ATS-08-162
EA-08-454

OCD-ARTESIA MAR 03 2008
OCD-ARTESIA

Form 3160-3
(April 2004)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of Work: [X] DRILL [ ] REENTER	5. Lease Serial No: NM-97128
	6 If Indian, Allotee or Tribe Name:
	7. If Unit or CA Agreement, Name and No: Pending
1b. Type of Well. [X] Oil Well [ ] Gas Well [ ] Other [X] Single Zone [ ] Multiple Zone	8 Lease Name and Well No: Cave Lake 24 Federal Com No. 2
2 Name of Operator: Cimarex Energy Co. of Colorado	9. API Well No: 30-015-36173
3a. Address: PO Box 140907, Irving, TX 75014 / 3b. Phone No. (include area code): 972-401-3111	10 Field and Pool, or Exploratory: (Cross Fork) Wolfcamp; 97102
4. Location of Well (Report location clearly and in accordance with any State requirements.*) At Surface: 1980' FSL & 330' FWL / At proposed prod Zone: 1980' FSL & 330' FEL Proposed Horizontal Wolfcamp Test	11. Sec., T. R. M. or Blk. and Survey or Area: 24-16S-28E
14. Distance in miles and direction from nearest town or post office*: 16 miles E/SE of Lake Arthur	12. County or Parish: Eddy / 13. State: NM

15 Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any): 330'	16. No of acres in lease: 880	17. Spacing Unit dedicated to this well: N2S2 160
18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft: NA	19 Proposed Depth: 7350' Pilot Hole, MD 11242', TVD 6870'	20. BLM/BIA Bond No. on File: NM-2575
21. Elevations (Show whether DF, KDB, RT, GL, etc): 3610' GR	22. Approximate date work will start*: 1/15/2007	23. Estimated duration: 35-45 days

24. Attachments

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

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

25. Signature: Zeno Farris	Name (Printed/Typed): Zeno Farris	Date: 11.30.07
Title: Manager Operations Administration		
Approved By (Signature): /s/ Don Peterson	Name (Printed/Typed): /s/ Don Peterson	Date: FEB 22 2008
Title: FOR 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.S. Section 1001 and Title 43 U S C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction.

* (Instructions on page 2)

ROSWELL CONTROLLED WATER BASIN

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHED

RICT I
5 N. French Dr., Hobbs, NM 88240
DISTRICT II
1301 W. Grand Avenue, Artesia, NM 88210
DISTRICT III
1000 Rio Brazos Rd., Aztec, NM 87410
DISTRICT IV
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Form C-102
Revised October 12, 2005

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
30-015-36173	97102	Crow Flats Wolfcamp Wildcat

Property Code	Property Name	Well Number
37029	CAVE LAKE "24" FEDERAL COM	2
OGRID No.	**Operator Name**	**Elevation**
162683	CIMAREX ENERGY CO. OF COLORADO	3610'

Surface Location

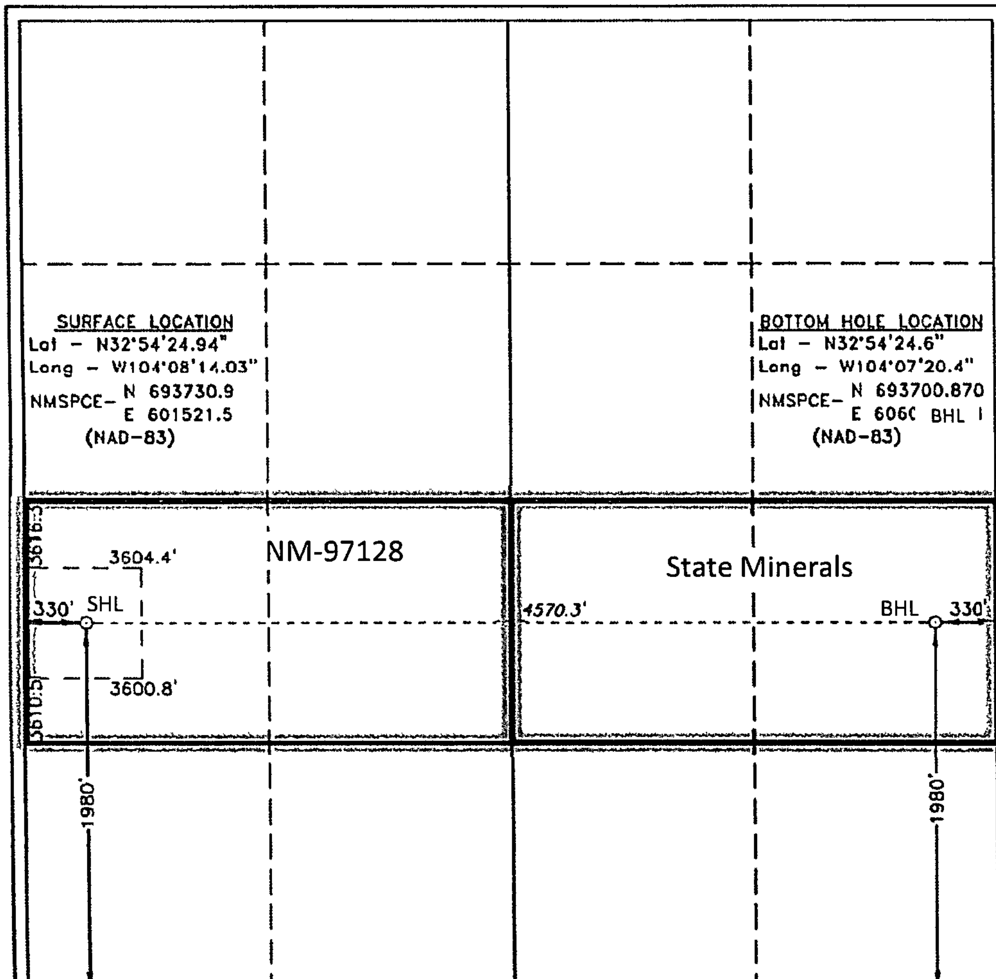
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	24	16 S	28 E		1980	SOUTH	330	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	24	16 S	28 E		1980	SOUTH	330	EAST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160		C	

NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION



OPERATOR CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

Zeno Farris 11-30-07
Signature Date

Zeno Farris
Printed Name

SURVEYOR CERTIFICATION

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervison, and that the same is true and correct to the best of my belief.

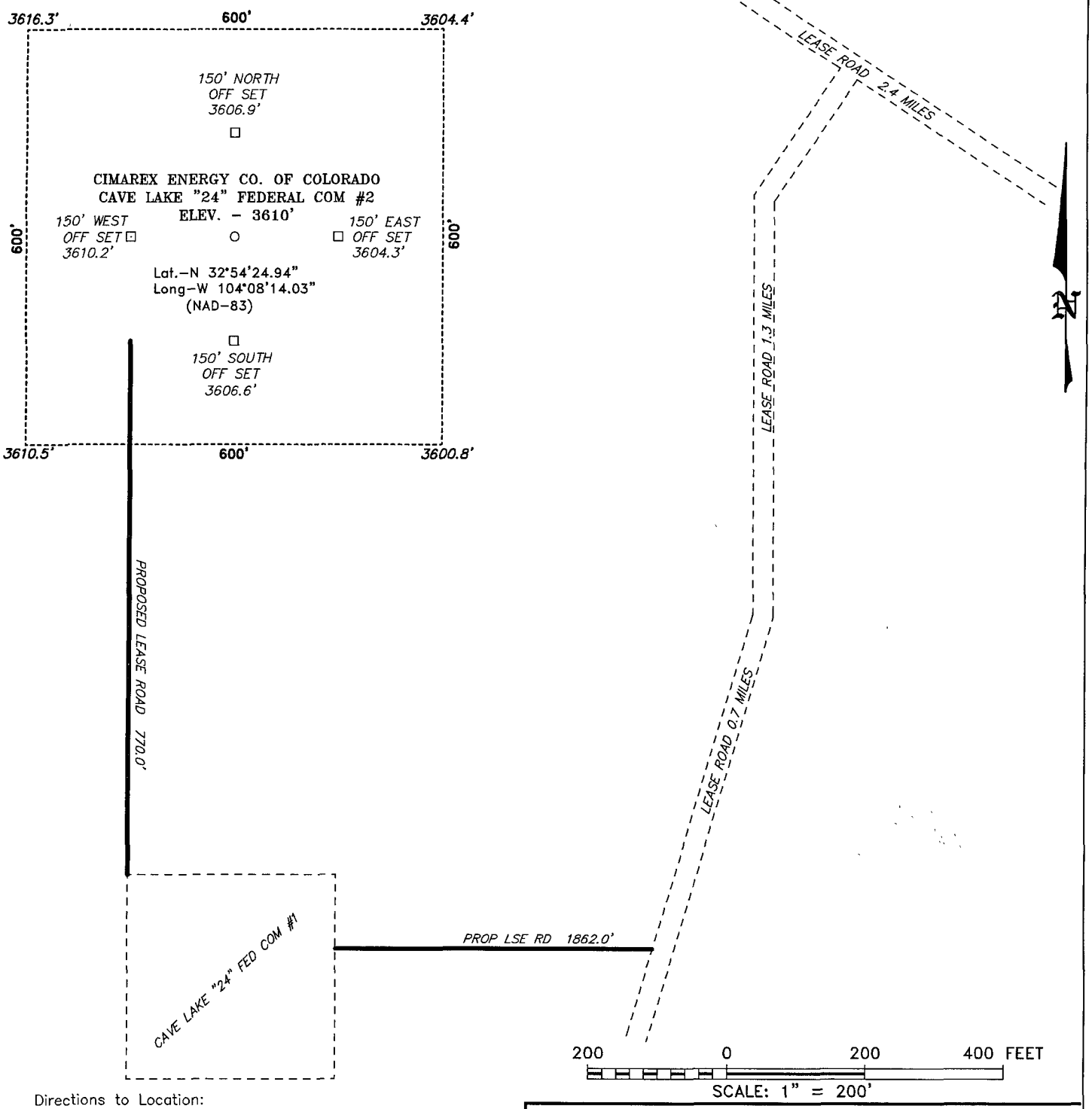
NOVEMBER 10, 2007
Date Surveyed
Signature & Seal of Professional Surveyor

GARY L. JONES NEW MEXICO 7977

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

SECTION 24, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, **NEW MEXICO.**



Directions to Location:

FROM JUNCTION OF US HWY 82 AND BARNIVAL DRAW ROAD, GO NORTH ON BARNIVAL DRAW FOR 6.8 MILES TO LEASE ROAD, ON LEASE ROAD GO NORTHWEST 2.4 MILES TO LEASE ROAD, ON LEASE ROAD GO SOUTH 1.3 MILES TO LEASE ROAD, CONTINUE SOUTH 0.7 MILES TO PROPOSED LEASE ROAD FOR THE #1 AND #4 LOCATIONS.

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

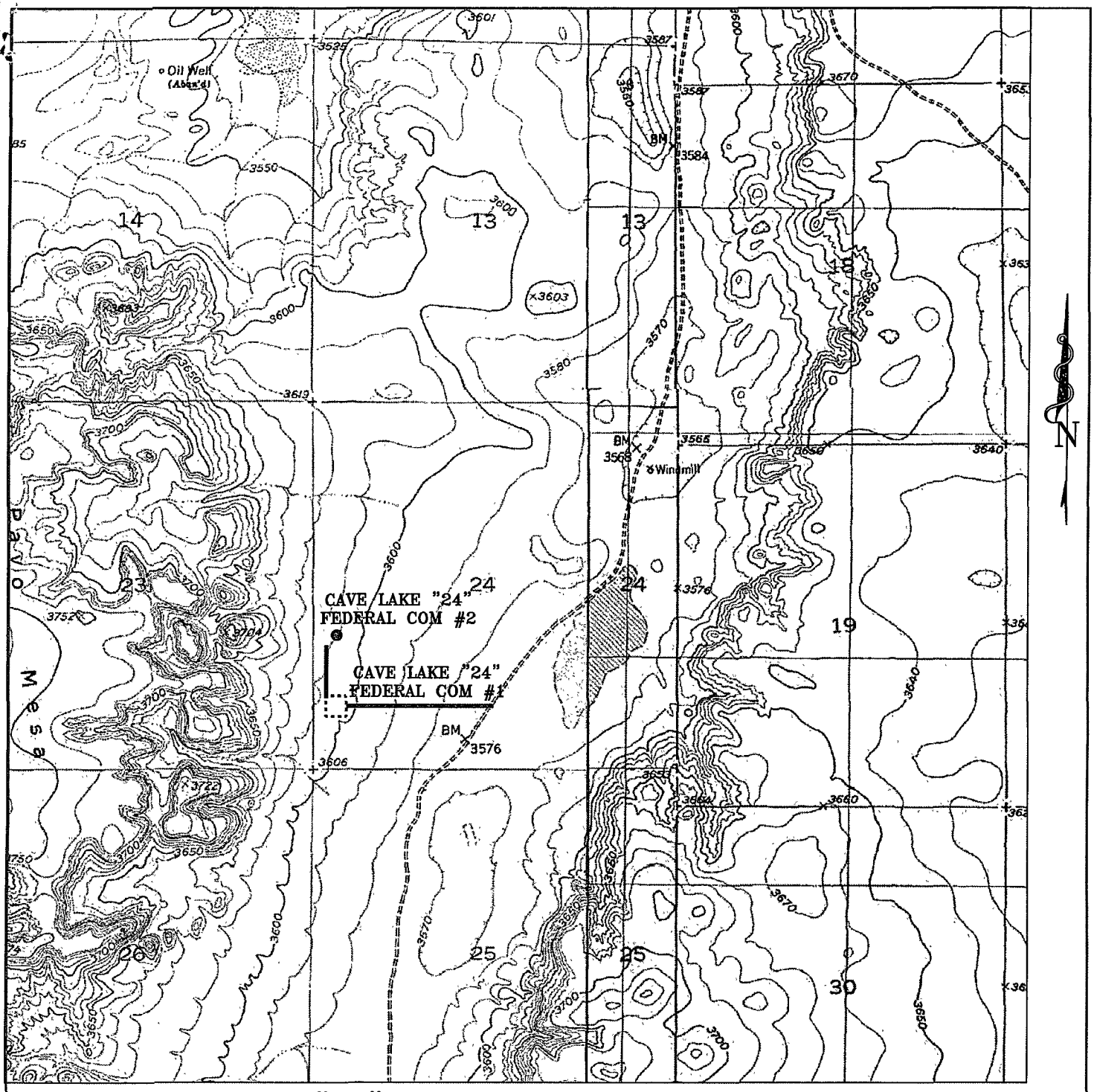
W.O. Number: 18792	Drawn By: J. SMALL
Date: 11-12-2007	Disk: JMS 18792W

