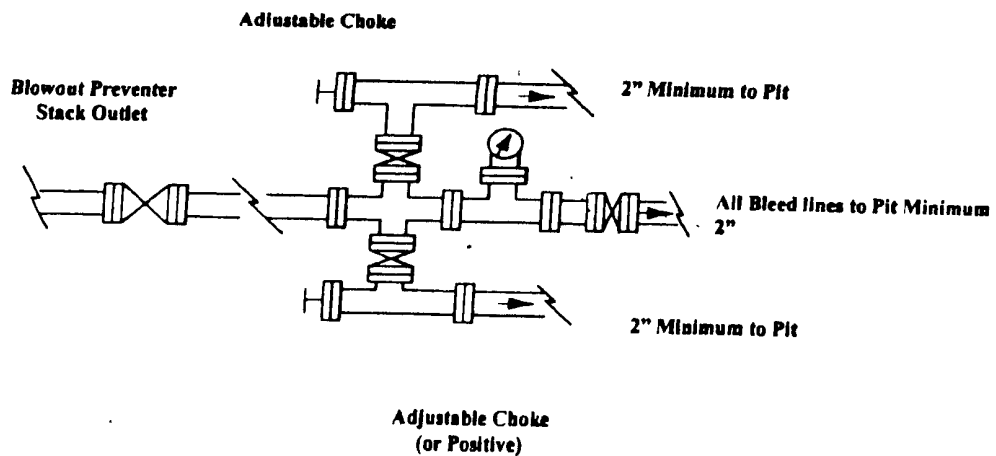
COG Operating LLC

Exhibit #9

BOPE and Choke Schematic

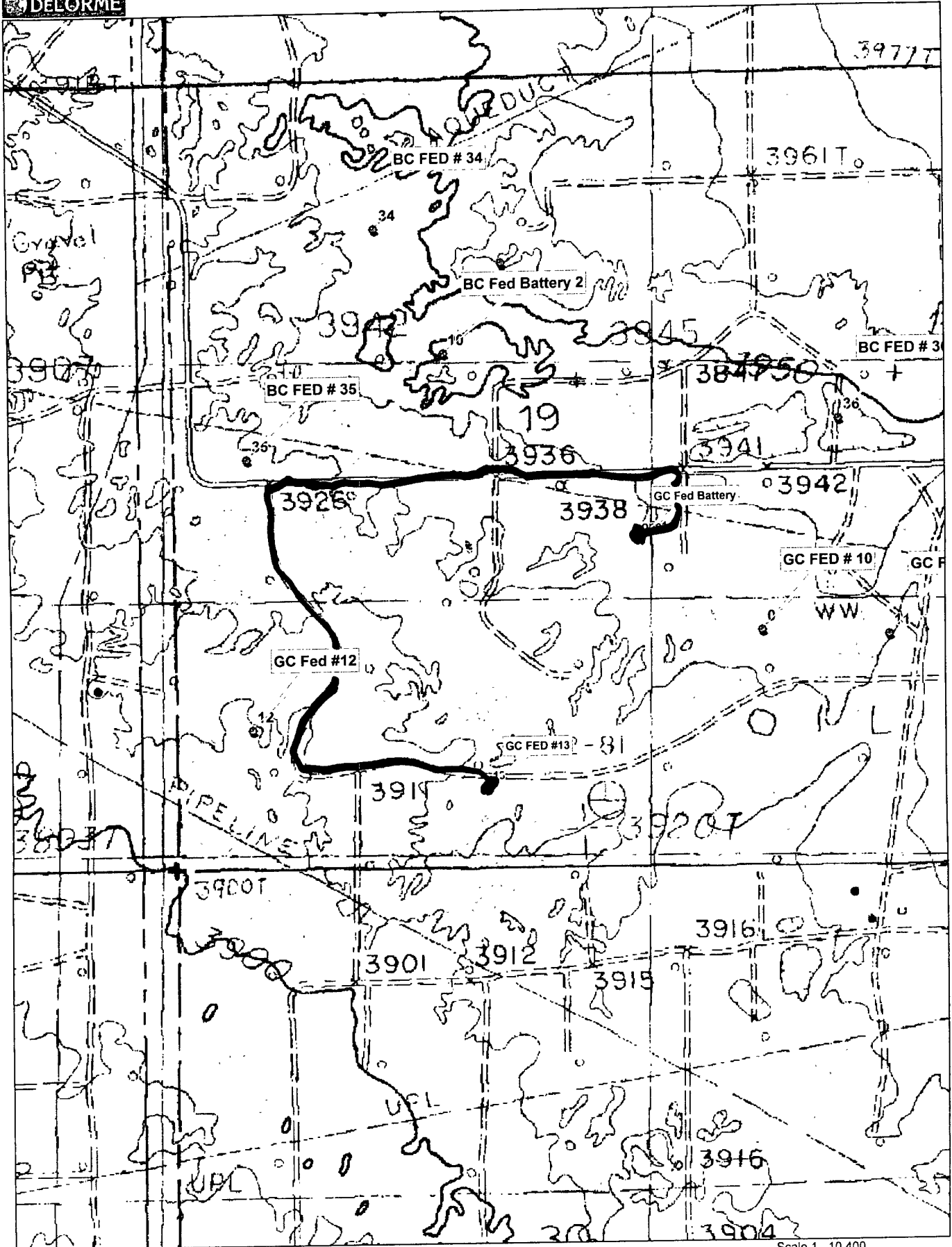


Choke Manifold Requirement (2000 psi WP)
No Annular Required



NOTES REGARDING THE BLOWOUT PREVENTERS

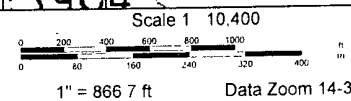
1. Drilling nipple to be so constructed that it can be removed without use of a welder through rotary table opening, with minimum I.D. equal to preventer bore.
2. Wear ring to be properly installed in head.
3. Blow out preventer and all fittings must be in good condition, 2000 psi WP minimum.
4. All 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.



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PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG OPERATING LLC
LEASE NO.:	LC029405B
WELL NAME & NO.:	G C FEDERAL #13
SURFACE HOLE FOOTAGE:	575' FSL & 1915' FWL
BOTTOM HOLE FOOTAGE:	990' FSL & 1650' FWL
LOCATION:	Section 19, T. 17 S., R 32 E., NMPM
COUNTY:	Lea 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.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Lesser Prairie Chicken
- ☐ **Construction**
 - Notification
 - Topsoil
 - Reserve Pit
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☒ **Drilling**
- ☒ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment/Reclamation**

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)

Timing Limitation Stipulation/Condition of Approval for Lesser Prairie-Chicken: Oil and gas activities including 3-D geophysical exploration, and drilling will not be allowed in lesser prairie-chicken habitat during the period from March 1st through June 15th annually. During that period, other activities that produce noise or involve human activity, such as the maintenance of oil and gas facilities, geophysical exploration other than 3-D operations, and pipeline, road, and well pad construction, will be allowed except between 3:00 am and 9:00 am. The 3:00 am to 9:00 am restriction will not apply to normal, around-the-clock operations, such as venting, flaring, or pumping, which do not require a human presence during this period. Additionally, no new drilling will be allowed within up to 200 meters of leks known at the time of permitting. Normal vehicle use on existing roads will not be restricted. Exhaust noise from pump jack engines must be muffled or otherwise controlled so as not to exceed 75 db measured at 30 ft. from the source of the noise.

