

OCD-HOBBS

AT5-08-97
EA-08-164Form 3160-3
(April 2004)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENTFORM APPROVED
OMB No 1004-0137
Expires March 31, 2007

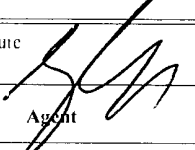
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No. LC-029405A	
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. <302456> BC Federal #21	
3b. Phone No. (include area code) <229137> (432) 685-4340		9. API Well No. 30-025-38726	
4. Location of Well (Report location clearly and in accordance with any State requirements*) At surface 2410' FNL & 2060' FWL At proposed prod zone 2310' FNL & 2310' FWL Unit F Roswell Controlled Water Basin		10. Field and Pool, or Exploratory Maljamar; Vaso Paddock	
11. Sec., T. R. M. or Blk. and Survey or Area Sec 19, T17S, R32E		12. County or Parish Lea	
13. State NM		14. Distance in miles and direction from nearest town or post office* 2.5 miles SW of Maljamar, NM	
15. Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig. unit line, if any) 2310'	16. No. of acres in lease 640	17. Spacing Unit dedicated to this well 40	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 900'	19. Proposed Depth 7200'	20. BLM/BIA Bond No. on file NMB000215	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3941'	22. Approximate date work will start* 01/01/2008	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 	Name (Printed/Typed) Gary E. Miller	Date 10/16/2007
--	---	---------------------------

Title Agent		
Approved by (Signature) /s/ James Stovall	Name (Printed/Typed) /s/ James Stovall	Date JAN 25 2008

Title FIELD MANAGER	Office CARLSBAD FIELD OFFICE
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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 USC Section 1001 and Title 43 USC 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)

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

RECEIVED

JAN 30 2008

HOBBS OCD

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED



August 20, 2007

U.S. Department of Interior
Bureau of Land Management

Sirs:

Please accept this letter as authorization for Gary E. Miller of Highlander Environmental Corp. to act as an agent of COG Operating, L.L.C. He will be submitting and signing permits and correspondence with your personnel on these matters for our company.

If you have any questions please call.

Sincerely,

A handwritten signature in cursive script, appearing to read "John Callahan".

COG Operating, L.L.C.

DISTRICT I
1620 N. FRENCH DR., HOBBES, 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 30-025-38726	Pool Code 97608 44500	Pool Name MALJAMAR; YESO Paddock
Property Code 302456	Property Name BC FEDERAL	Well Number 21
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3941'

Surface Location

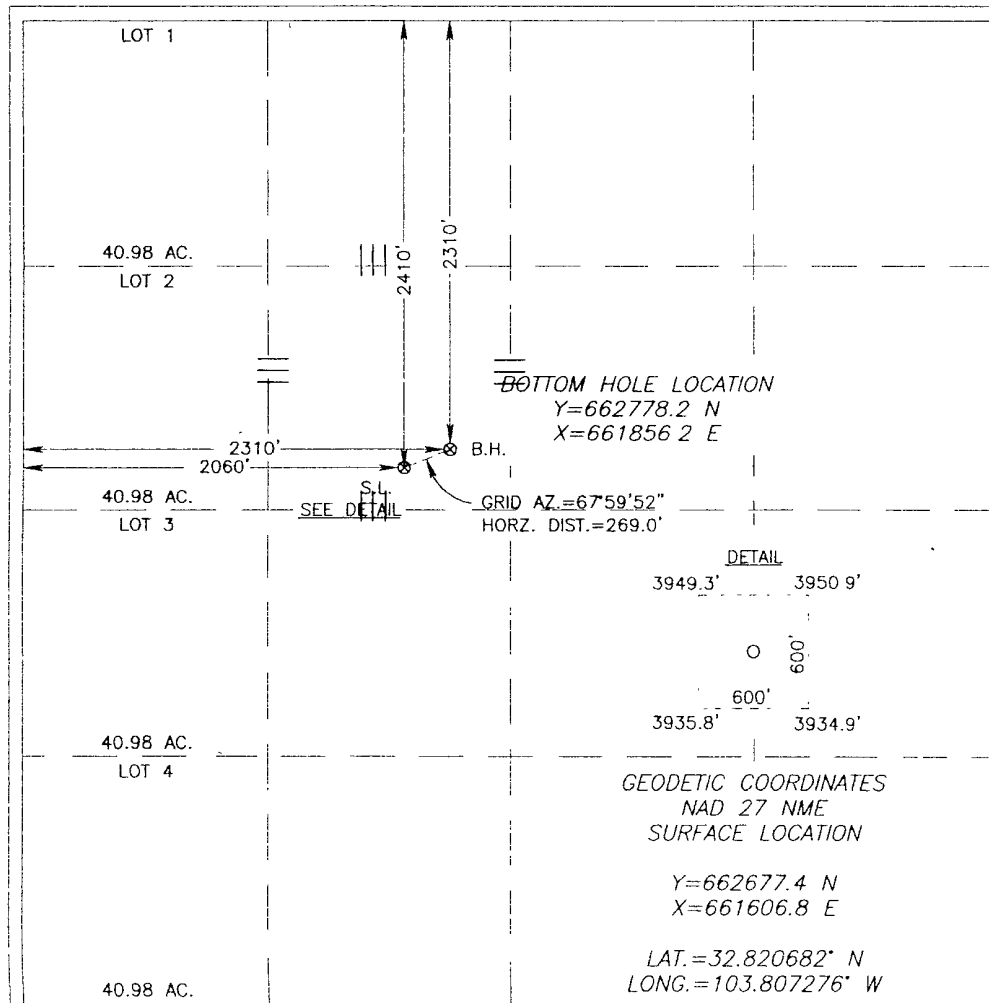
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
F	19	17-S	32-E		2410	NORTH	2060	WEST	LEA

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
F	19	17-S	32-E		2310	NORTH	2310	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