CIMAREX ENERGY CO. OF COLORADO

REF: CAVE LAKE "24" FEDERAL COM #2 / WELL PAD TOPO

THE CAVE LAKE "24" FEDERAL COM #2 LOCATED 1980' FROM THE SOUTH LINE AND 330' FROM THE WEST LINE OF SECTION 24, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

Survey Date: 11-10-2007	Sheet 1 of 1 Sheets



CAVE LAKE "24" FEDERAL COM #2
Located 1980' FSL and 330' FWL
Section 24, Township 16 South, Range 28 East,
N.M.P.M., Eddy County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com

W.O. Number: JMS 18792T
Survey Date: 11-10-2007
Scale: 1" = 2000'
Date: 11-12-2007

CIMAREX ENERGY CO. OF COLORADO

Application to Drill
Cimarex Energy Co. of Colorado
Cave Lake 24 Federal Com No. 2 H
Unit L Section 24
T16S R28E Eddy County, NM

In response to questions asked under Section II B of Bulletin NTL-6, the following information is provided for your consideration:

1 Location: SHL 1980' FSL & 330' FWL
BHL 1980' FSL & 330' FEL *Proposed Horizontal Wolfcamp Test*

2 Elevation above sea level: 3610' GR

3 Geologic name of surface formation: Quaternery Alluvium Deposits

4 Drilling tools and associated equipment: Conventional rotary drilling rig using fluid as a circulating medium for solids removal.

5 Proposed drilling depth: 7350' Pilot Hole□MD 11242'□TVD 6870'

6 Estimated tops of geological markers:

San Andres	1820'
Abo Shale	5340'
Wolfcamp	6870'
Wolfcamp	7000'

7 Possible mineral bearing formation:

Wolfcamp Oil

8 Proposed Mud Circulating System:

Depth			Mud Wt	Visc	Fluid Loss	Type Mud
0	to	340	8.4 - 8.6	30-32	May lose circ	Fresh water spud mud
340	to	1,800	10.0	28-29	May lose circ	Brine Water
1,800	to	11,242	8.6 - 9.5	28-29	NC	Fresh water and brine, use hi-vis sweeps to keep hole clean

Sufficient mud materials will be kept on location at all times in order to combat lost circulation, or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs. Mud system monitoring equipment with derrick floor indicators and visual/audio alarms shall be installed and operative prior to drilling into the Wolfcamp formation. This equipment will remain in use until production casing is run and cemented.

8a Drill pilot hole to 7350.' Set KO Plug @ 6700.' Kick off horizontal leg @ 6500' and drill 7-7/8" hole to 11242' MD & 6870' TVD. Run 5-1/2" 17# P-110 BTC casing and cement as shown on Page 2, production casing details.

Application to Drill
Cimarex Energy Co. of Colorado
Cave Lake 24 Federal Com No. 2
Unit L Section 24
T16S R28E Eddy County, NM

9 Casing & Cementing Program:

Hole Size	Depth			Casing OD		Weight	Thread	Collar	Grade
17-1/2	0	to	340	New	13-3/8	48#	8-R	STC	H-40
11	0	to	1,800	New	8-5/8	24#	8-R	LTC	J-55
7-7/8	0	to	11,242	New	5-1/2	17#	8-R	BTC	P-110

10 Cementing & Setting Depth:

13-3/8 Surface — Set 340 of 13-3/8 48# H-40 STC
Lead: 171 sx Light Premium Plus + 0.125 lb/sk Poly-E-Flake + 1% CaCl (wt 14.2, yld 1.64)
Tail: 220 sk Premium Plus + 2% CaCl (wt 14.8, yld 1.35)
TOC Surface

8-5/8 Intermediate — Set 1,800 of 8-5/8 24# J-55 LTC
Lead: 344 sks Interfill C + 0.125 lb/sk Poly-E-Flake (wt 11.9, yld 2.45)
Tail: 200 sks Premium Plus + 1% CaCl (wt 14.8, yld 1.33)
TOC Surface

5-1/2 Production — Set 11,242 of 5-1/2 17# P-110 BTC
1437 sx Super H + 0.5% Halad-344 + 0.4% CFR-3 + 1lbm/sk Salt + 5 lb/sk Gilsonite + 0.125 lb/sk Poly-E-Flake + 0.35% HR-7 (wt 13.0, yld 1.67)
TOC 1,300

Fresh water will be protected by setting 13-3/8 casing at 340 and cementing to Surface
Hydrocarbon zones will be protected by setting 8-5/8 casing at 1,800 and cementing to Surface
and by setting 5-1/2 casing at 11,242 and cementing to 1,300

Cimarex uses the following minimum safety factors:

Burst	Collapse	Tension
1.125	1.0	1.80

11 Pressure control Equipment:

Exhibit "E-1" - Surface Casing - A 13 5/8" 3000 PSI working pressure B.O.P. consisting of a 3000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor. Annular preventor to be function-tested once per day. Annular preventor will be tested to 250 psi low and 2000 psi high.

Exhibit "E-2" - Intermediate & Production Casing - An 11" 5000 PSI working pressure B.O.P. consisting of one set of blind rams and one set of pipe rams and a 5000# hydril. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head below 6000'. A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

BOP unit will be hydraulically operated. Below intermediate casing shoe, BOP will be operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling. From the base of the surface pipe through the running of production casing, the well will be equipped with a 5000 psi BOP system.

The BOPs will be tested by an independent service company. Ram type BOPs to 250 psi low and 5000 psi high. Annular BOP 250 psi low and 3000 psi high.

12 Testing, Logging and Coring Program:

A. Mud logging program: 2 man unit from 5000' to TD
B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR
C. No DSTs are planned at this time.

13 Potential Hazards:

No abnormal pressures or temperatures are expected. The area has a potiential H2S hazard. An H2S drilling plan is attached. Adequate flare lines will be installed off the mud / gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used.

Estimated BHP **4000 psi** Estimated BHT **175**

14 Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved.

Drilling expected to take 35-45 days
If production casing is run an additional 30 days will be required to complete and construct surface facilities.

15 Other Facets of Operations:

After running casing, cased hole gamma ray neutron collar logs will be run from total depth over possible pay intervals.

Wolfcamp pay will be perforated and stimulated.
The proposed well will be tested and potentialed as **an oil well**

Hydrogen Sulfide Drilling Operations Plan
Cimarex Energy Co. of Colorado
Cave Lake 24 Federal Com No. 2H
Unit L Section 24
T16S R28E Eddy County, NM

1 All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:

A. Characteristics of H2S
B. Physical effects and hazards
C. Proper use of safety equipment and life support systems.
D. Principle and operation of H2S detectors, warning system and briefing areas.
E. Evacuation procedure, routes and first aid.
F. Proper use of 30 minute pressure demand air pack.

2 H2S Detection and Alarm Systems

A. H2S detectors and audio alarm system to be located at bell nipple, end of flow line (mud pit) and on derrick floor or doghouse.

3 Windsock and/or wind streamers

A. Windsock at mudpit area should be high enough to be visible.
B. Windsock at briefing area should be high enough to be visible.

4 Condition Flags and Signs

A. Warning sign on access road to location.
B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H2S present in dangerous concentration). Only emergency personnel admitted to location.

5 Well control equipment

A. See exhibit "E"

6 Communication

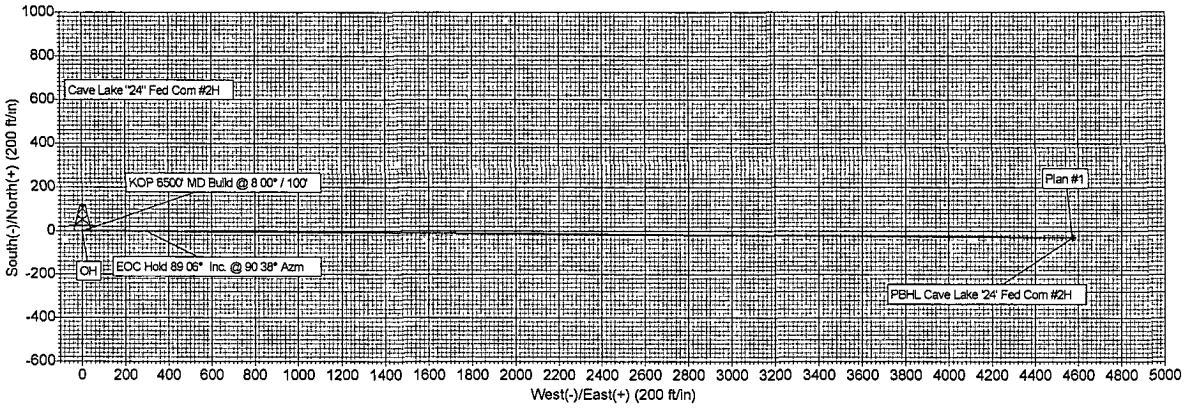
A. While working under masks chalkboards will be used for communication.
B. Hand signals will be used where chalk board is inappropriate.
C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.

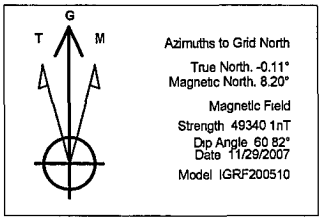
7 Drillstem Testing
No DSTs are planned at this time.

8 Drilling contractor supervisor will be required to be familiar with the effects H2S has on tubular goods and other mechanical equipment.

9 If H2S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas seperator will be brought into service along with H2S scavengers if necessary.

Project Eddy Co , New Mexico
Site. Cave Lake "24" Fed Com #2H
Well: Cave Lake "24" Fed Com #2H
Wellbore: Lateral #1
Plan Plan #1 (Cave Lake "24" Fed Com #2H/Lateral #1)





Azimuths to Grid North
True North. -0.11°
Magnetic North. 8.20°
Magnetic Field
Strength 49340 1nT
Dip Angle 60 82°
Date 11/29/2007
Model IGRF200510

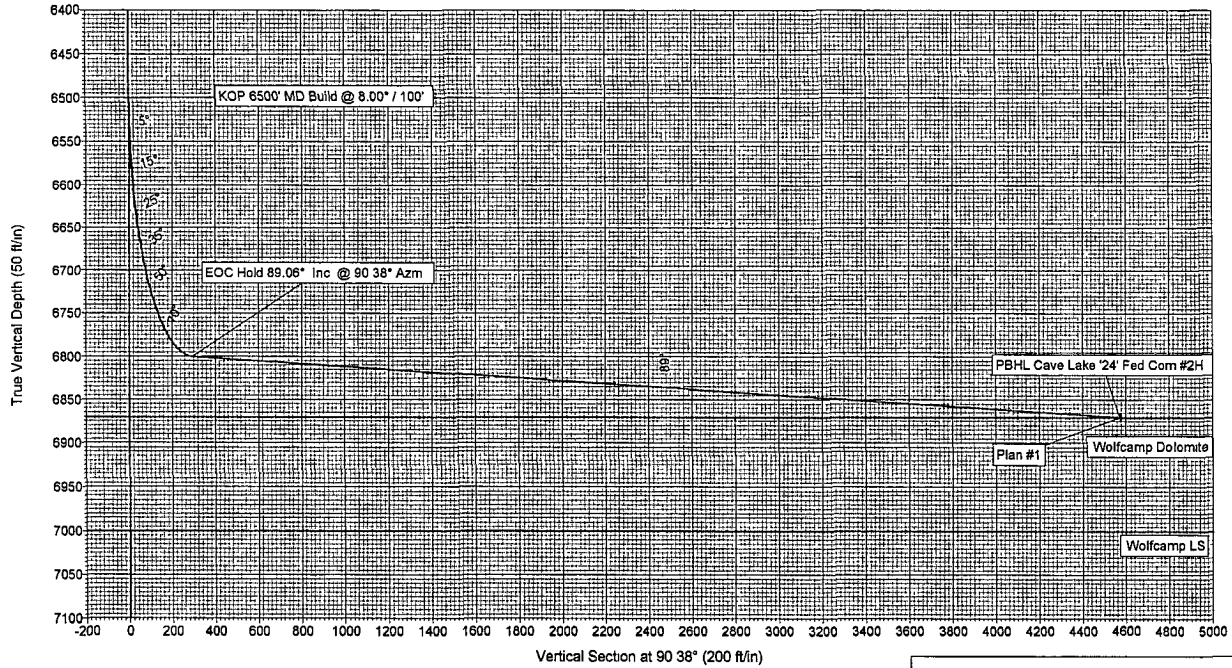
PROJECT DETAILS Eddy Co , New Mexico

Geodetic System US State Plane 1983
Datum North American Datum 1983
Ellipsoid GRS 1980
Zone New Mexico Eastern Zone

System Datum. Mean Sea Level

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	6500.00	0 00	0 00	6500.00	0.00	0 00	0 00	0 00	0.00	
2	6966 54	89.06	90 38	6800 10	-1.94	295.22	19 09	90 38	295 23	
3	11242 20	89 06	90 38	6870.00	-30 03	4570 22	0 00	0.00	4570 32	PBHL



Plan Plan #1 (Cave Lake "24" Fed Com #2H/Lateral #1)
Created By Heather Vannoy Date November 28, 2007

Cimarex Energy Co., Inc.

