

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No 1004-0135
Expires July 31, 1996

OCD-ARTESIA
SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.

SUBMIT IN TRIPLICATE - Other instructions on reverse side

Type of Well

☒ Oil Well ☐ Gas Well ☐ Other

Name of Operator

Cimarex Energy Co. of Colorado

3b Phone No. (include area code)

a. Address
PO Box 140907; Irving, TX 75014-0907

Location of Well (Footage, Sec., T., R., M., or Survey Description)

SHL 260' FSL & 330' FEL

BHL 660' FSL & 330' FWL

13-16S-28E

JAN 15 2008

OCD-ARTESIA

5. Lease Serial No.

NM-95630

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

Pending

8. Well Name and No.

Cave Lake 13 Federal Com No. 1

9. API Well No

30-015-35879

10. Field and Pool, or Exploratory Area

Wolfcamp Wildcat

11. County or Parish, State

Eddy County, NM

12. CHECK APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

TYPE OF SUBMISSION

TYPE OF ACTION

☒ Notice of Intent

☐ Subsequent Report

☐ Final Abandonment Notice

☐ Acidize

☐ Alter Casing

☐ Casing Repair

☒ Change Plans

☐ Convert to Injection

☐ Deepen

☐ Fracture Treat

☐ New Construction

☐ Plug and Abandon

☐ Plug Back

☐ Production (Start/Resume)

☐ Reclamation

☐ Recomplete

☐ Temporarily Abandon

☐ Water Disposal

☐ Water Shut-Off

☐ Well Integrity

☐ Other

3 Describe Proposed or Completed Operation (clearly state all pertinent details, included estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports shall be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 shall be filed once testing has been completed. Final Abandonment Notices shall be filed only after all requirements, including reclamation, have been completed, and the operator has determined that the site is ready for final inspection.)

Cimarex has changed the proposed location and access road for the Cave Lake 13 Federal Com No. 1.

Old Location

SHL 260' FSL & 330' FEL

BHL 660' FSL & 330' FWL

13-16S-28E

New Location

SHL 990' FSL & 330' FWL

BHL 660' FSL & 330' FEL

13-16S-28E

A revised preliminary directional survey is in progress and will be submitted as soon as it is complete.

The new location has been scheduled for archaeological survey.

State and Federal ROW Access Road applications are currently in progress at the NMSLO and Carlsbad BLM for the new proposed access road.

Please see attached revised plats.

4. I hereby certify that the foregoing is true and correct
Name (Printed/Typed)

Natalie Krueger

Signature

Title

Reg Analyst 1

Date

November 21, 2007

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by

/s/ Don Peterson

Title

FIELD MANAGER

Date JAN 7 2008

Conditions of Approval, if any, are attached. Approval of this notice 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.

Office

CARLSBAD FIELD OFFICE

Title 18 U.S.C. Section 1001, makes 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 reverse)

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

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

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

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

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Form C-102
Revised October 12, 2005

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number 30-015-35879	Pool Code	Pool Name Wolfcamp Wildcat
Property Code	Property Name CAVE LAKE "13" FEDERAL COM	Well Number 2
OGRID No. 162683	Operator Name CIMAREX ENERGY CO. OF COLORADO	Elevation 3613'

Surface Location

UL or lot No. M	Section 13	Township 16 S	Range 28 E	Lot Idn	Feet from the 990'	North/South line SOUTH	Feet from the 330	East/West line WEST	County EDDY
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Bottom Hole Location If Different From Surface

UL or lot No. P	Section 13	Township 16 S	Range 28 E	Lot Idn	Feet from the 660'	North/South line SOUTH	Feet from the 330	East/West line EAST	County EDDY
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Dedicated Acres 160	Joint or Infill	Consolidation Code P	Order No.
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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

SURFACE LOCATION Lat - N32°55'07.99" Long - W104°08'13.93" NMSPCE- N 698081.5 E 601521.8 (NAD-83)		BOTTOM HOLE LOCATION Lat - N32°55'04.0" Long - W104°07'20.4" NMSPCE- N 697683.554 E 606083.400 (NAD-83)	
SHL 330' 3613.2' 990' 3612.3'		BHL 330' 660'	
NM-95630		State Minerals	

4578.9'

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.