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 10-15-07
Signature Date

Phyllis A. Edwards
Printed Name

Regulatory Analyst

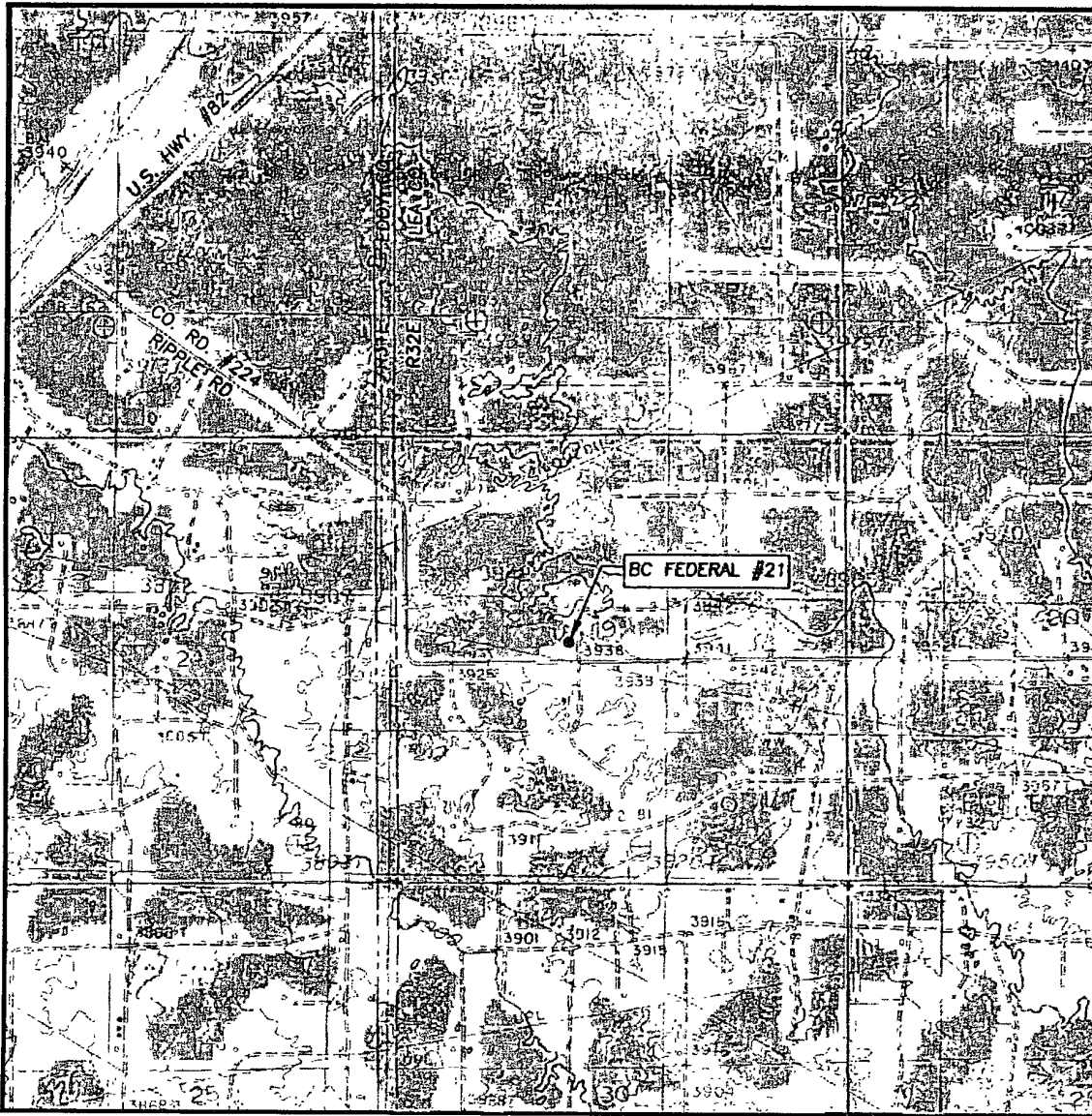
SURVEYOR CERTIFICATION

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.

DATE SURVEYED: OCTOBER 12, 2007
Signature & Seal of Professional Surveyor
3239
10/12/07
DSS

Certificate No. GARY EIDSON 12641
RONALD EIDSON 3239

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

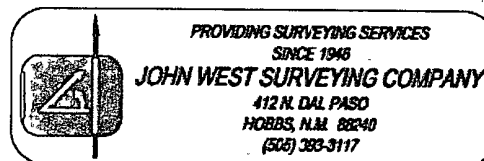
DESCRIPTION 2410' FNL & 2060' FWL

ELEVATION 3941'