Eddy Co., New Mexico
Cave Lake "24" Fed Com #2H
Cave Lake "24" Fed Com #2H
Lateral #1

Plan: Plan #1

Standard Survey Report

29 November, 2007

Black Viper Energy

Survey Report

Company:	Cimarex Energy Co , Inc.	**Local Co-ordinate Reference:**	Well Cave Lake "24" Fed Com #2H
Project:	Eddy Co., New Mexico	**TVD Reference:**	WELL @ 3610.00ft (Original Well Elev)
Site:	Cave Lake "24" Fed Com #2H	**MD Reference:**	WELL @ 3610.00ft (Original Well Elev)
Well:	Cave Lake "24" Fed Com #2H	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 2003.14 Server Db

Project Eddy Co., New Mexico

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

Site Cave Lake "24" Fed Com #2H

Site Position:		**Northing:**	693,730.90 ft	**Latitude:**	32° 54' 24.929 N
From:	Map	**Easting:**	601,521.50 ft	**Longitude:**	104° 8' 14.039 W
Position Uncertainty:	0.00 ft	**Slot Radius:**	"	**Grid Convergence:**	0.11 °

Well Cave Lake "24" Fed Com #2H

Well Position	**+N/-S**	0.00 ft	**Northing:**	693,730.90 ft	**Latitude:**	32° 54' 24.929 N
	+E/-W	0.00 ft	**Easting:**	601,521.50 ft	**Longitude:**	104° 8' 14.039 W
Position Uncertainty		0.00 ft	**Wellhead Elevation:**	ft	**Ground Level:**	0.00 ft

Wellbore Lateral #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	11/29/2007	8.31	60 82	49,340

Design Plan #1

Audit Notes:

Version:		**Phase:**	PROTOTYPE	**Tie On Depth:**	6,500 00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0.00	0.00	90.38

Survey Tool Program Date 11/29/2007

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
6,500 00	11,241.94	Plan #1 (Lateral #1)	MWD	MWD - Standard

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,500.00	0.00	0.00	6,500.00	0.00	0 00	0 00	0 00	0.00	0.00
KOP 6500' MD Build @ 8.00° / 100'									
6,510.00	1.91	90.38	6,510 00	0.00	0.17	0.17	19.09	19 09	0.00
6,540.00	7.64	90.38	6,539.88	-0.02	2.66	2.66	19.09	19.09	0.00
6,570.00	13.36	90.38	6,569.37	-0 05	8 13	8.13	19.09	19.09	0.00
6,600.00	19 09	90.38	6,598.16	-0.11	16.51	16.51	19.09	19.09	0.00
6,630 00	24.82	90.38	6,625.97	-0.18	27.72	27.72	19.09	19.09	0.00
6,660.00	30.54	90.38	6,652.53	-0.27	41.65	41.65	19.09	19.09	0.00
6,690.00	36.27	90.38	6,677.56	-0.38	58.16	58.16	19.09	19.09	0.00
6,720.00	42.00	90.38	6,700.82	-0 51	77 08	77.08	19.09	19 09	0.00
6,750.00	47.72	90.38	6,722.08	-0.65	98.23	98.24	19.09	19.09	0.00
6,780.00	53.45	90.38	6,741.12	-0.80	121.40	121.41	19.09	19.09	0.00
6,810 00	59.18	90.38	6,757.75	-0 96	146.36	146.36	19.09	19.09	0.00

Black Viper Energy

Survey Report

Company:	Cimarex Energy Co., Inc.	**Local Co-ordinate Reference:**	Well Cave Lake "24" Fed Com #2H
Project:	Eddy Co., New Mexico	**TVD Reference:**	WELL @ 3610.00ft (Original Well Elev)
Site:	Cave Lake "24" Fed Com #2H	**MD Reference:**	WELL @ 3610.00ft (Original Well Elev)
Well:	Cave Lake "24" Fed Com #2H	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 2003.14 Server Db

Planned Survey

Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)
6,840.00	64.91	90.38	6,771.81	-1.14	172.84	172.85	19.09	19.09	0.00
6,870.00	70.63	90.38	6,783.15	-1.32	200.60	200.60	19.09	19.09	0.00
6,900.00	76.36	90.38	6,791.67	-1.51	229.35	229.36	19.09	19.09	0.00
6,930.00	82.09	90.38	6,797.28	-1.70	258.81	258.82	19.09	19.09	0.00
6,960.00	87.81	90.38	6,799.92	-1.90	288.68	288.69	19.09	19.09	0.00
6,966.54	89.06	90.38	6,800.10	-1.94	295.22	295.23	19.09	19.09	0.00
EOC Hold 89.06° Inc. @ 90.38° Azm.									
6,990.00	89.06	90.38	6,800.48	-2.09	318.67	318.68	0.00	0.00	0.00
7,020.00	89.06	90.38	6,800.97	-2.29	348.67	348.68	0.00	0.00	0.00
7,050.00	89.06	90.38	6,801.46	-2.49	378.66	378.67	0.00	0.00	0.00
7,080.00	89.06	90.38	6,801.95	-2.69	408.66	408.67	0.00	0.00	0.00
7,110.00	89.06	90.38	6,802.44	-2.88	438.66	438.66	0.00	0.00	0.00
7,140.00	89.06	90.38	6,802.93	-3.08	468.65	468.66	0.00	0.00	0.00
7,170.00	89.06	90.38	6,803.42	-3.28	498.65	498.66	0.00	0.00	0.00
7,200.00	89.06	90.38	6,803.91	-3.47	528.64	528.65	0.00	0.00	0.00
7,230.00	89.06	90.38	6,804.40	-3.67	558.64	558.65	0.00	0.00	0.00
7,260.00	89.06	90.38	6,804.89	-3.87	588.63	588.64	0.00	0.00	0.00
7,290.00	89.06	90.38	6,805.38	-4.06	618.63	618.64	0.00	0.00	0.00
7,320.00	89.06	90.38	6,805.87	-4.26	648.62	648.64	0.00	0.00	0.00
7,350.00	89.06	90.38	6,806.36	-4.46	678.62	678.63	0.00	0.00	0.00
7,380.00	89.06	90.38	6,806.86	-4.66	708.61	708.63	0.00	0.00	0.00
7,410.00	89.06	90.38	6,807.35	-4.85	738.61	738.62	0.00	0.00	0.00
7,440.00	89.06	90.38	6,807.84	-5.05	768.60	768.62	0.00	0.00	0.00
7,470.00	89.06	90.38	6,808.33	-5.25	798.60	798.62	0.00	0.00	0.00
7,500.00	89.06	90.38	6,808.82	-5.44	828.59	828.61	0.00	0.00	0.00
7,530.00	89.06	90.38	6,809.31	-5.64	858.59	858.61	0.00	0.00	0.00
7,560.00	89.06	90.38	6,809.80	-5.84	888.59	888.60	0.00	0.00	0.00
7,590.00	89.06	90.38	6,810.29	-6.04	918.58	918.60	0.00	0.00	0.00
7,620.00	89.06	90.38	6,810.78	-6.23	948.58	948.60	0.00	0.00	0.00
7,650.00	89.06	90.38	6,811.27	-6.43	978.57	978.59	0.00	0.00	0.00
7,680.00	89.06	90.38	6,811.76	-6.63	1,008.57	1,008.59	0.00	0.00	0.00
7,710.00	89.06	90.38	6,812.25	-6.82	1,038.56	1,038.58	0.00	0.00	0.00
7,740.00	89.06	90.38	6,812.74	-7.02	1,068.56	1,068.58	0.00	0.00	0.00
7,770.00	89.06	90.38	6,813.23	-7.22	1,098.55	1,098.58	0.00	0.00	0.00
7,800.00	89.06	90.38	6,813.72	-7.42	1,128.55	1,128.57	0.00	0.00	0.00
7,830.00	89.06	90.38	6,814.21	-7.61	1,158.54	1,158.57	0.00	0.00	0.00
7,860.00	89.06	90.38	6,814.70	-7.81	1,188.54	1,188.56	0.00	0.00	0.00
7,890.00	89.06	90.38	6,815.19	-8.01	1,218.53	1,218.56	0.00	0.00	0.00
7,920.00	89.06	90.38	6,815.68	-8.20	1,248.53	1,248.56	0.00	0.00	0.00
7,950.00	89.06	90.38	6,816.17	-8.40	1,278.52	1,278.55	0.00	0.00	0.00
7,980.00	89.06	90.38	6,816.66	-8.60	1,308.52	1,308.55	0.00	0.00	0.00
8,010.00	89.06	90.38	6,817.16	-8.80	1,338.52	1,338.54	0.00	0.00	0.00
8,040.00	89.06	90.38	6,817.65	-8.99	1,368.51	1,368.54	0.00	0.00	0.00
8,070.00	89.06	90.38	6,818.14	-9.19	1,398.51	1,398.54	0.00	0.00	0.00
8,100.00	89.06	90.38	6,818.63	-9.39	1,428.50	1,428.53	0.00	0.00	0.00
8,130.00	89.06	90.38	6,819.12	-9.58	1,458.50	1,458.53	0.00	0.00	0.00
8,160.00	89.06	90.38	6,819.61	-9.78	1,488.49	1,488.52	0.00	0.00	0.00
8,190.00	89.06	90.38	6,820.10	-9.98	1,518.49	1,518.52	0.00	0.00	0.00
8,220.00	89.06	90.38	6,820.59	-10.17	1,548.48	1,548.52	0.00	0.00	0.00
8,250.00	89.06	90.38	6,821.08	-10.37	1,578.48	1,578.51	0.00	0.00	0.00
8,280.00	89.06	90.38	6,821.57	-10.57	1,608.47	1,608.51	0.00	0.00	0.00
8,310.00	89.06	90.38	6,822.06	-10.77	1,638.47	1,638.50	0.00	0.00	0.00
8,340.00	89.06	90.38	6,822.55	-10.96	1,668.46	1,668.50	0.00	0.00	0.00
8,370.00	89.06	90.38	6,823.04	-11.16	1,698.46	1,698.50	0.00	0.00	0.00

Black Viper Energy

Survey Report

Company:	Cimarex Energy Co , Inc.	**Local Co-ordinate Reference:**	Well Cave Lake "24" Fed Com #2H
Project:	Eddy Co., New Mexico	**TVD Reference:**	WELL @ 3610.00ft (Original Well Elev)
Site:	Cave Lake "24" Fed Com #2H	**MD Reference:**	WELL @ 3610.00ft (Original Well Elev)
Well:	Cave Lake "24" Fed Com #2H	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 2003.14 Server Db