Natalie Krueger 11-21-07
Signature Date

Natalie Krueger
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 supervision and that the same is true and correct to the best of my belief.

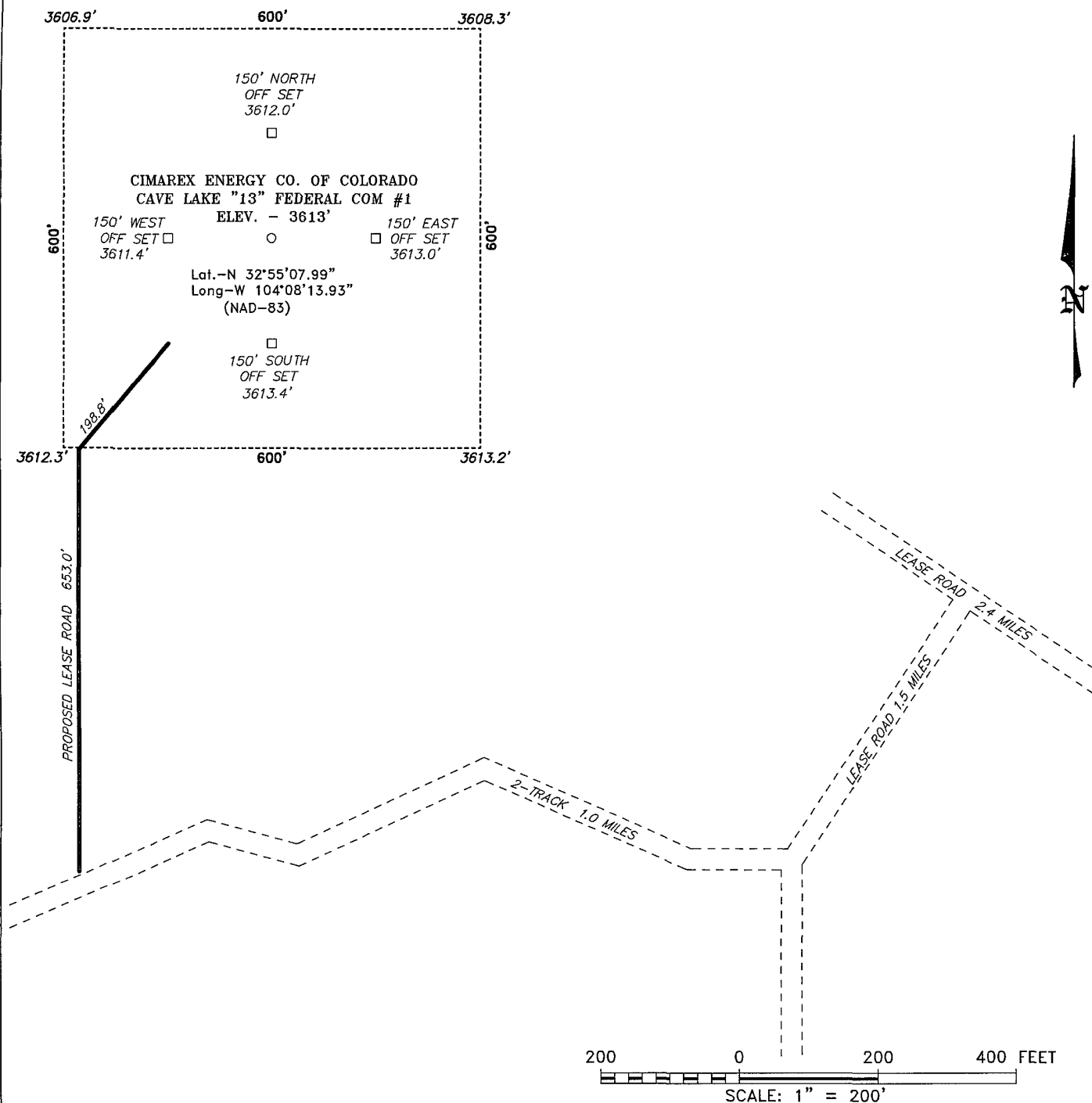
NOVEMBER 2 2007
Date Surveyed

Signature & Seal of Surveyor
Professional Surveyor

Certificate No. Gary L. Jones 7977

Basin Surveys

SECTION 13, 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 1.5 MILES TO LEASE ROAD, ON 2-TRACK GO WEST 1.0 MILES TO PROPOSED LEASE ROAD.