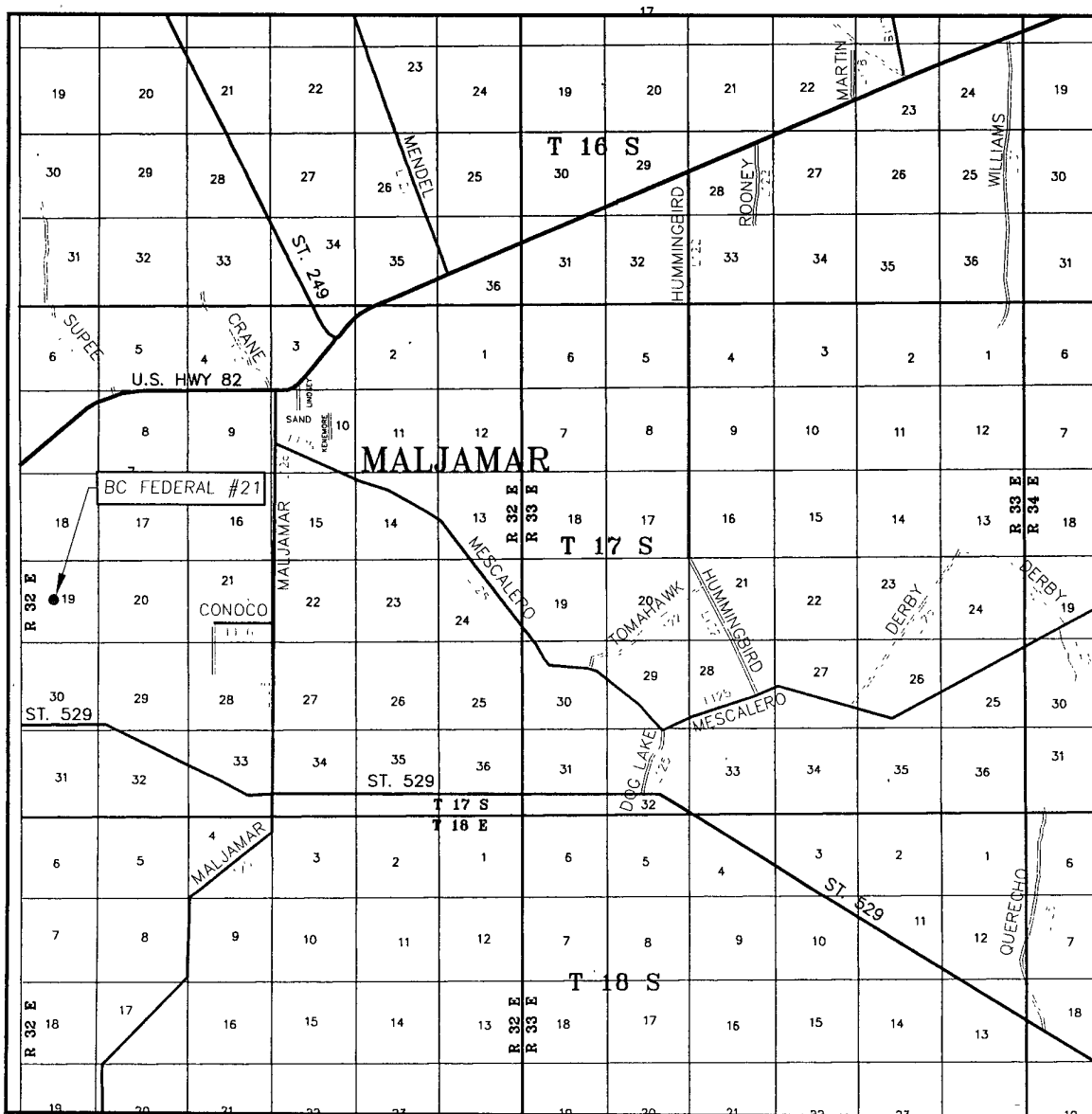
OPERATOR COG OPERATING, LLC

LEASE BC FEDERAL

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



VICINITY MAP



SCALE: 1" = 2 MILES

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

SURVEY N.M.P.M.

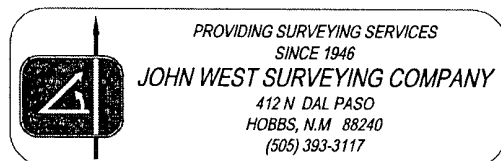
COUNTY LEA STATE NEW MEXICO

DESCRIPTION 2410' FNL & 2060' FWL

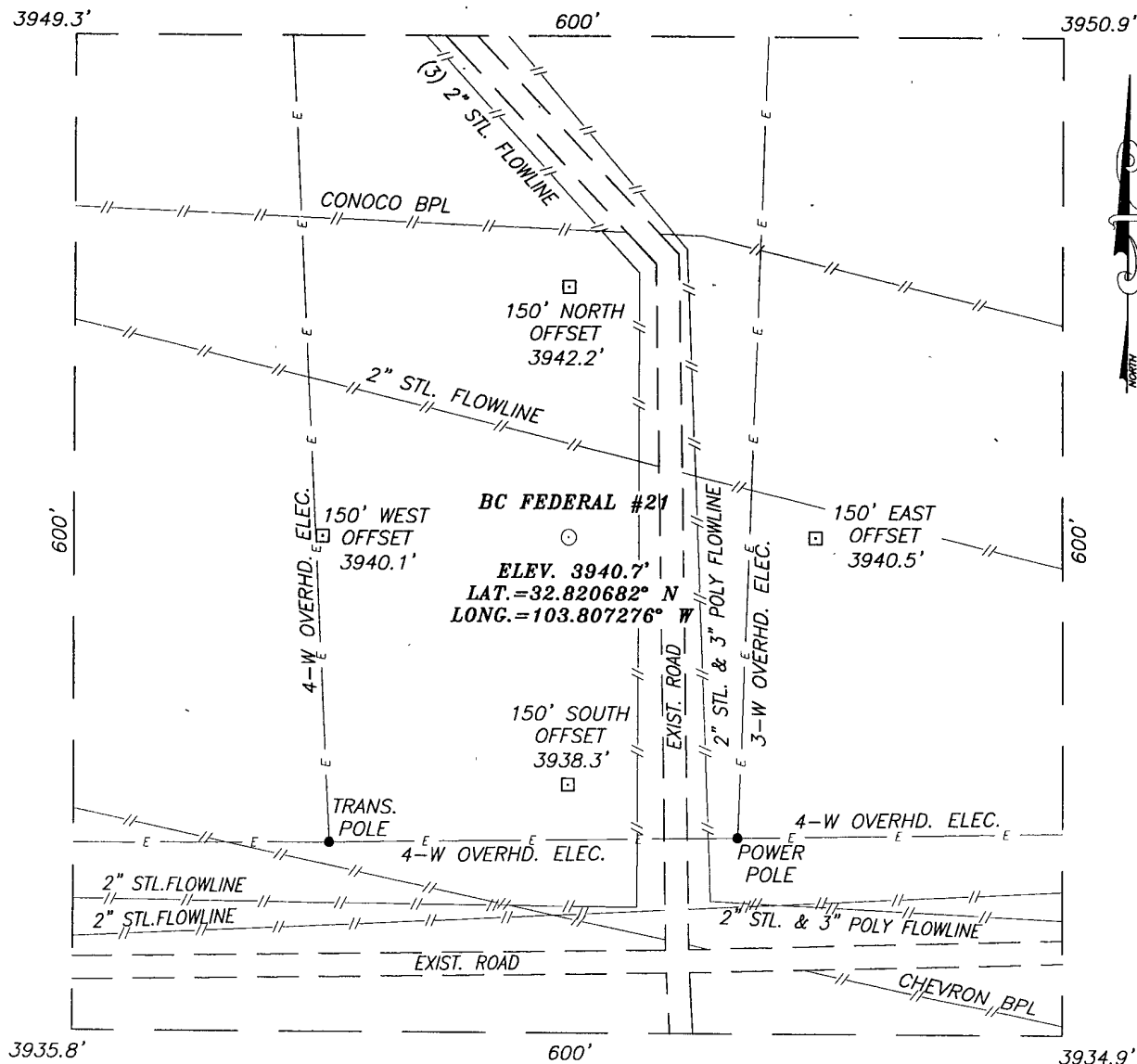
ELEVATION 3941'

OPERATOR COG OPERATING, LLC

LEASE BC FEDERAL

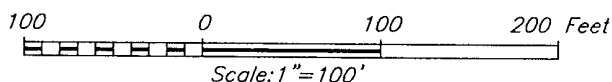


SECTION 19, TOWNSHIP 17 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO



DIRECTIONS TO LOCATION

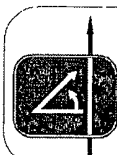
FROM THE INTERSECTION OF U.S. HWY. #82 AND EDDY CO. RD. #224 (RIPPLE RD.), GO SOUTHEAST ON CO. RD. #224 APPROX. 0.9 MILES. VEER RIGHT AND GO SOUTH APPROX. 0.4 MILES. TURN LEFT AND GO WEST APPROX. 0.4 MILES. TURN LEFT AND GO NORTH APPROX. 255 FEET. THIS LOCATION IS APPROX. 60 FEET WEST.