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 the Carlsbad 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

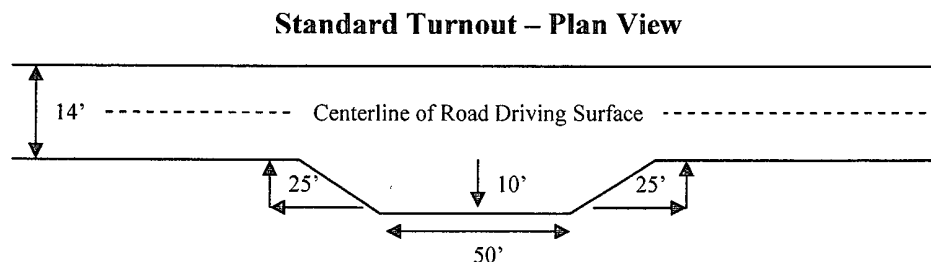
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

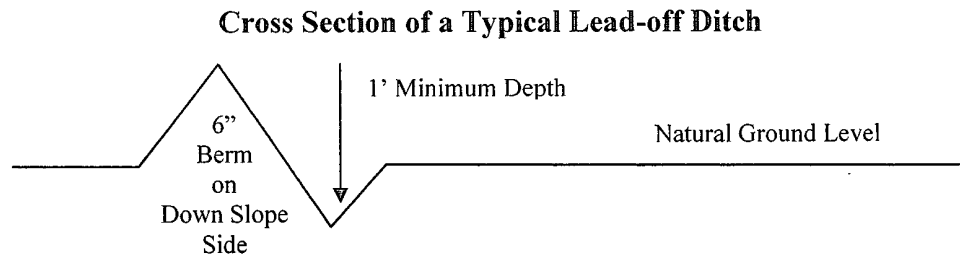
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing 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.



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:

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

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

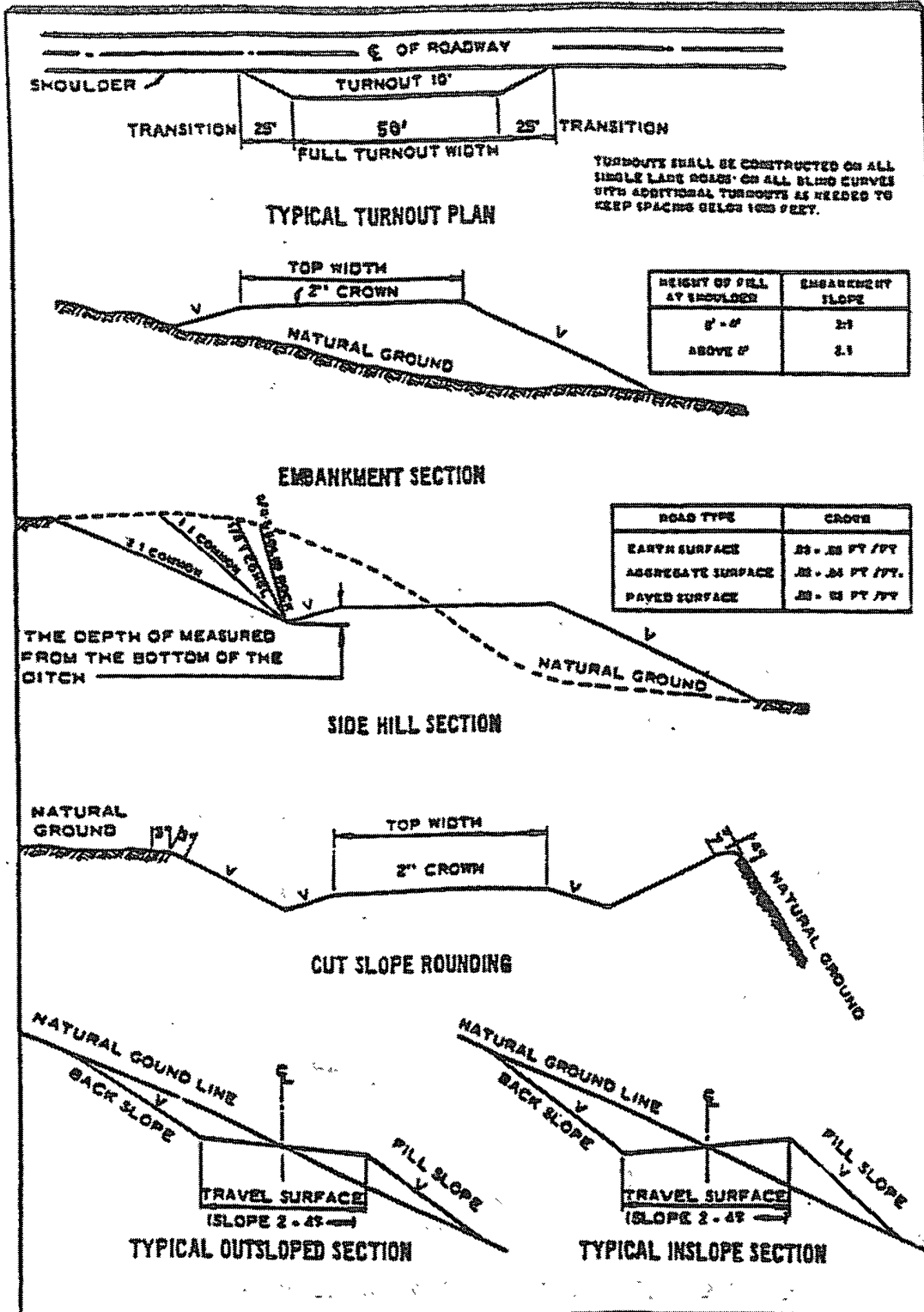
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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