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)
8,400 00	89.06	90 38	6,823.53	-11.36	1,728.45	1,728.49	0.00	0.00	0 00
8,430.00	89.06	90.38	6,824.02	-11.55	1,758.45	1,758 49	0.00	0.00	0 00
8,460.00	89.06	90.38	6,824.51	-11.75	1,788.45	1,788.48	0.00	0.00	0.00
8,490.00	89.06	90.38	6,825.00	-11.95	1,818.44	1,818 48	0.00	0.00	0.00
8,520.00	89.06	90 38	6,825.49	-12.15	1,848.44	1,848.48	0.00	0.00	0 00
8,550.00	89.06	90.38	6,825.98	-12.34	1,878.43	1,878.47	0.00	0.00	0.00
8,580.00	89.06	90.38	6,826.47	-12.54	1,908.43	1,908.47	0.00	0 00	0.00
8,610.00	89.06	90.38	6,826.97	-12.74	1,938.42	1,938.46	0.00	0 00	0.00
8,640.00	89.06	90.38	6,827.46	-12.93	1,968 42	1,968.46	0.00	0.00	0.00
8,670.00	89.06	90.38	6,827.95	-13.13	1,998 41	1,998 46	0.00	0.00	0.00
8,700.00	89.06	90.38	6,828.44	-13.33	2,028 41	2,028.45	0.00	0.00	0.00
8,730.00	89.06	90.38	6,828.93	-13.53	2,058 40	2,058 45	0.00	0.00	0 00
8,760 00	89 06	90 38	6,829.42	-13.72	2,088.40	2,088 44	0.00	0.00	0.00
8,790 00	89.06	90.38	6,829.91	-13.92	2,118.39	2,118.44	0.00	0.00	0 00
8,820.00	89.06	90.38	6,830.40	-14.12	2,148.39	2,148.44	0.00	0.00	0.00
8,850.00	89.06	90.38	6,830.89	-14.31	2,178.39	2,178.43	0.00	0 00	0.00
8,880.00	89.06	90.38	6,831.38	-14.51	2,208 38	2,208.43	0.00	0.00	0.00
8,910 00	89.06	90.38	6,831.87	-14.71	2,238.38	2,238 42	0.00	0.00	0 00
8,940.00	89.06	90 38	6,832.36	-14.91	2,268.37	2,268.42	0 00	0.00	0.00
8,970.00	89.06	90.38	6,832 85	-15.10	2,298.37	2,298.42	0.00	0 00	0.00
9,000.00	89.06	90.38	6,833.34	-15 30	2,328.36	2,328.41	0.00	0.00	0.00
9,030.00	89.06	90.38	6,833.83	-15.50	2,358.36	2,358.41	0.00	0.00	0.00
9,060.00	89.06	90.38	6,834.32	-15.69	2,388.35	2,388.40	0.00	0 00	0.00
9,090.00	89.06	90.38	6,834.81	-15.89	2,418 35	2,418.40	0.00	0.00	0 00
9,120 00	89 06	90.38	6,835.30	-16.09	2,448 34	2,448.40	0.00	0.00	0.00
9,150.00	89.06	90.38	6,835.79	-16.28	2,478.34	2,478.39	0 00	0 00	0.00
9,180.00	89.06	90.38	6,836.28	-16.48	2,508 33	2,508 39	0 00	0.00	0.00
9,210.00	89.06	90.38	6,836.77	-16.68	2,538 33	2,538.38	0.00	0.00	0.00
9,240.00	89.06	90.38	6,837.27	-16.88	2,568.32	2,568.38	0.00	0.00	0 00
9,270 00	89.06	90.38	6,837.76	-17.07	2,598.32	2,598.38	0.00	0.00	0.00
9,300.00	89.06	90 38	6,838.25	-17.27	2,628.32	2,628.37	0.00	0.00	0.00
9,330.00	89.06	90.38	6,838.74	-17.47	2,658.31	2,658.37	0 00	0.00	0.00
9,360.00	89.06	90.38	6,839.23	-17.66	2,688.31	2,688 36	0.00	0.00	0.00
9,390.00	89.06	90 38	6,839.72	-17.86	2,718.30	2,718 36	0 00	0.00	0.00
9,420 00	89.06	90.38	6,840.21	-18 06	2,748.30	2,748.36	0.00	0.00	0 00
9,450.00	89.06	90.38	6,840 70	-18.26	2,778.29	2,778.35	0.00	0.00	0 00
9,480.00	89.06	90.38	6,841.19	-18 45	2,808.29	2,808.35	0.00	0.00	0.00
9,510.00	89.06	90.38	6,841.68	-18 65	2,838.28	2,838.34	0.00	0.00	0 00
9,540.00	89.06	90.38	6,842 17	-18.85	2,868.28	2,868.34	0.00	0.00	0 00
9,570.00	89.06	90.38	6,842.66	-19.04	2,898.27	2,898.34	0.00	0.00	0.00
9,600.00	89.06	90.38	6,843 15	-19.24	2,928.27	2,928.33	0.00	0.00	0.00
9,630.00	89.06	90.38	6,843.64	-19.44	2,958.26	2,958.33	0.00	0.00	0.00
9,660.00	89.06	90.38	6,844 13	-19 64	2,988.26	2,988.32	0.00	0.00	0.00
9,690 00	89.06	90 38	6,844.62	-19.83	3,018.25	3,018.32	0 00	0 00	0 00
9,720.00	89 06	90 38	6,845.11	-20.03	3,048.25	3,048.32	0.00	0.00	0.00
9,750.00	89.06	90.38	6,845.60	-20.23	3,078.25	3,078.31	0.00	0 00	0.00
9,780.00	89 06	90.38	6,846.09	-20.42	3,108.24	3,108.31	0.00	0.00	0 00
9,810.00	89 06	90 38	6,846.58	-20.62	3,138.24	3,138.30	0.00	0.00	0.00
9,840.00	89.06	90.38	6,847.07	-20 82	3,168.23	3,168.30	0.00	0.00	0.00
9,870.00	89.06	90.38	6,847.57	-21.01	3,198.23	3,198.30	0.00	0.00	0.00
9,900.00	89.06	90.38	6,848.06	-21.21	3,228.22	3,228.29	0.00	0.00	0.00
9,930.00	89.06	90 38	6,848.55	-21.41	3,258.22	3,258.29	0.00	0.00	0.00
9,960.00	89.06	90.38	6,849.04	-21.61	3,288.21	3,288 28	0.00	0 00	0.00
9,990.00	89.06	90.38	6,849 53	-21.80	3,318.21	3,318.28	0.00	0.00	0.00
10,020.00	89.06	90.38	6,850.02	-22.00	3,348.20	3,348.28	0.00	0.00	0.00

Black Viper Energy

Survey Report

Company:	Cimarex Energy Co., Inc.	**Local Co-ordinate Reference:**	Well Cave Lake "24" Fed Com #2H
Project:	Eddy Co., New Mexico	**TVD Reference:**	WELL @ 3610.00ft (Original Well Elev)
Site:	Cave Lake "24" Fed Com #2H	**MD Reference:**	WELL @ 3610.00ft (Original Well Elev)
Well:	Cave Lake "24" Fed Com #2H	**North Reference:**	Grid
Wellbore:	Lateral #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Plan #1	**Database:**	EDM 2003.14 Server Db

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)
10,050.00	89.06	90.38	6,850 51	-22.20	3,378.20	3,378.27	0.00	0.00	0.00
10,080.00	89.06	90 38	6,851.00	-22.39	3,408.19	3,408.27	0.00	0.00	0.00
10,110.00	89.06	90.38	6,851.49	-22.59	3,438.19	3,438.26	0.00	0.00	0 00
10,140.00	89.06	90 38	6,851.98	-22.79	3,468.18	3,468.26	0.00	0.00	0.00
10,170 00	89.06	90 38	6,852.47	-22.99	3,498.18	3,498.26	0.00	0 00	0.00
10,200.00	89.06	90.38	6,852.96	-23.18	3,528.18	3,528.25	0.00	0 00	0.00
10,230.00	89.06	90.38	6,853.45	-23.38	3,558.17	3,558.25	0.00	0 00	0.00
10,260.00	89.06	90.38	6,853.94	-23.58	3,588 17	3,588.24	0.00	0.00	0.00
10,290.00	89.06	90 38	6,854.43	-23.77	3,618.16	3,618.24	0.00	0.00	0 00
10,320.00	89.06	90.38	6,854.92	-23.97	3,648.16	3,648.24	0 00	0.00	0 00
10,350 00	89.06	90.38	6,855.41	-24.17	3,678.15	3,678.23	0 00	0.00	0 00
10,380.00	89.06	90.38	6,855 90	-24.37	3,708.15	3,708.23	0 00	0.00	0.00
10,410.00	89.06	90.38	6,856.39	-24.56	3,738.14	3,738.22	0 00	0.00	0.00
10,440.00	89.06	90.38	6,856.88	-24.76	3,768.14	3,768.22	0.00	0.00	0.00
10,470.00	89.06	90.38	6,857.37	-24.96	3,798.13	3,798.22	0.00	0.00	0.00
10,500.00	89.06	90.38	6,857.87	-25.15	3,828.13	3,828.21	0 00	0.00	0 00
10,530.00	89.06	90.38	6,858.36	-25.35	3,858.12	3,858.21	0.00	0.00	0.00
10,560.00	89.06	90.38	6,858.85	-25.55	3,888.12	3,888.20	0.00	0.00	0.00
10,590 00	89.06	90.38	6,859.34	-25.75	3,918.12	3,918.20	0.00	0.00	0.00
10,620.00	89.06	90.38	6,859.83	-25.94	3,948.11	3,948.20	0.00	0 00	0.00
10,650.00	89.06	90.38	6,860.32	-26.14	3,978.11	3,978 19	0.00	0.00	0.00
10,680.00	89.06	90.38	6,860.81	-26.34	4,008.10	4,008.19	0.00	0.00	0.00
10,710.00	89.06	90.38	6,861.30	-26.53	4,038.10	4,038 18	0.00	0.00	0.00
10,740.00	89.06	90.38	6,861.79	-26.73	4,068.09	4,068 18	0 00	0.00	0.00
10,770.00	89.06	90.38	6,862.28	-26.93	4,098.09	4,098.18	0 00	0.00	0.00
10,800.00	89.06	90.38	6,862.77	-27.12	4,128.08	4,128.17	0.00	0.00	0.00
10,830.00	89.06	90.38	6,863.26	-27.32	4,158.08	4,158.17	0.00	0.00	0.00
10,860.00	89.06	90.38	6,863.75	-27.52	4,188.07	4,188.16	0.00	0 00	0.00
10,890.00	89.06	90.38	6,864.24	-27.72	4,218.07	4,218.16	0.00	0.00	0.00
10,920.00	89.06	90.38	6,864.73	-27.91	4,248.06	4,248.16	0.00	0.00	0.00
10,950 00	89 06	90.38	6,865.22	-28.11	4,278 06	4,278.15	0.00	0.00	0.00
10,980.00	89 06	90.38	6,865.71	-28.31	4,308.05	4,308.15	0.00	0 00	0.00
11,010.00	89.06	90.38	6,866.20	-28.50	4,338 05	4,338.14	0.00	0.00	0.00
11,040.00	89 06	90 38	6,866.69	-28.70	4,368.05	4,368.14	0.00	0.00	0 00
11,070.00	89.06	90 38	6,867.18	-28.90	4,398.04	4,398.14	0.00	0.00	0.00
11,100.00	89 06	90 38	6,867.68	-29.10	4,428.04	4,428.13	0.00	0.00	0 00
11,130.00	89.06	90.38	6,868.17	-29.29	4,458.03	4,458.13	0 00	0.00	0.00
11,160.00	89.06	90.38	6,868.66	-29.49	4,488.03	4,488.12	0.00	0.00	0.00
11,190.00	89.06	90.38	6,869.15	-29.69	4,518.02	4,518.12	0.00	0.00	0.00
11,220.00	89.06	90.38	6,869.64	-29.88	4,548.02	4,548.12	0.00	0.00	0 00
11,242.20	89.06	90.38	6,870.00	-30.03	4,570.22	4,570.32	0.00	0.00	0.00
PBHL Cave Lake '24' Fed Com @2H - Wolfcamp Dolomite									

Black Viper Energy

Survey Report

Company:	Cimarex Energy Co., Inc.	Local Co-ordinate Reference:	Well Cave Lake "24" Fed Com #2H
Project:	Eddy Co., New Mexico	TVD Reference:	WELL @ 3610.00ft (Original Well Elev)
Site:	Cave Lake "24" Fed Com #2H	MD Reference:	WELL @ 3610.00ft (Original Well Elev)
Well:	Cave Lake "24" Fed Com #2H	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.14 Server Db

Targets

Target Name - hit/miss target - Shape	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
PBHL - plan hits target - Point	0.00	0.00	6,870.00	-30.03	4,570.22	693,700.87	606,091.72	32° 54' 24.545 N	104° 7' 20.431 W

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
	5,340.00	ABO Shale	Shale	0 00	
11,242.20	6,870.00	Wolfcamp Dolomite	Dolomite	0.00	
	7,000.00	Wolfcamp LS	Limestone	0.00	

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates +N/-S (ft)	Local Coordinates +E/-W (ft)	Comment
6,500.00	6,500 00	0.00	0.00	KOP 6500' MD Build @ 8.00° / 100'
6,966.54	6,800.10	-1.94	295.22	EOC Hold 89.06° Inc. @ 90.38° Azm.
11,242.20	6,870.00	-30.03	4,570.22	PBHL Cave Lake '24' Fed Com @2H

Checked By: _____ Approved By: _____ Date: _____

Cimarex Energy Co., Inc.
Cave Lake "24" Fed Com #2H - Plan #1

Eddy Co., New Mexico
Cave Lake "24" Fed Com #2H

Measured Depth (ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
6500.00	0.000	0.000	6500.00	0.00 N	0.00 E	0.00	0.00
6510.00	1.909	90.376	6510.00	0.00 S	0.17 E	0.17	19.09
6540.00	7.636	90.376	6539.88	0.02 S	2.66 E	2.66	19.09
6570.00	13.363	90.376	6569.37	0.05 S	8.13 E	8.13	19.09
6600.00	19.090	90.376	6598.16	0.11 S	16.51 E	16.51	19.09
6630.00	24.817	90.376	6625.97	0.18 S	27.72 E	27.72	19.09
6660.00	30.544	90.376	6652.53	0.27 S	41.65 E	41.65	19.09
6690.00	36.271	90.376	6677.56	0.38 S	58.16 E	58.16	19.09
6720.00	41.998	90.376	6700.82	0.51 S	77.08 E	77.08	19.09
6750.00	47.725	90.376	6722.08	0.65 S	98.23 E	98.24	19.09
6780.00	53.452	90.376	6741.12	0.80 S	121.40 E	121.41	19.09
6810.00	59.179	90.376	6757.75	0.96 S	146.36 E	146.36	19.09
6840.00	64.906	90.376	6771.81	1.14 S	172.84 E	172.85	19.09
6870.00	70.633	90.376	6783.15	1.32 S	200.60 E	200.60	19.09
6900.00	76.360	90.376	6791.67	1.51 S	229.35 E	229.36	19.09
6930.00	82.087	90.376	6797.28	1.70 S	258.81 E	258.82	19.09
6960.00	87.814	90.376	6799.92	1.90 S	288.68 E	288.69	19.09
6966.54	89.063	90.376	6800.10	1.94 S	295.22 E	295.23	19.09
6990.00	89.063	90.376	6800.48	2.09 S	318.67 E	318.68	0.00
7020.00	89.063	90.376	6800.97	2.29 S	348.67 E	348.68	0.00
7050.00	89.063	90.376	6801.46	2.49 S	378.66 E	378.67	0.00
7080.00	89.063	90.376	6801.95	2.69 S	408.66 E	408.67	0.00
7110.00	89.063	90.376	6802.44	2.88 S	438.66 E	438.66	0.00
7140.00	89.063	90.376	6802.93	3.08 S	468.65 E	468.66	0.00
7170.00	89.063	90.376	6803.42	3.28 S	498.65 E	498.66	0.00