COG OPERATING, LLC

BC FEDERAL #21 WELL
LOCATED 2410 FEET FROM THE NORTH LINE
AND 2060 FEET FROM THE WEST LINE OF SECTION 19,
TOWNSHIP 17 SOUTH, RANGE 32 EAST, N.M.P.M.,
LEA COUNTY, NEW MEXICO.

Survey Date: 10/4/07	Sheet 1 of 1 Sheets
W.O. Number: 07.11.1035	Dr By: DSS
Date: 10/11/07	Rev 1: N/A
Disc: .	07111035
	Scale: 1"=100'



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'
7 River	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
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
12 1/4"	0-2100'	8 5/8"	32#	J-55	ST&C/New	1.85/1.241/4.78
7 7/8"	0-T.D.	5 1/2"	17#	J-55	LT&C/New	1.59/1.463/2.05

5. Cement Program

13 3/8" Surface Casing: Class C, 500 sx lead, yield-1.98 + 200 sx tail, yield-1.32, back to surface

8 5/8" Intermediate Casing: Class C, 700 sx lead, yield-2.45 + 200 sx tail, yield-1.32, back to surface

5 1/2" Production Casing: Class C, 1500 sx, 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 and tested to 2000 psi by a third party. 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.

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	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.

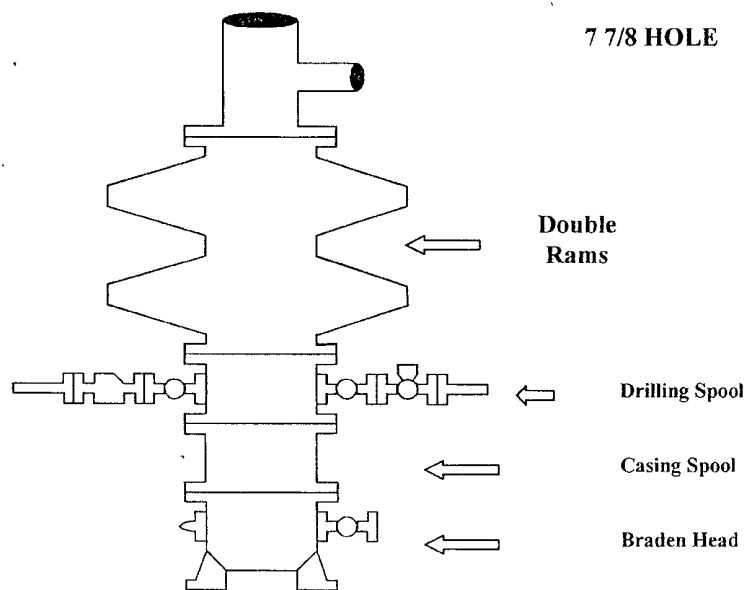
11. Anticipated Starting Date and Duration of Operations

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 10 days. If the well is productive, an additional 30 days will be required for completion and testing before a decision is made to install permanent facilities.