BASIN SURVEYS

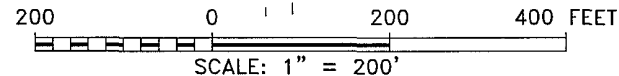
P.O. BOX 1786 - HOBBS, NEW MEXICO

W.O. Number: 18804

Drawn By: J. SMALL

Date: 11-08-2007

Disk: JMS 18804W



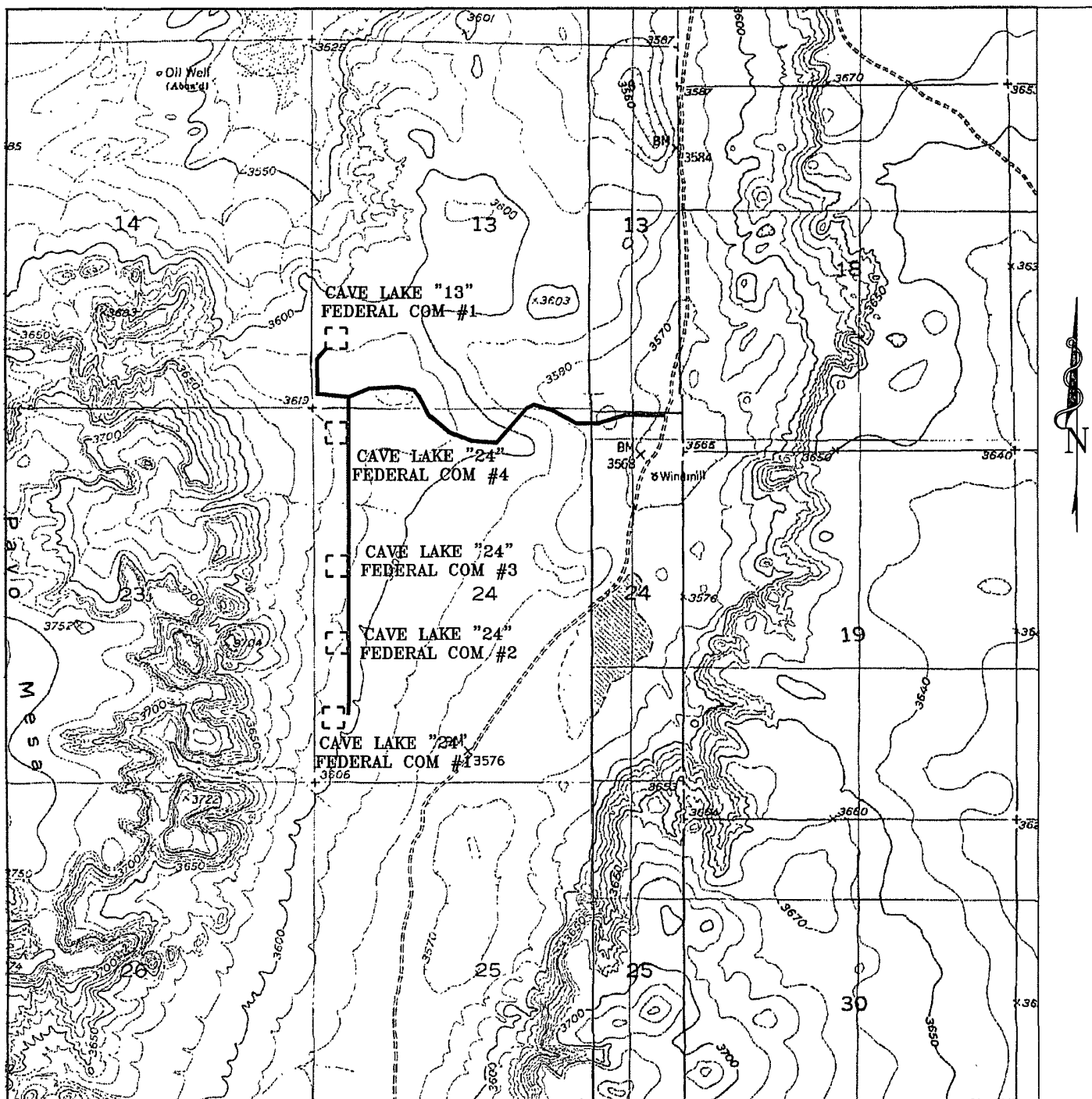
CIMAREX ENERGY CO. OF COLORADO

REF: CAVE LAKE "13" FEDERAL COM #1 / WELL PAD TOPO

THE CAVE LAKE "13" FEDERAL COM #1 LOCATED 990' FROM
THE SOUTH LINE AND 330' FROM THE WEST LINE OF
SECTION 13, TOWNSHIP 16 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