7200.00	89.063	90.376	6803.91	3.47	S	528.64	E	528.65	0.00
7230.00	89.063	90.376	6804.40	3.67	S	558.64	E	558.65	0.00
7260.00	89.063	90.376	6804.89	3.87	S	588.63	E	588.64	0.00
7290.00	89.063	90.376	6805.38	4.06	S	618.63	E	618.64	0.00
7320.00	89.063	90.376	6805.87	4.26	S	648.62	E	648.64	0.00
7350.00	89.063	90.376	6806.36	4.46	S	678.62	E	678.63	0.00
7380.00	89.063	90.376	6806.86	4.66	S	708.61	E	708.63	0.00
7410.00	89.063	90.376	6807.35	4.85	S	738.61	E	738.62	0.00
7440.00	89.063	90.376	6807.84	5.05	S	768.60	E	768.62	0.00
7470.00	89.063	90.376	6808.33	5.25	S	798.60	E	798.62	0.00
7500.00	89.063	90.376	6808.82	5.44	S	828.59	E	828.61	0.00
7530.00	89.063	90.376	6809.31	5.64	S	858.59	E	858.61	0.00
7560.00	89.063	90.376	6809.80	5.84	S	888.59	E	888.60	0.00
7590.00	89.063	90.376	6810.29	6.04	S	918.58	E	918.60	0.00
7620.00	89.063	90.376	6810.78	6.23	S	948.58	E	948.60	0.00
7650.00	89.063	90.376	6811.27	6.43	S	978.57	E	978.59	0.00
7680.00	89.063	90.376	6811.76	6.63	S	1008.57	E	1008.59	0.00
7710.00	89.063	90.376	6812.25	6.82	S	1038.56	E	1038.58	0.00
7740.00	89.063	90.376	6812.74	7.02	S	1068.56	E	1068.58	0.00
7770.00	89.063	90.376	6813.23	7.22	S	1098.55	E	1098.58	0.00
7800.00	89.063	90.376	6813.72	7.42	S	1128.55	E	1128.57	0.00
7830.00	89.063	90.376	6814.21	7.61	S	1158.54	E	1158.57	0.00
7860.00	89.063	90.376	6814.70	7.81	S	1188.54	E	1188.56	0.00
7890.00	89.063	90.376	6815.19	8.01	S	1218.53	E	1218.56	0.00
7920.00	89.063	90.376	6815.68	8.20	S	1248.53	E	1248.56	0.00
7950.00	89.063	90.376	6816.17	8.40	S	1278.52	E	1278.55	0.00
7980.00	89.063	90.376	6816.66	8.60	S	1308.52	E	1308.55	0.00
8010.00	89.063	90.376	6817.16	8.80	S	1338.52	E	1338.54	0.00
8040.00	89.063	90.376	6817.65	8.99	S	1368.51	E	1368.54	0.00
8070.00	89.063	90.376	6818.14	9.19	S	1398.51	E	1398.54	0.00
8100.00	89.063	90.376	6818.63	9.39	S	1428.50	E	1428.53	0.00
8130.00	89.063	90.376	6819.12	9.58	S	1458.50	E	1458.53	

0.00							
8160.00	89.063	90.376	6819.61	9.78	S	1488.49 E	1488.52
0.00							
8190.00	89.063	90.376	6820.10	9.98	S	1518.49 E	1518.52
0.00							
8220.00	89.063	90.376	6820.59	10.17	S	1548.48 E	1548.52
0.00							
8250.00	89.063	90.376	6821.08	10.37	S	1578.48 E	1578.51
0.00							
8280.00	89.063	90.376	6821.57	10.57	S	1608.47 E	1608.51
0.00							
8310.00	89.063	90.376	6822.06	10.77	S	1638.47 E	1638.50
0.00							
8340.00	89.063	90.376	6822.55	10.96	S	1668.46 E	1668.50
0.00							
8370.00	89.063	90.376	6823.04	11.16	S	1698.46 E	1698.50
0.00							
8400.00	89.063	90.376	6823.53	11.36	S	1728.45 E	1728.49
0.00							
8430.00	89.063	90.376	6824.02	11.55	S	1758.45 E	1758.49
0.00							
8460.00	89.063	90.376	6824.51	11.75	S	1788.45 E	1788.48
0.00							
8490.00	89.063	90.376	6825.00	11.95	S	1818.44 E	1818.48
0.00							
8520.00	89.063	90.376	6825.49	12.15	S	1848.44 E	1848.48
0.00							
8550.00	89.063	90.376	6825.98	12.34	S	1878.43 E	1878.47
0.00							
8580.00	89.063	90.376	6826.47	12.54	S	1908.43 E	1908.47
0.00							
8610.00	89.063	90.376	6826.97	12.74	S	1938.42 E	1938.46
0.00							
8640.00	89.063	90.376	6827.46	12.93	S	1968.42 E	1968.46
0.00							
8670.00	89.063	90.376	6827.95	13.13	S	1998.41 E	1998.46
0.00							
8700.00	89.063	90.376	6828.44	13.33	S	2028.41 E	2028.45
0.00							
8730.00	89.063	90.376	6828.93	13.53	S	2058.40 E	2058.45
0.00							
8760.00	89.063	90.376	6829.42	13.72	S	2088.40 E	2088.44
0.00							
8790.00	89.063	90.376	6829.91	13.92	S	2118.39 E	2118.44
0.00							
8820.00	89.063	90.376	6830.40	14.12	S	2148.39 E	2148.44
0.00							
8850.00	89.063	90.376	6830.89	14.31	S	2178.39 E	2178.43
0.00							
8880.00	89.063	90.376	6831.38	14.51	S	2208.38 E	2208.43
0.00							
8910.00	89.063	90.376	6831.87	14.71	S	2238.38 E	2238.42
0.00							
8940.00	89.063	90.376	6832.36	14.91	S	2268.37 E	2268.42
0.00							
8970.00	89.063	90.376	6832.85	15.10	S	2298.37 E	2298.42
0.00							
9000.00	89.063	90.376	6833.34	15.30	S	2328.36 E	2328.41
0.00							
9030.00	89.063	90.376	6833.83	15.50	S	2358.36 E	2358.41
0.00							
9060.00	89.063	90.376	6834.32	15.69	S	2388.35 E	2388.40
0.00							

9090.00	89.063	90.376	6834.81	15.89	S	2418.35	E	2418.40	0.00
9120.00	89.063	90.376	6835.30	16.09	S	2448.34	E	2448.40	0.00
9150.00	89.063	90.376	6835.79	16.28	S	2478.34	E	2478.39	0.00
9180.00	89.063	90.376	6836.28	16.48	S	2508.33	E	2508.39	0.00
9210.00	89.063	90.376	6836.77	16.68	S	2538.33	E	2538.38	0.00
9240.00	89.063	90.376	6837.27	16.88	S	2568.32	E	2568.38	0.00
9270.00	89.063	90.376	6837.76	17.07	S	2598.32	E	2598.38	0.00
9300.00	89.063	90.376	6838.25	17.27	S	2628.32	E	2628.37	0.00
9330.00	89.063	90.376	6838.74	17.47	S	2658.31	E	2658.37	0.00
9360.00	89.063	90.376	6839.23	17.66	S	2688.31	E	2688.36	0.00
9390.00	89.063	90.376	6839.72	17.86	S	2718.30	E	2718.36	0.00
9420.00	89.063	90.376	6840.21	18.06	S	2748.30	E	2748.36	0.00
9450.00	89.063	90.376	6840.70	18.26	S	2778.29	E	2778.35	0.00
9480.00	89.063	90.376	6841.19	18.45	S	2808.29	E	2808.35	0.00
9510.00	89.063	90.376	6841.68	18.65	S	2838.28	E	2838.34	0.00
9540.00	89.063	90.376	6842.17	18.85	S	2868.28	E	2868.34	0.00
9570.00	89.063	90.376	6842.66	19.04	S	2898.27	E	2898.34	0.00
9600.00	89.063	90.376	6843.15	19.24	S	2928.27	E	2928.33	0.00
9630.00	89.063	90.376	6843.64	19.44	S	2958.26	E	2958.33	0.00
9660.00	89.063	90.376	6844.13	19.64	S	2988.26	E	2988.32	0.00
9690.00	89.063	90.376	6844.62	19.83	S	3018.25	E	3018.32	0.00
9720.00	89.063	90.376	6845.11	20.03	S	3048.25	E	3048.32	0.00
9750.00	89.063	90.376	6845.60	20.23	S	3078.25	E	3078.31	0.00
9780.00	89.063	90.376	6846.09	20.42	S	3108.24	E	3108.31	0.00
9810.00	89.063	90.376	6846.58	20.62	S	3138.24	E	3138.30	0.00
9840.00	89.063	90.376	6847.07	20.82	S	3168.23	E	3168.30	0.00
9870.00	89.063	90.376	6847.57	21.01	S	3198.23	E	3198.30	0.00
9900.00	89.063	90.376	6848.06	21.21	S	3228.22	E	3228.29	0.00
9930.00	89.063	90.376	6848.55	21.41	S	3258.22	E	3258.29	0.00
9960.00	89.063	90.376	6849.04	21.61	S	3288.21	E	3288.28	0.00
9990.00	89.063	90.376	6849.53	21.80	S	3318.21	E	3318.28	0.00
10020.00	89.063	90.376	6850.02	22.00	S	3348.20	E	3348.28	

0.00						
10050.00	89.063	90.376	6850.51	22.20 S	3378.20 E	3378.27
0.00						
10080.00	89.063	90.376	6851.00	22.39 S	3408.19 E	3408.27
0.00						
10110.00	89.063	90.376	6851.49	22.59 S	3438.19 E	3438.26
0.00						
10140.00	89.063	90.376	6851.98	22.79 S	3468.18 E	3468.26
0.00						
10170.00	89.063	90.376	6852.47	22.99 S	3498.18 E	3498.26
0.00						
10200.00	89.063	90.376	6852.96	23.18 S	3528.18 E	3528.25
0.00						
10230.00	89.063	90.376	6853.45	23.38 S	3558.17 E	3558.25
0.00						
10260.00	89.063	90.376	6853.94	23.58 S	3588.17 E	3588.24
0.00						
10290.00	89.063	90.376	6854.43	23.77 S	3618.16 E	3618.24
0.00						
10320.00	89.063	90.376	6854.92	23.97 S	3648.16 E	3648.24
0.00						
10350.00	89.063	90.376	6855.41	24.17 S	3678.15 E	3678.23
0.00						
10380.00	89.063	90.376	6855.90	24.37 S	3708.15 E	3708.23
0.00						
10410.00	89.063	90.376	6856.39	24.56 S	3738.14 E	3738.22
0.00						
10440.00	89.063	90.376	6856.88	24.76 S	3768.14 E	3768.22
0.00						
10470.00	89.063	90.376	6857.37	24.96 S	3798.13 E	3798.22
0.00						
10500.00	89.063	90.376	6857.87	25.15 S	3828.13 E	3828.21
0.00						
10530.00	89.063	90.376	6858.36	25.35 S	3858.12 E	3858.21
0.00						
10560.00	89.063	90.376	6858.85	25.55 S	3888.12 E	3888.20
0.00						
10590.00	89.063	90.376	6859.34	25.75 S	3918.12 E	3918.20
0.00						
10620.00	89.063	90.376	6859.83	25.94 S	3948.11 E	3948.20
0.00						
10650.00	89.063	90.376	6860.32	26.14 S	3978.11 E	3978.19
0.00						
10680.00	89.063	90.376	6860.81	26.34 S	4008.10 E	4008.19
0.00						
10710.00	89.063	90.376	6861.30	26.53 S	4038.10 E	4038.18
0.00						
10740.00	89.063	90.376	6861.79	26.73 S	4068.09 E	4068.18
0.00						
10770.00	89.063	90.376	6862.28	26.93 S	4098.09 E	4098.18
0.00						
10800.00	89.063	90.376	6862.77	27.12 S	4128.08 E	4128.17
0.00						
10830.00	89.063	90.376	6863.26	27.32 S	4158.08 E	4158.17
0.00						
10860.00	89.063	90.376	6863.75	27.52 S	4188.07 E	4188.16
0.00						
10890.00	89.063	90.376	6864.24	27.72 S	4218.07 E	4218.16
0.00						
10920.00	89.063	90.376	6864.73	27.91 S	4248.06 E	4248.16
0.00						
10950.00	89.063	90.376	6865.22	28.11 S	4278.06 E	4278.15
0.00						

10980.00	89.063	90.376	6865.71	28.31 S	4308.05 E	4308.15
0.00						
11010.00	89.063	90.376	6866.20	28.50 S	4338.05 E	4338.14
0.00						
11040.00	89.063	90.376	6866.69	28.70 S	4368.05 E	4368.14
0.00						
11070.00	89.063	90.376	6867.18	28.90 S	4398.04 E	4398.14
0.00						
11100.00	89.063	90.376	6867.68	29.10 S	4428.04 E	4428.13
0.00						
11130.00	89.063	90.376	6868.17	29.29 S	4458.03 E	4458.13
0.00						
11160.00	89.063	90.376	6868.66	29.49 S	4488.03 E	4488.12
0.00						
11190.00	89.063	90.376	6869.15	29.69 S	4518.02 E	4518.12
0.00						
11220.00	89.063	90.376	6869.64	29.88 S	4548.02 E	4548.12
0.00						
11242.20	89.063	90.376	6870.00	30.03 S	4570.22 E	4570.32
0.00						

All data are in feet unless otherwise stated. Directions and coordinates are relative to Grid North.
Vertical depths are relative to WELL. Northings and Eastings are relative to Well.