COG Operating LLC

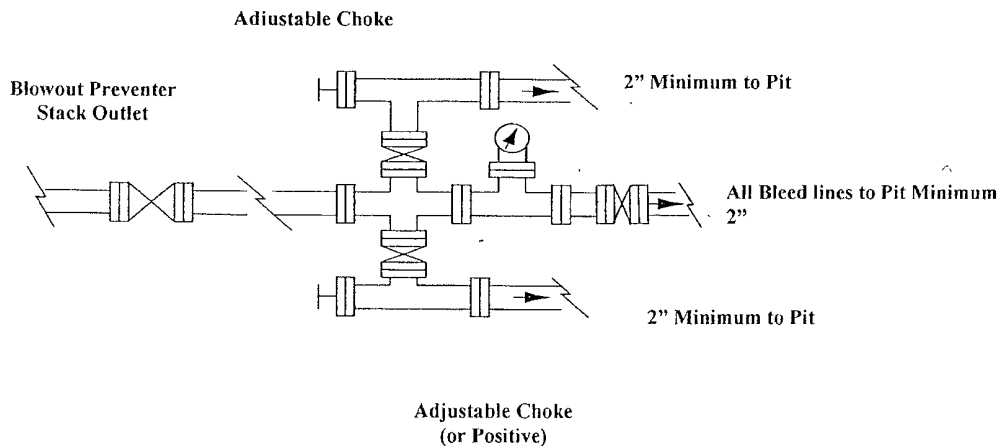
Exhibit #9

BOPE and Choke Schematic



Minimum 4" Nominal choke and kill lines

Choke Manifold Requirement (2000 psi WP)
No Annular Required



NOTES REGARDING THE BLOWOUT PREVENTERS

**Master Drilling Plan
Eddy County, New Mexico**

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

Proposal



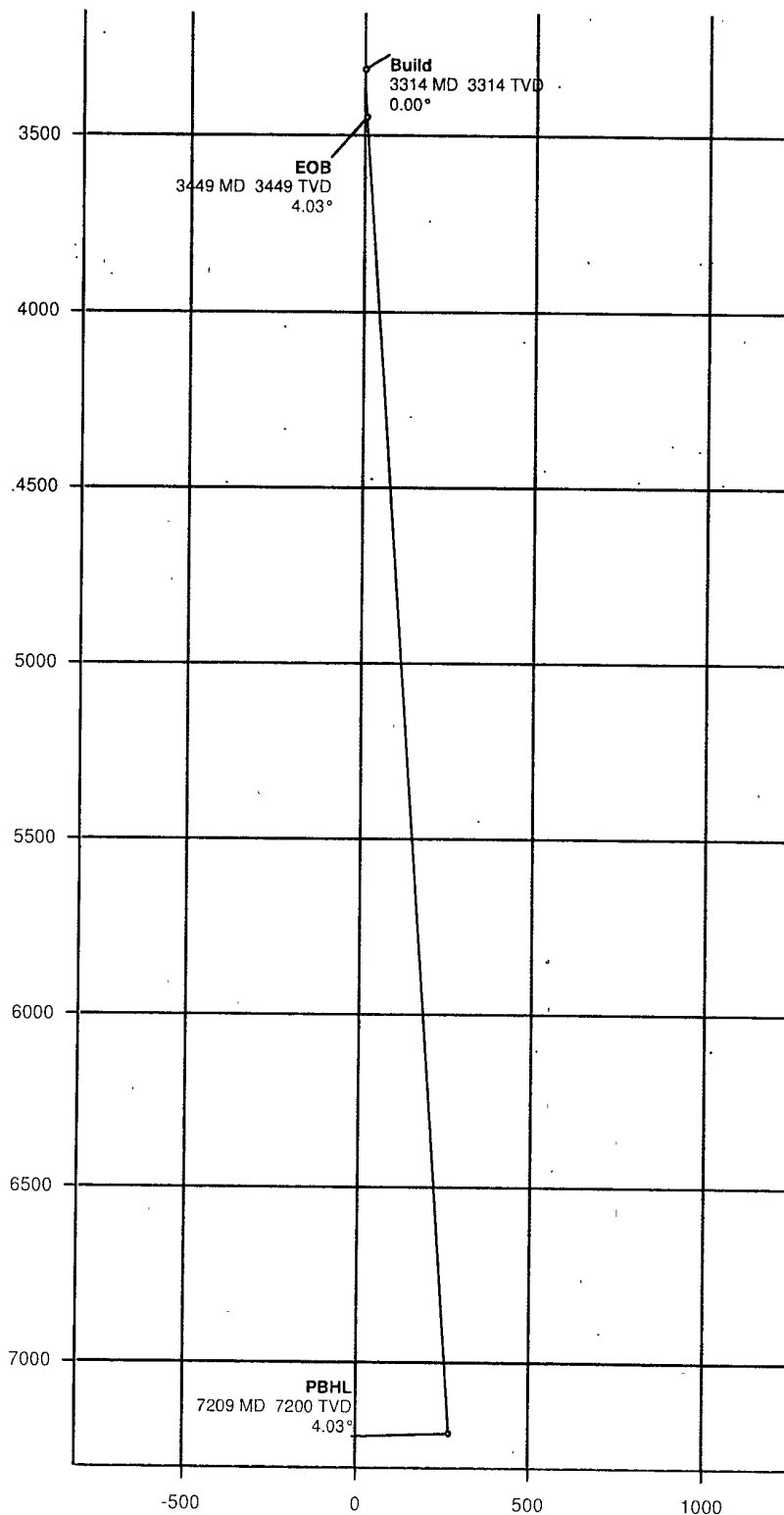
Report Date: October 18, 2007	Survey / DLS Computation Method: Minimum Curvature / Lubinski
Client: COG Operating, LLC.	Vertical Section Azimuth: 67.990°
Field: Eddy County, NM	Vertical Section Origin: N 0.000 ft, E 0.000 ft
Structure / Slot: BC Federal #21 / BC Federal #21	TVD Reference Datum: RKB
Well: BC Federal #21	TVD Reference Elevation: 0.0 ft relative to
Borehole: BC Federal #21	Sea Bed / Ground Level Elevation: 0.000 ft relative to
UWI/API#:	Magnetic Declination: 8.169°
Survey Name / Date: BC Federal #21_r1 / October 18, 2007	Total Field Strength: 49365.884 nT
Tort / AHD / DDI / ERD ratio: 4.030° / 269.02 ft / 3.036 / 0.037	Magnetic Dip: 60.800°
Grid Coordinate System: NAD27 New Mexico State Planes; Eastern Zone, US Feet	Declination Date: October 17, 2007
Location Lat/Long: N 32 49 14.456, W 103 48 26.193	Magnetic Declination Model: IGRF 2005
Location Grid N/E Y/X: N 662677.400 ftUS, E 661606.800 ftUS	North Reference: Grid North
Grid Convergence Angle: +0.28513499°	Total Corr Mag North -> Grid North: +7.884°
Grid Scale Factor: 0.99993900	Local Coordinates Referenced To: Well Head

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (deg)	DLS (deg/100 ft)	Mag / Grav Tool Face (deg)
Tie-In	0.00	0.00	67.99	0.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	100.00	0.00	67.99	100.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	200.00	0.00	67.99	200.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	300.00	0.00	67.99	300.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	400.00	0.00	67.99	400.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	500.00	0.00	67.99	500.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	600.00	0.00	67.99	600.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	700.00	0.00	67.99	700.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	800.00	0.00	67.99	800.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	900.00	0.00	67.99	900.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	1000.00	0.00	67.99	1000.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	1100.00	0.00	67.99	1100.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	1200.00	0.00	67.99	1200.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	1300.00	0.00	67.99	1300.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	1400.00	0.00	67.99	1400.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	1500.00	0.00	67.99	1500.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	1600.00	0.00	67.99	1600.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	1700.00	0.00	67.99	1700.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	1800.00	0.00	67.99	1800.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	1900.00	0.00	67.99	1900.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	2000.00	0.00	67.99	2000.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	2100.00	0.00	67.99	2100.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	2200.00	0.00	67.99	2200.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	2300.00	0.00	67.99	2300.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	2400.00	0.00	67.99	2400.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	2500.00	0.00	67.99	2500.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	2600.00	0.00	67.99	2600.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	2700.00	0.00	67.99	2700.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	2800.00	0.00	67.99	2800.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	2900.00	0.00	67.99	2900.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	3000.00	0.00	67.99	3000.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	3100.00	0.00	67.99	3100.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	3200.00	0.00	67.99	3200.00	0.00	0.00	0.00	0.00	0.00	0.00	---
	3300.00	0.00	67.99	3300.00	0.00	0.00	0.00	0.00	0.00	0.00	---
Build	3314.42	0.00	67.99	3314.42	0.00	0.00	0.00	0.00	0.00	0.00	67.99M
	3400.00	2.57	67.99	3399.97	1.92	0.72	1.78	1.92	67.99	3.00	67.99M
EOB	3448.75	4.03	67.99	3448.64	4.72	1.77	4.38	4.72	67.99	3.00	---
	3500.00	4.03	67.99	3499.76	8.32	3.12	7.72	8.32	67.99	0.00	---