Survey Date: 11-04-2007

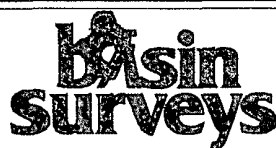
Sheet 1 of 1 Sheets



CAVE LAKE "13" FEDERAL COM #1

Located 990' FSL and 330' FWL

Section 13, Township 16 South, Range 28 East,
N.M.P.M., Eddy County, New Mexico.



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 18804T

Survey Date: 11-14-2007

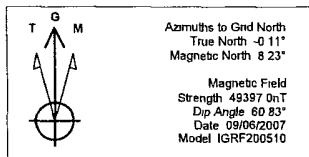
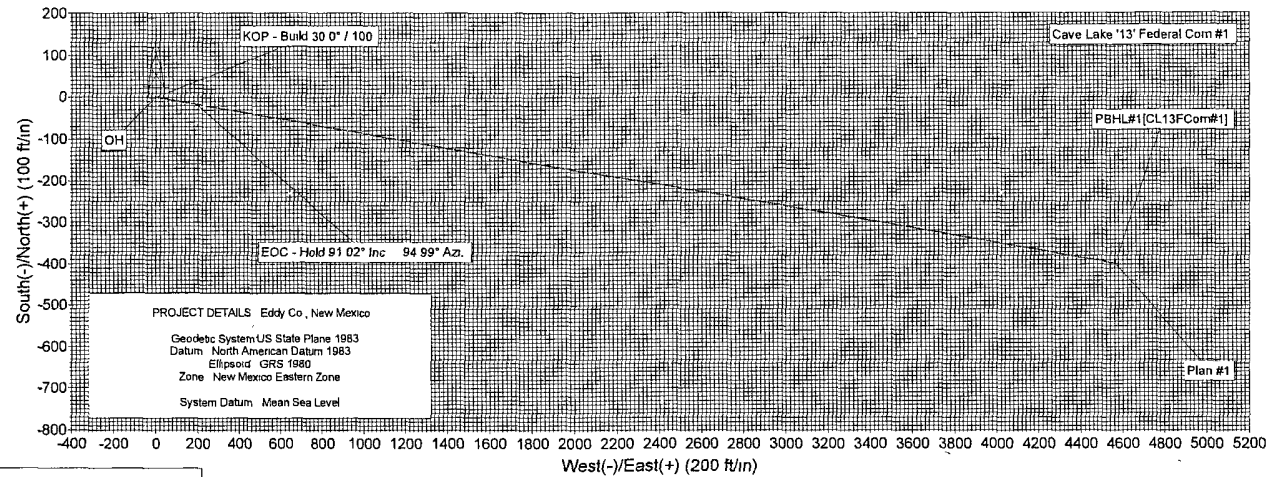
Scale: 1" = 2000'