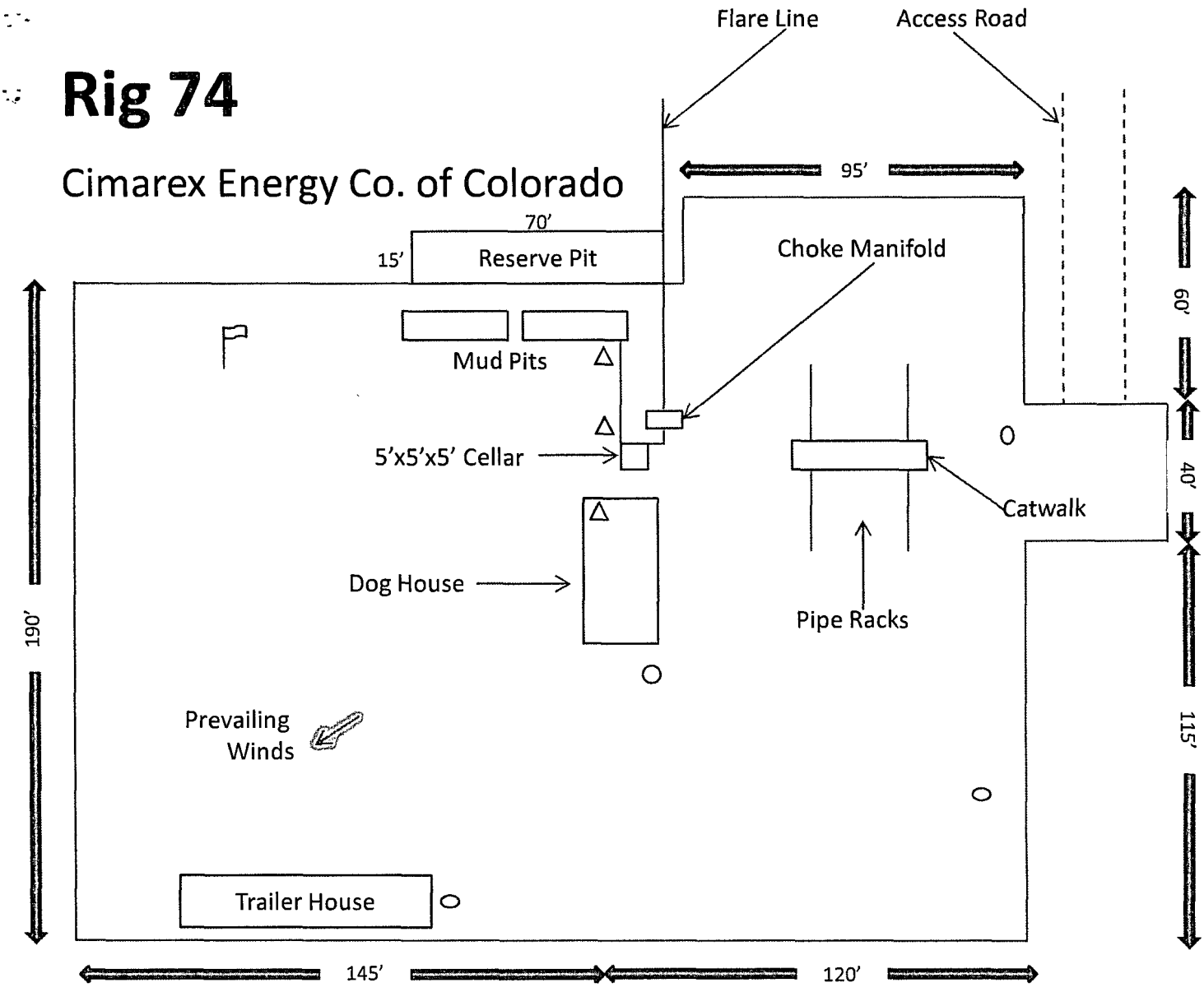
The Dogleg Severity is in Degrees per 100 feet.
Vertical Section is from Site and calculated along an Azimuth of 90.376° (Grid).

Coordinate System is North American Datum 1983 US State Plane 1983, New Mexico Eastern Zone.
Central meridian is -104.333°.
Grid Convergence at Surface is 0.107°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 11242.20ft., the Bottom Hole Displacement is 4570.32ft., in the Direction of 90.376° (Grid).

Rig 74

Cimarex Energy Co. of Colorado



Wind Direction Indicators
(wind sock or streamers)

△ H2S Monitors
(alarms at bell nipple and shale shaker)

○ Briefing Areas

○ Remote BOP Closing Unit

SEE ATTACHED FOR
CONDITIONS OF APPROVAL

Exhibit D – Rig Layout
Cave Lake 24 Federal Com No. 2
Cimarex Energy Co. of Colorado
SHL 1980' FSL & 330' FWL
BHL 1980' FSL & 330' FEL
Sec. 24-16S-28E
Eddy County, NM

SR & A

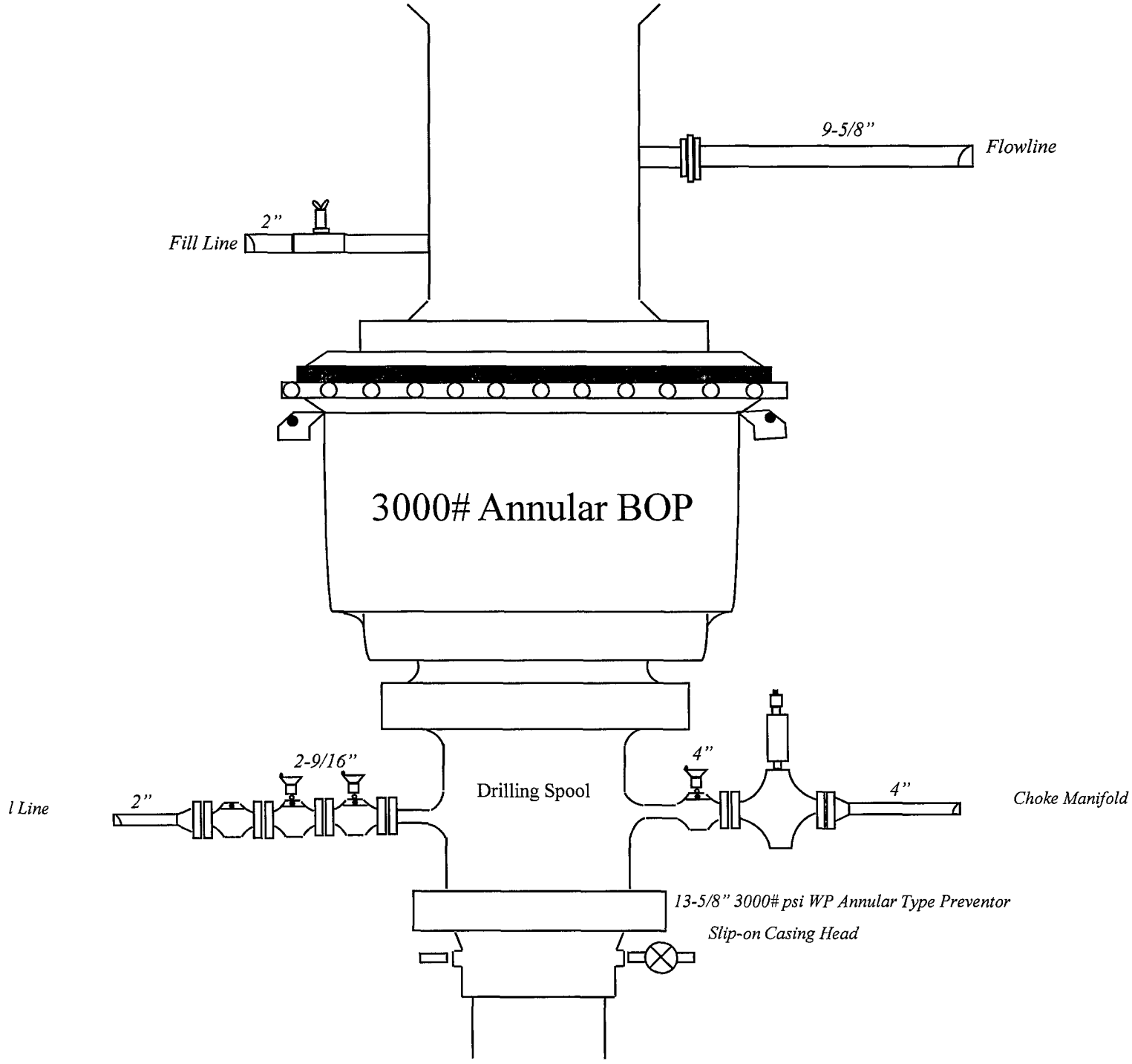


Exhibit E-1 – Surface Casing BOP
Cave Lake 24 Federal Com No. 2
Cimarex Energy Co. of Colorado
SHL 1980' FSL & 330' FWL
BHL 1980' FSL & 330' FEL
Sec. 24-16S-28E
Eddy County, NM

SR & A

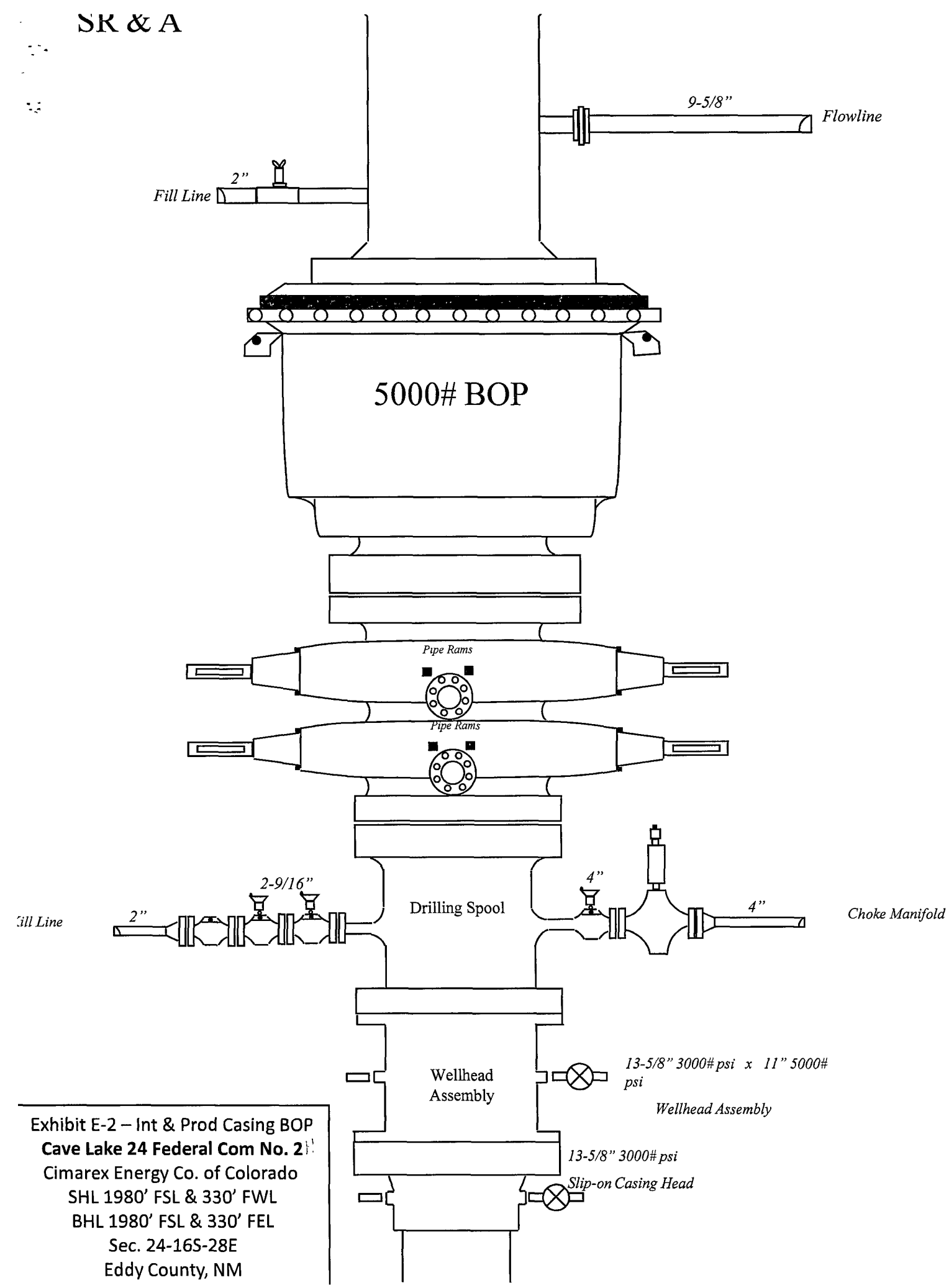


Exhibit E-2 – Int & Prod Casing BOP
Cave Lake 24 Federal Com No. 2
Cimarex Energy Co. of Colorado
SHL 1980' FSL & 330' FWL
BHL 1980' FSL & 330' FEL
Sec. 24-16S-28E
Eddy County, NM