Comments	Measured Depth (ft)	Inclination (deg)	Azimuth (deg)	TVD (ft)	Vertical Section (ft)	NS (ft)	EW (ft)	Closure (ft)	Closure Azimuth (deg)	DLS (deg/100 ft)	Mag / Grav Tool Face (deg)
	3600.00	4.03	67.99	3599.52	15.35	5.75	14.23	15.35	67.99	0.00	---
	3700.00	4.03	67.99	3699.27	22.38	8.39	20.75	22.38	67.99	0.00	---
	3800.00	4.03	67.99	3799.02	29.41	11.02	27.27	29.41	67.99	0.00	---
	3900.00	4.03	67.99	3898.77	36.44	13.65	33.78	36.44	67.99	0.00	---
	4000.00	4.03	67.99	3998.53	43.46	16.29	40.30	43.46	67.99	0.00	---
	4100.00	4.03	67.99	4098.28	50.49	18.92	46.81	50.49	67.99	0.00	---
	4200.00	4.03	67.99	4198.03	57.52	21.55	53.33	57.52	67.99	0.00	---
	4300.00	4.03	67.99	4297.78	64.55	24.19	59.84	64.55	67.99	0.00	---
	4400.00	4.03	67.99	4397.54	71.58	26.82	66.36	71.58	67.99	0.00	---
	4500.00	4.03	67.99	4497.29	78.60	29.45	72.88	78.60	67.99	0.00	---
	4600.00	4.03	67.99	4597.04	85.63	32.09	79.39	85.63	67.99	0.00	---
	4700.00	4.03	67.99	4696.80	92.66	34.72	85.91	92.66	67.99	0.00	---
	4800.00	4.03	67.99	4796.55	99.69	37.35	92.42	99.69	67.99	0.00	---
	4900.00	4.03	67.99	4896.30	106.71	39.99	98.94	106.71	67.99	0.00	---
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	5100.00	4.03	67.99	5095.81	120.77	45.26	111.97	120.77	67.99	0.00	---
	5200.00	4.03	67.99	5195.56	127.80	47.89	118.49	127.80	67.99	0.00	---
	5300.00	4.03	67.99	5295.31	134.83	50.52	125.00	134.83	67.99	0.00	---
	5400.00	4.03	67.99	5395.06	141.85	53.16	131.52	141.85	67.99	0.00	---
	5500.00	4.03	67.99	5494.82	148.88	55.79	138.03	148.88	67.99	0.00	---
	5600.00	4.03	67.99	5594.57	155.91	58.42	144.55	155.91	67.99	0.00	---
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	6700.00	4.03	67.99	6691.85	233.22	87.39	216.22	233.22	67.99	0.00	---
	6800.00	4.03	67.99	6791.60	240.24	90.02	222.74	240.24	67.99	0.00	---
	6900.00	4.03	67.99	6891.36	247.27	92.66	229.26	247.27	67.99	0.00	---
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	7100.00	4.03	67.99	7090.86	261.33	97.93	242.29	261.33	67.99	0.00	---
	7200.00	4.03	67.99	7190.61	268.36	100.56	248.80	268.36	67.99	0.00	---
PBHL	7209.41	4.03	67.99	7200.00	269.02	100.81	249.42	269.02	67.99	0.00	---

COG Operating, LLC.

WELL BC Federal #21	FIELD Eddy County, NM	STRUCTURE BC Federal #21
Magnetic Parameters Model IGRF 2005 Dp 60 800° Mag Dec +8.169°	Surface Location Lat N32 49 14.456 Lon W103 48 26.183 Northing 662677.40 HUS Easting 661806.80 HUS NAD83 New Mexico State Planes, Eastern Zone, US Feet Grid Conv +0.28513499° Scale Fact. 0.9999389988	Miscellaneous Site BC Federal #21 Plan BC Federal #21.r1 TVD Ref RKB (9 00 ft above) Srvy Date October 16, 2007