Date: 11-15-2007

**CIMAREX
ENERGY CO.
OF COLORADO**

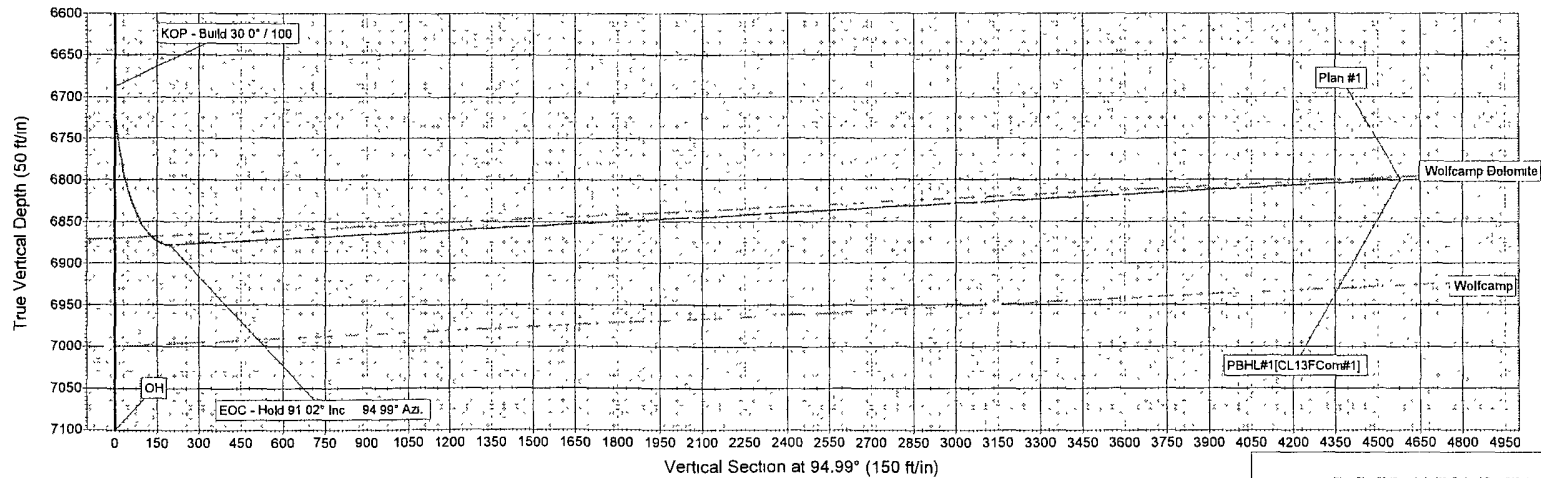


Project Eddy Co., New Mexico
 Site Cave Lake '13' Federal Com #1
 Well Cave Lake '13' Federal Com #1
 Wellbore Lateral #1
 Plan Plan #1 (Cave Lake '13' Federal Com #1/Lateral #1)



SECTION DETAILS										
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	6687.00	0 00	0 00	6687 00	0 00	0 00	0 00	0 00	0 00	
2	6687 11	0 00	0 00	6687 11	0 00	0 00	0 00	0 00	0 00	
3	6990 51	91 02	94 99	6878.06	-16 89	193 65	30 00	94 99	194 39	
4	11375.74	91 02	94 99	6800 00	-397.95	4561 60	0 00	0 00	4578.93	PBHL#1[CL13FCom#1]

ANNOTATIONS		
TVD	MD	Annotation
6687 11	6687 11	KOP - Build 30 0° / 100
6878 06	6990.51	EOC - Hold 91 02° Inc 94 99° Azi



Plan Plan #1 (Cave Lake '13' Federal Com #1/Lateral #1)
 Created By LD Burton Date January 7, 2008



Cimarex Energy Co., Inc.

Eddy Co., New Mexico

Cave Lake '13' Federal Com #1

Cave Lake '13' Federal Com #1

Lateral #1

Plan: Plan #1

Standard Survey Report

07 January, 2008





Black Viper Energy Survey Report



Company: Cimarex Energy Co., Inc.
Project: Eddy Co., New Mexico
Site: Cave Lake '13' Federal Com #1
Well: Cave Lake '13' Federal Com #1
Wellbore: Lateral #1
Design: Plan #1

Local Co-ordinate Reference: Well Cave Lake '13' Federal Com #1
TVD Reference: WELL @ 3571.00ft (Original Well Elev)
MD Reference: WELL @ 3571.00ft (Original Well Elev)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 2003.14 1.0 Server DB

Project: Eddy Co., New Mexico

Map System: US State Plane 1983
Geo Datum: North American Datum 1983
Map Zone: New Mexico Eastern Zone