DRILLING OPERATIONS
CHOKE MANIFOLD
5M SERVICE

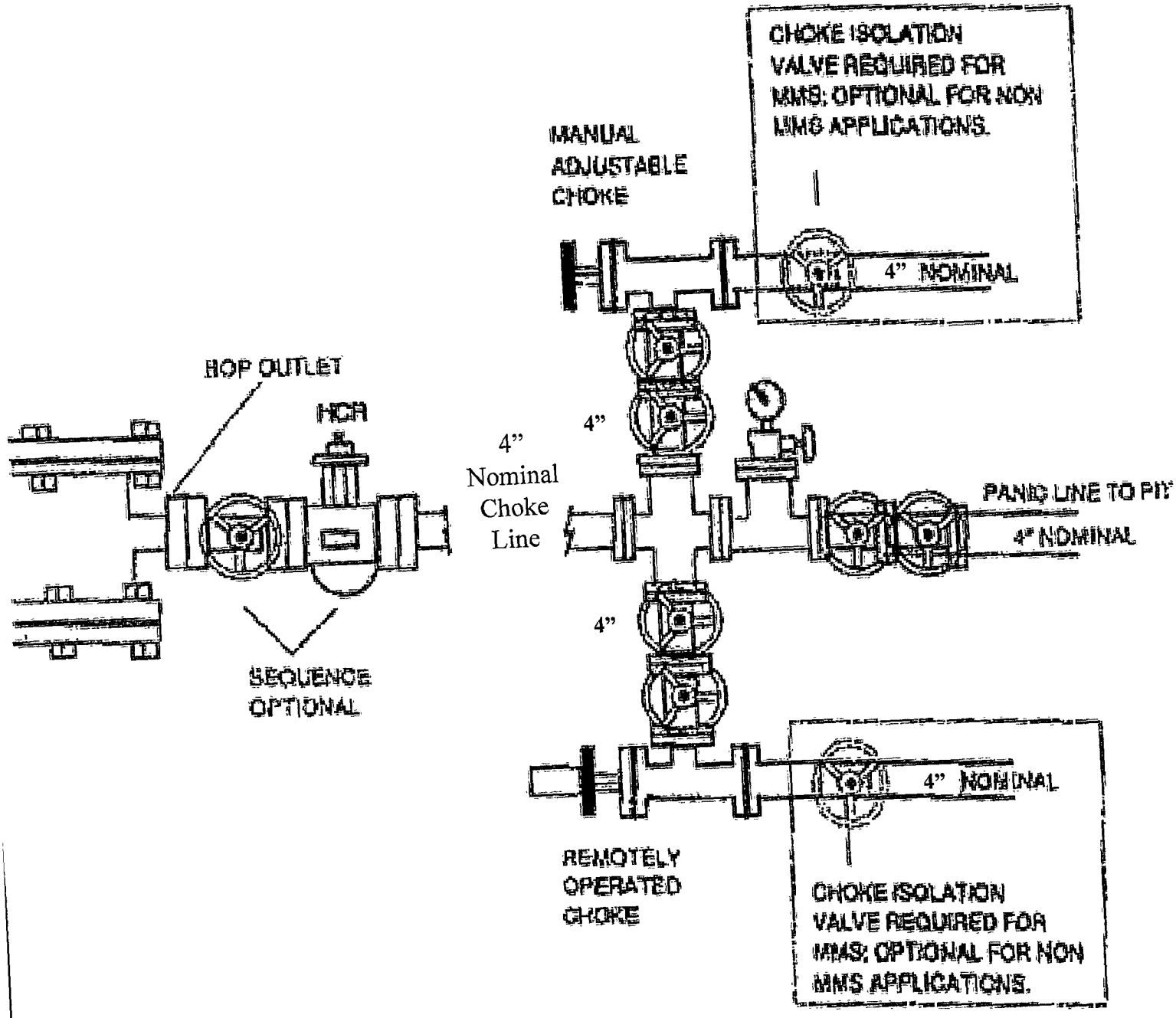


Exhibit E-1 – Choke Manifold Diagram
Cave Lake 24 Federal Com No. 2
Cimarex Energy Co. of Colorado
SHL 1980' FSL & 330' FWL
BHL 1980' FSL & 330' FEL
Sec. 24-16S-28E
Eddy County, NM

Surface Use Plan
Cimarex Energy Co. of Colorado
Cave Lake 24 Federal Com No. 2
Unit L Section 24
T16S R28E Eddy County, NM

1 Existing Roads: Area maps, Exhibit "B" is a reproduction of Eddy Co. General Highway Map. Exhibit "C" is a reproduction of a USGS Topographic Map, showing existing roads and proposed roads. All existing roads will be maintained in a condition equal to or better than current conditions. Any new roads will be constructed to BLM specifications.

A. Exhibit "A" shows the proposed well site as staked.

B. From junction of US Hwy 82 and Barnival Draw Road, go North on Barnival Draw for 6.8 miles to lease road. On lease road, go Northwest 2.4 miles to lease road. On lease road, go South 1.5 miles to lease road. On lease road, go West 1.0 miles to proposed lease road for Cave Lake locations.

2632' C.L. 01/29/08

2 PLANNED ACCESS ROADS: ~~1100.8~~' of access road will be built. A federal ROW application is in progress at the Carlsbad BLM.

3 LOCATION OF EXISTING WELLS IN A ONE-MILE RADIUS EXHIBIT "A"

A. Water wells - None known

B. Disposal wells - None known

C. Drilling wells - None known

D. Producing wells - As shown on Exhibit "A"

E. Abandoned wells - As shown on Exhibit "A"

4 If on completion this well is a producer, Cimarex Energy Co. of Colorado will furnish maps and/or plats showing on site facilities or off site facilities if needed. This will be accompanied by a Sundry Notice.

5 Location and Type of Water Supply
Water will be purchased locally from a commercial source and trucked over the access roads or piped in flexible lines laid on top of the ground.

6 Source of Construction Material
If possible, construction will be obtained from the excavation of drill site. If additional material is needed, it will be purchased from a local source and transported over the access route as shown on Exhibit "C".

7 Methods of Handling Waste Material
A. Drill cuttings will be disposed of in the reserve pit and hauled to a State-approved disposal facility.
B. All trash, junk and other waste material will be contained in trash cages or bins to prevent scattering. When the job is completed all contents will be removed and disposed of in an approved sanitary land fill.
C. Salts remaining after completion of well will be picked up by supplier including broken sacks.
D. Sewage from living quarters will drain into holding tanks and be cleaned out periodically. A Porta-John will be provided for the rig crews. This equipment will be properly maintained during the drilling operations and removed upon completion of the well.
E. Remaining drilling fluids will be hauled off by transports and be disposed of at a State approved disposal facility. Water produced during drilling will be put in reserve pit. Any oil or condensate produced will be stored in test tanks until sold and hauled from the site.

8 Ancillary Facilities
A. No camps or airstrips to be constructed.

9 Well Site Layout

A. Exhibit "D" shows location and rig layout.
B. This exhibit indicates proposed location of reserve and trash pits and living facilities.
C. Mud pits in the active circulating system will be steel pits and the reserve pit is proposed to be lined with PVC or polyethylene liner. The pit liner will be 12 mils thick. Pit liner will extend a minimum, 2'00" over the reserve pits dikes where the liner will be anchored down.
D. The reserve pit will be fenced on three sides with four strands of barbed wire during drilling and completion phases. The fourth side will be fenced after all drilling operations have ceased. If the well is a producer, the reserve pit fence will be torn down. The reserve pit and those areas of the location not essential to production facilities will be reclaimed and seeded per BLM requirements.

10 Plans for Restoration of Surface

Rehabilitation of the location and reserve pit will start in a timely manner after all drilling operations cease. The type of reclamation will depend on whether the well is a producer or a dry hole.

However, in either event, fluid and cuttings will be removed and disposed of in accordance with Article 7.B as previously noted. The pit area will then be leveled and contoured to conform to the original and surrounding area. Drainage systems, if any, will be reshaped to the original configuration with provisions made to alleviate erosion. These may need to be modified in certain circumstances to prevent inundation of the location's pad and surface facilities. After the area has been shaped and contoured, topsoil from the spoil pile will be placed over the disturbed area to the extent possible. Revegetation procedures will comply with BLM standards.

If the well is a dry hole, the pad and road area will be recountoured to match the existing terrain. Topsoil will be spread to the extent possible. Revegetation will comply with BLM standards.

Should the well be a producer, the previously noted procedures will apply to those areas which are not required for production facilities.

11 OTHER INFORMATION:

A. Topography consists of a sloping plane with loose tan sands. Vegetation is mainly yucca, mesquite and shin oak.
B. The wellsite is on surface owned by the Department of the Interior, Bureau of Land Management. The land is used mainly for farming, cattle ranching, recreational use, and oil and gas production.
C. An Archaeological survey will be conducted on the location and proposed roads, and this report will be filed with the Bureau of Land Management in the Carlsbad BLM office.
D. There are no know dwellings within 1 1/2 miles of this location.

Operator Certification Statement
Cimarex Energy Co. of Colorado
Cave Lake 24 Federal Com No. 2H
Unit L Section 24
T16S R28E Eddy County, NM

Operator's Representative

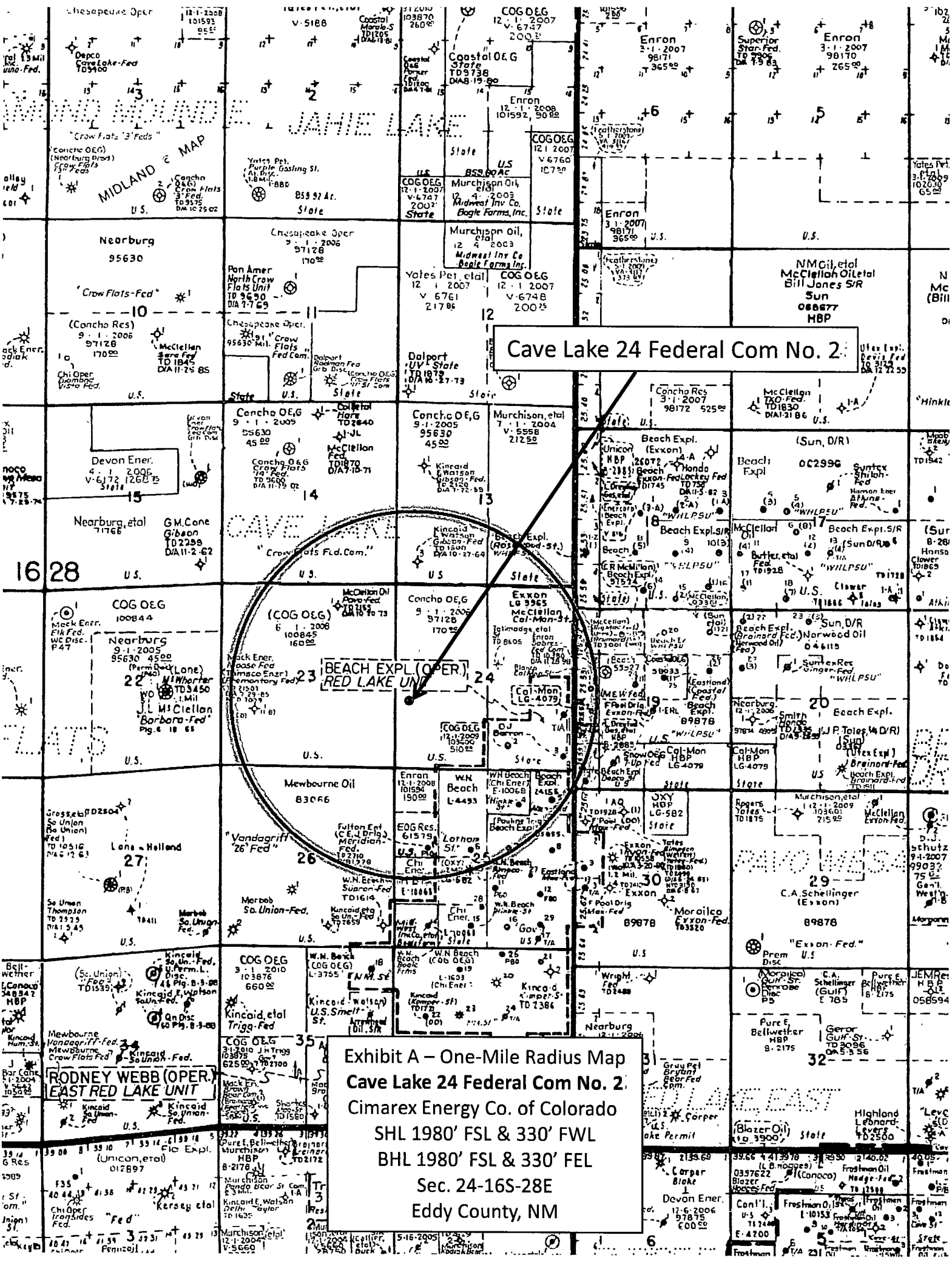
Cimarex Energy Co. of Colorado
P.O. Box 140907
Irving, TX 75014
Office Phone: (972) 443-6489
Zeno Farris