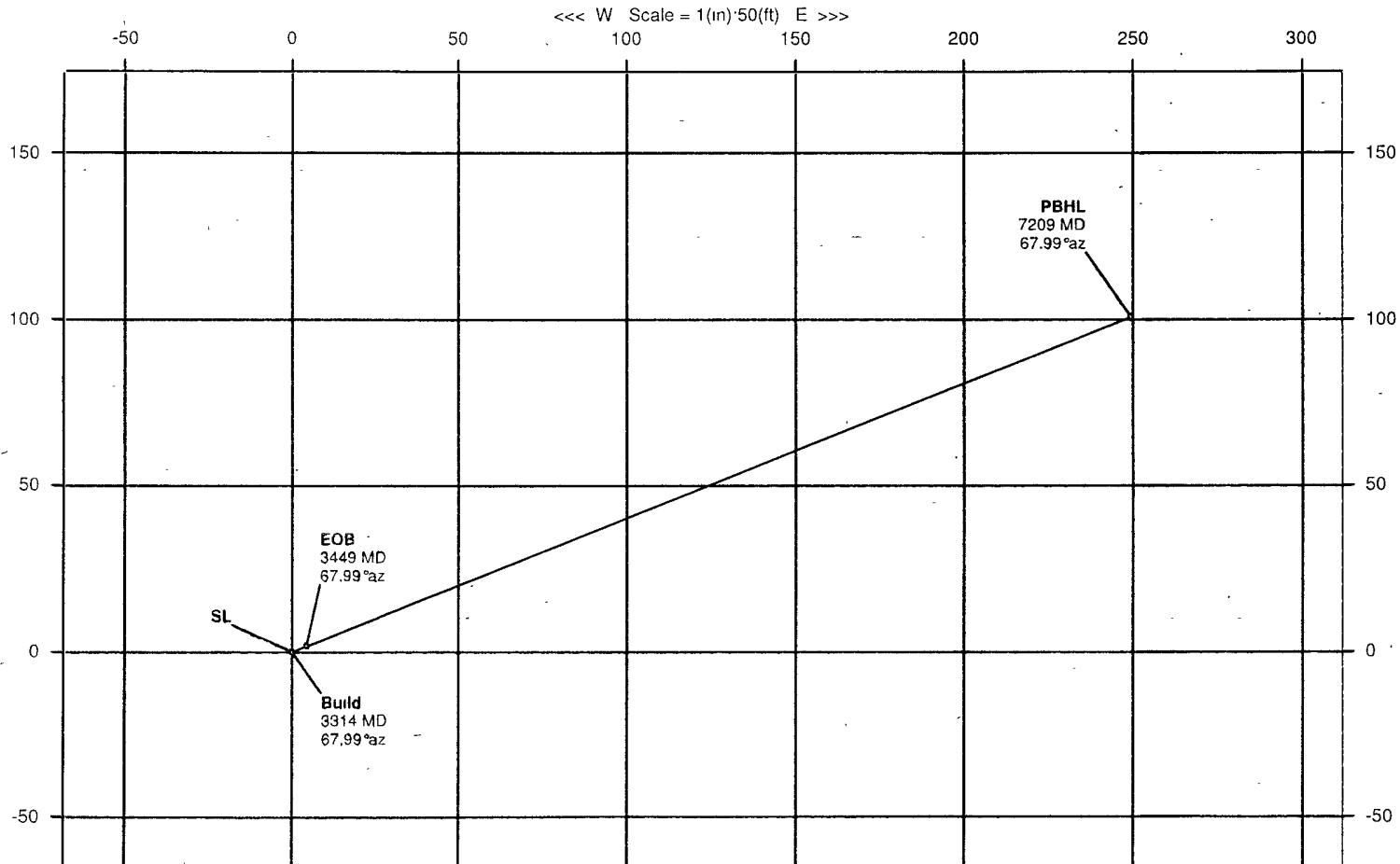


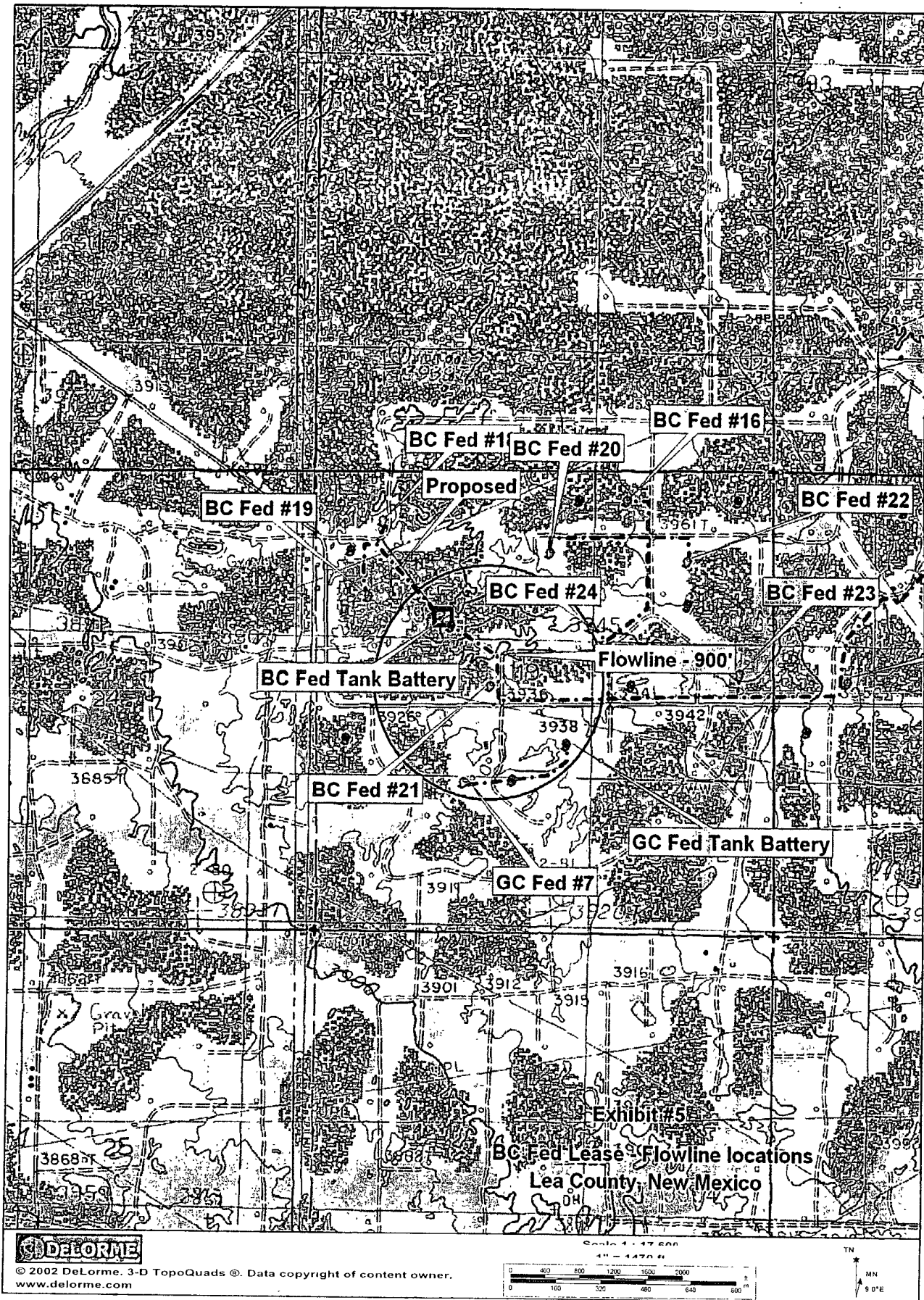
INTREPID
Directional Drilling Specialists



COG Operating, LLC.

WELL BC Federal #21			FIELD Eddy County, NM			STRUCTURE BC Federal #21		
Magnetic Parameters Model IGRF 2005 Dip 50.850° Mag Dec +8.169°			Surface Location Lat N32 49 14.456 Lon W103 48 26.193			Miscellaneous Slot BC Federal #21 Plan BC Federal #21_r1		
Date October 17, 2007 FS 49355.9 nT			NAD27 New Mexico State Planes Eastern Zone US Feet Northing 662677.40 NUS Easting 661606.80 NUS			TVD Ref RKB (0.00 ft above) Srvy Date October 18, 2007		
			Grid Conv +0.28513499° Scale Fact 0.999938988					





DELORME

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www.delorme.com

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	COG Operating LLC
LEASE NO.:	NMLC – 029405 A
WELL NAME & NO.:	21 – BC Federal
SURFACE HOLE FOOTAGE:	2410' FNL & 2060' FWL
BOTTOM HOLE FOOTAGE:	2310' FNL & 2310' FWL
LOCATION:	Section 19, T. 17 S., R 32 E., NMPPM
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
- ☐ **Reserve Pit Closure/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)

Mitigation Measures: The mitigation measures include the special drilling stipulations, the standard stipulation for the lesser prairie chicken, the standard stipulation for surface pipelines, and the standard stipulations for permanent resource roads.

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 15 through June 15 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 (505) 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 shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

C. RESERVE PITS

The reserve pit shall be constructed and closed in accordance with the NMOCD rules.

The reserve pit shall be constructed 125' X 125' on the East side of the well pad V-Door West.

The reserve pit shall be constructed, so that upon completion of drilling operations, the dried pit contents shall be buried a minimum depth of three feet below ground level. Should the pit content level not meet the three foot minimum depth requirement, the excess contents shall be removed until the required minimum depth of three feet below ground level has been met. The operator shall properly dispose of the excess contents at an authorized disposal site.

The reserve pit shall be constructed and maintained so that runoff water from outside the location is not allowed to enter the pit. The berms surrounding the entire perimeter of the pit shall extend a minimum of two (2) feet above ground level. At no time will standing fluids in the pit be allowed to rise above ground level.