☒ **Lea County**

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240,
(575) 393-3612

1. A Hydrogen Sulfide (H₂S) Drilling Plan should be activated 500 feet prior to drilling into the **Grayburg** formation. **Hydrogen Sulfide has been reported through out the township measuring 100-1400 ppm in the gas stream. If Hydrogen Sulfide is encountered, please provide measured values 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.

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.

Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string.

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 compression strength, whichever is greater. (This is to include the lead cement).

WOC for water basin or potash applies to entire wellbore.

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.
Possible water and brine flows in the Salado and Artesia Group.**

1. The 13-3/8 inch surface casing shall be set **a minimum of 25 feet into the Rustler Anhydrite at approximately 650 feet** 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 will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater.
 - 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 **8-5/8 inch** intermediate casing is:
☒ Cement to surface. If cement does not circulate see B.1.a-d above.
This casing is to be set in the Tansill formation at approximately 1900'. This is a more competent formation than the Yates.
3. The minimum required fill of cement behind the **5-1/2 inch** production casing is:
☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.
4. 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. A variance to test the surface casing and BOP/BOPE (**entire system**) to the reduced pressure of **1000** psi with the rig pumps is approved. **In order to meet BLM requirements, the test cannot be properly done in one step.**

D. DRILL STEM TEST

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

WWI 081608

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

B. PIPELINES

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the APD and attachments, including stipulations, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR, Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the

release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.

4. The holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. The holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:

- a. Activities of the holder including, but not limited to construction, operation, maintenance, and termination of the facility.
- b. Activities of other parties including, but not limited to:
 - (1) Land clearing.
 - (2) Earth-disturbing and earth-moving work.
 - (3) Blasting.
 - (4) Vandalism and sabotage.
- c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of the holder, regardless of fault. Upon failure of the holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve the holder of any responsibility as provided herein.

6. All construction and maintenance activity will be confined to the authorized right-of-way width of 25 feet.
7. No blading or clearing of any vegetation will be allowed unless approved in writing by the Authorized Officer.
8. The holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline will be "snaked" around hummocks and dunes rather than suspended across these features.
9. The pipeline shall be buried with a minimum of 24 inches under all roads, "two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.
10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.
11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.
12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.
13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.
14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural and/or paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on his behalf, on public or Federal land shall be immediately reported to the authorized officer. Holder 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 will be made by the authorized officer to determine appropriate cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to proper mitigation measures will be made by the authorized officer after consulting with the holder.

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 for LPC Sand/Shinnery 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:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass	5lbs/A
Sand Bluestem	5lbs/A
Little Bluestem	3lbs/A
Big Bluestem	6lbs/A
Plains Coreopsis	2lbs/A
Sand Dropseed	1lbs/A

**Four-winged Saltbush 5lbs/A

* This can be used around well pads and other areas where caliche cannot be removed.

*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.