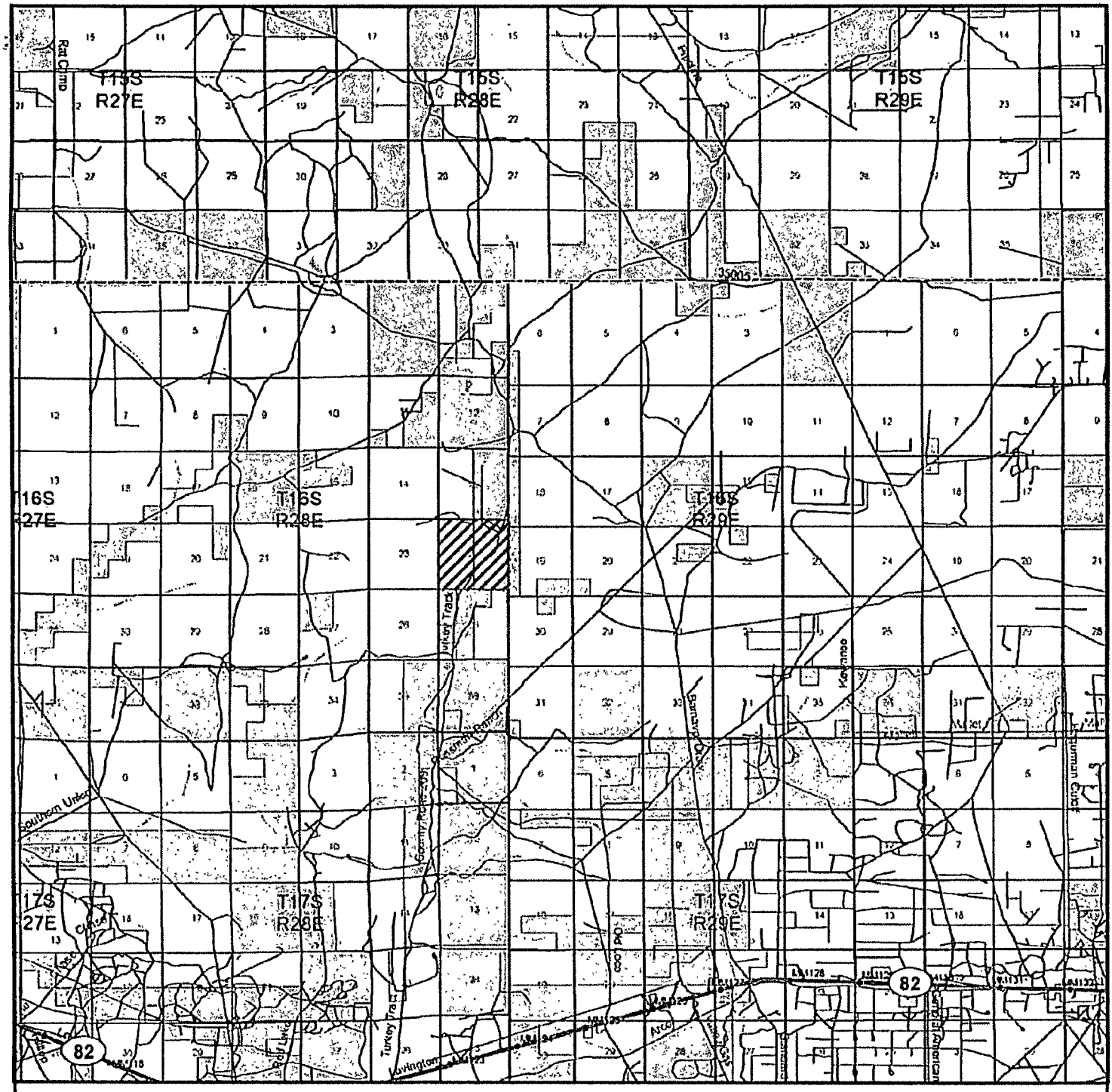
CERTIFICATION: I hereby certify that the statements and plans made in this APD are, to the best of my knowledge, true and correct; and that the work associated with the operations proposed herein will be performed by Cimarex Energy Co. of Colorado and/or its contractors/subcontractors and is in conformity with this plan and the terms and conditions under which it is approved. This statement is subject to the provision of U.S.C. 1001 for the filing of a false statement.

NAME: Zeno Farris
Zeno Farris

DATE: November 30, 2007

TITLE: Manager Operations Administration


Cave Lake 24 Federal Com No. 2
BEACH EXPL (OPER.)
RED LAKE UNIT
RODNEY WEBB (OPER.)
EAST RED LAKE UNIT
MIDLAND MAP
Exhibit A – One-Mile Radius Map
Cave Lake 24 Federal Com No. 2
Cimarex Energy Co. of Colorado
SHL 1980' FSL & 330' FWL
BHL 1980' FSL & 330' FEL
Sec. 24-16S-28E
Eddy County, NM



CAVE LAKE "24" FEDERAL COM #2
Located 1980' FSL and 330' FWL
Section 24, Township 16 South, Range 28 East,
N.M.P.M., Eddy County, New Mexico.

basin surveys
focused on excellence in the oilfield

P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com

W.O. Number:	JMS 18792TR
Survey Date:	11-10-2007
Scale:	1" = 2 MILES
Date:	11-12-2007

CIMAREX ENERGY CO. OF COLORADO

Exhibit B

PECOS DISTRICT
CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy Co. of Colorado
LEASE NO.:	NM-97128
WELL NAME & NO.:	Cave lake 24 Federal Com No. 2
SURFACE HOLE FOOTAGE:	1980' FSL & 330' FWL
BOTTOM HOLE FOOTAGE	1980' FSL & 330' FEL
LOCATION:	Section 24, T. 16 S., R 28 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

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 stipulations for high cave/karst, and the standard stipulations for permanent resource roads. The Pad needs a berm placed around the entire pad to prevent water from eroding across the pad or the down sloping side of the pad.

Cave Lake 24 Federal Com. # 3: Pit West V-Door North

Cave and Karst

Cave/Karst Surface Mitigation
The following stipulations will be applied to minimize impacts during construction, drilling and production.

Berming:
Any tank batteries will be constructed and bermed large enough to contain any spills that may occur.

Bermed areas will be lined with rip-stop padding to prevent tears or punctures in liners and lined with a permanent 20 mil plastic liner.

Cave/Karst Subsurface Mitigation
The following stipulations will be applied to protect cave/karst and ground water concerns:

Rotary Drilling with Fresh Water:
Rotary drilling techniques in cave or karst areas will include the use of fresh water as a circulating medium in zones where caves or karst features are expected. Use depth to the deepest expected fresh water as listed in the geologist report.

Casing:
All casing will meet or exceed National Association of Corrosion Engineers specifications pertaining to the geology of the location and be run to American Petroleum Institute and BLM standards.

Lost Circulation:
ALL lost circulation zones from the surface to the base of the cave occurrence zone will be logged and reported in the drilling report.

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 100 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will

assess the consequences of the situation and work with operator on corrective actions to resolve the problem.

Abandonment Cementing:
Upon well abandonment the well bore will be cemented completely from 100 feet below the bottom of the cave bearing zone to the surface.

Record Keeping:
The Operator will track customary drilling activities, including the rate of penetration, pump pressure, weight on bit, bit drops, percent of mud returns, and presence of absence of cuttings returning to the surface. As part of customary record keeping, each detectable void or sudden increase in the rate of penetration not attributable to a change in the formation type should be documented and evaluated as it is encountered.

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 70' X 15' on the West side of the well pad V-Door North.

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.

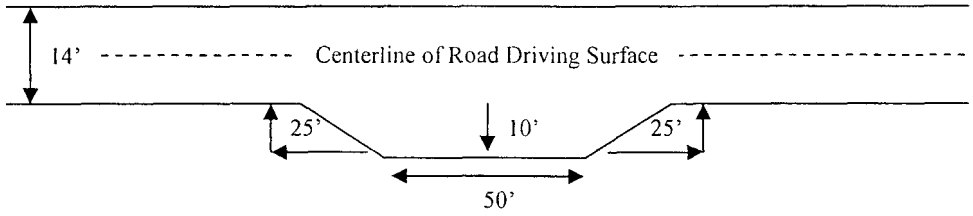
Crowning
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

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

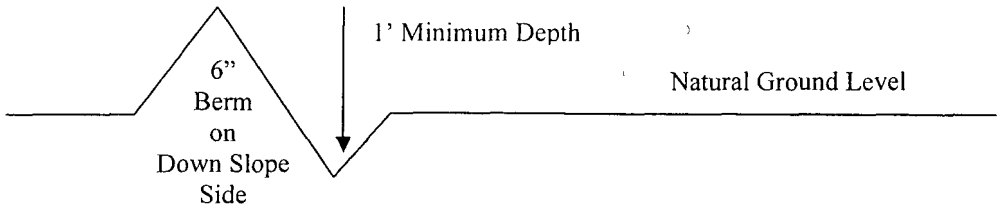


Drainage

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:

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

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.

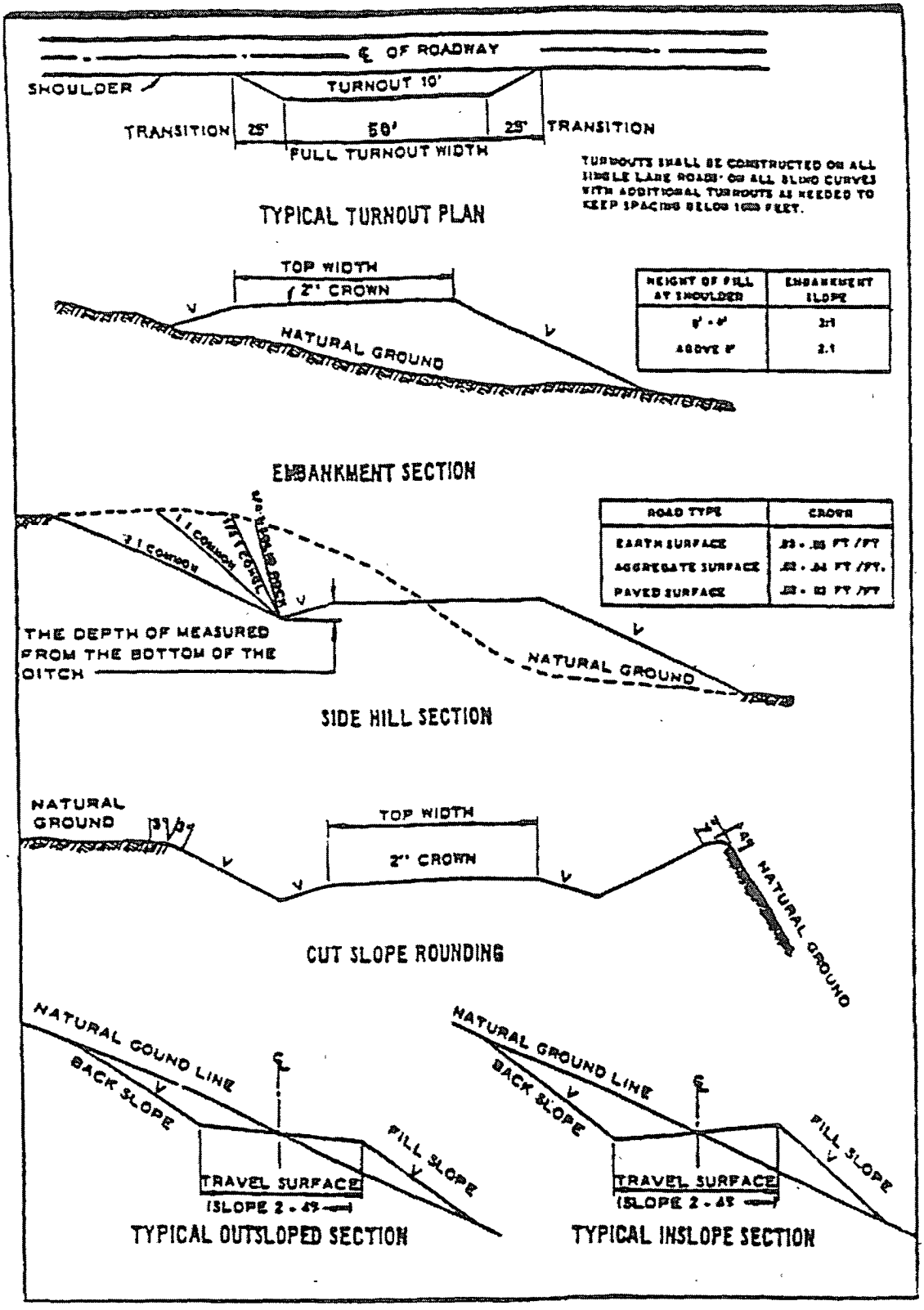
A gate shall be constructed and fastened securely to H-braces.

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 2 hours in advance for a representative to witness:

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

☒ **Chaves and Roosevelt Counties, T16S Eddy County**
Call the Roswell Field Office, 2909 West Second St., Roswell NM 88201.
(575) 627-0205 and (575) 361-2822.

1. **Hydrogen Sulfide has been reported as a hazard. It is recommended that monitoring equipment be onsite for potential Hydrogen Sulfide and an H2S drilling plan is attached. If Hydrogen Sulfide is encountered, please report measurements to the BLM.**

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

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

B. CASING

1. The **13-3/8** inch surface casing shall be set **within the Tansill formation at approximately 340** 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). **Please provide WOC times to inspector for cement slurries.**

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.

High cave/karst area.
Possible lost circulation in the Grayburg and San Andres formations.
Possible high pressure gas bursts in the Wolfcamp.

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. **Please provide WOC times to inspector for cement slurries.**

Formation below the 8-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i.

If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.

3. The minimum required fill of cement behind the **5-1/2** inch production casing is:

   ☒ Cement should tie-back at least 500 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 2 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. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the **Wolfcamp if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days**. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

D. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the **Wolfcamp** formation, and shall be used until production casing is run and cemented.

Engineer on call phone (after hours): **Carlsbad: (575) 706-2779**

WWI 012508

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

C. ELECTRIC LINES

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 4, for Gypsum Sites

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

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

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

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

⊆DWS: DeWinged Seed

*Pounds of pure live seed:

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

(Insert Seed Mixture Here)

X. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

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

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