The reserve pit shall be fenced on three (3) sides during drilling operations. The fourth side shall be fenced immediately upon rig release.

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 (505) 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.

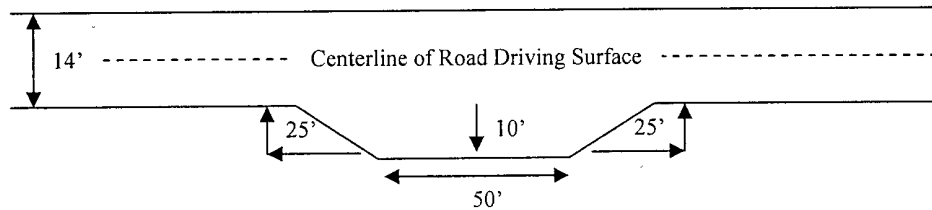
Ditching

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

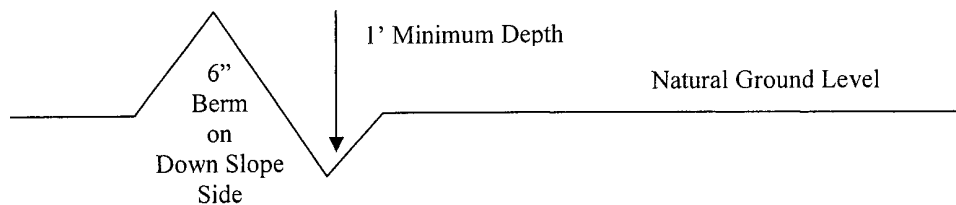


Drainage

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:

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

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

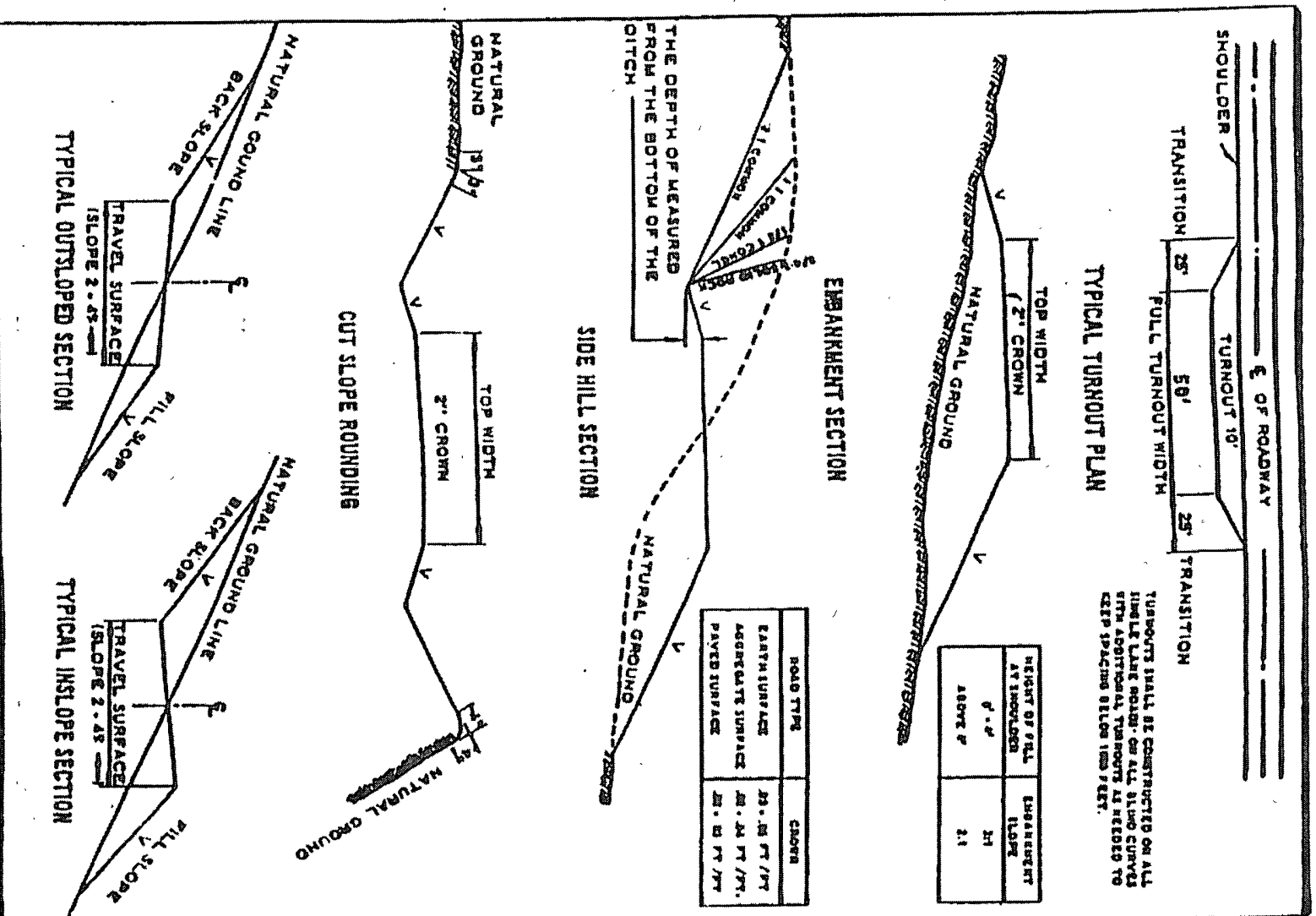
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

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,
(505) 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.**
- 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

- 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. (This is to include the lead cement).
 - 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 action will be done prior to drilling out that string.

**Possible lost circulation in the Grayburg and San Andres formations.
Possible water and brine flows in the Salado and Artesia Group.**

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.

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.

Engineer on call phone (after hours): Carlsbad: (505) 706-2779

WWI 103107

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

VRM Facility Requirement

B. PIPELINES

BLM Serial Number:

Company Reference:

Well # & Name:

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.

16. Special Stipulations:

The reclamation stipulation is attached.

(March 1989)

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.

At the time reserve pits are to be reclaimed, 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.

B. RESERVE PIT CLOSURE

The reserve pit, when dried and closed, shall be recontoured, all trash removed, and reseeded as follows:

Seed Mixture 2, for Sandy 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>
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sand love grass (<i>Eragrostis trichodes</i>)	1.0
Plains bristlegrass (<i>Setaria macrostachya</i>)	2.0

*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.