System Datum: Mean Sea Level

Site: Cave Lake '13' Federal Com #1

Site Position: Northing: 698,081.50 ft Latitude: 32° 55' 7 978 N
From: Map Easting: 601,521 80 ft Longitude: 104° 8' 13 941 W
Position Uncertainty: 0.00 ft Slot Radius: " Grid Convergence: 0 11 °

Well: Cave Lake '13' Federal Com #1

Well Position: +N/-S 0 00 ft Northing: 698,081 50 ft Latitude: 32° 55' 7 978 N
+E/-W 0 00 ft Easting: 601,521.80 ft Longitude: 104° 8' 13 941 W
Position Uncertainty: 0 00 ft Wellhead Elevation: ft Ground Level: 3,613 00 ft

Wellbore: Lateral #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF200510	09/06/2007	8 34	60 83	49,397

Design: Plan #1

Audit Notes:

Version: Phase: PROTOTYPE Tie On Depth: 6,687 00

Vertical Section:	Depth From (TVD) (ft)	+N/-S (ft)	+E/-W (ft)	Direction (°)
	0.00	0 00	0 00	94 99

Survey Tool Program Date 01/07/2008

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
6,687.00	11,375 74	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)
6,687 00	0 00	0 00	6,687 00	0 00	0 00	0 00	0 00	0 00	0 00
6,687 11	0 00	0 00	6,687 11	0.00	0 00	0.00	0 00	0 00	0 00
KOP - Build 30.0° / 100									
6,690 00	0 87	94 99	6,690 00	0 00	0 02	0 02	30 00	30.00	0 00
6,700 00	3 87	94.99	6,699 99	-0 04	0 43	0 43	30.00	30 00	0 00
6,710 00	6.87	94.99	6,709.95	-0 12	1 37	1.37	30 00	30 00	0 00
6,720 00	9 87	94.99	6,719 84	-0.25	2 81	2 83	30 00	30 00	0 00
6,730 00	12 87	94 99	6,729 64	-0 42	4 78	4 80	30 00	30 00	0 00
6,740 00	15 87	94.99	6,739.33	-0 63	7 25	7 28	30.00	30.00	0 00
6,750 00	18 87	94 99	6,748 87	-0 89	10 22	10.26	30.00	30 00	0 00
6,760 00	21.87	94 99	6,758.24	-1 19	13 69	13 74	30 00	30 00	0 00
6,770 00	24.87	94.99	6,767 42	-1 54	17 64	17.71	30.00	30 00	0 00
6,780 00	27 87	94.99	6,776.38	-1.92	22 07	22.15	30.00	30 00	0 00



Black Viper Energy Survey Report



Company: Cimarex Energy Co., Inc.
Project: Eddy Co., New Mexico
Site: Cave Lake '13' Federal Com #1
Well: Cave Lake '13' Federal Com #1
Wellbore: Lateral #1
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Cave Lake '13' Federal Com #1
WELL @ 3571 00ft (Original Well Elev)
WELL @ 3571 00ft (Original Well Elev)
Grid
Minimum Curvature
EDM 2003.14.1.0 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)
6,790.00	30.87	94.99	6,785.09	-2.35	26.95	27.05	30.00	30.00	0.00
6,800.00	33.87	94.99	6,793.54	-2.82	32.28	32.41	30.00	30.00	0.00
6,810.00	36.87	94.99	6,801.69	-3.32	38.05	38.19	30.00	30.00	0.00
6,820.00	39.87	94.99	6,809.53	-3.86	44.23	44.40	30.00	30.00	0.00
6,830.00	42.87	94.99	6,817.04	-4.43	50.81	51.01	30.00	30.00	0.00
6,840.00	45.87	94.99	6,824.18	-5.04	57.78	58.00	30.00	30.00	0.00
6,850.00	48.87	94.99	6,830.96	-5.68	65.11	65.36	30.00	30.00	0.00
6,860.00	51.87	94.99	6,837.33	-6.35	72.78	73.06	30.00	30.00	0.00
6,870.00	54.87	94.99	6,843.30	-7.05	80.77	81.08	30.00	30.00	0.00
6,880.00	57.87	94.99	6,848.84	-7.77	89.07	89.41	30.00	30.00	0.00
6,890.00	60.87	94.99	6,853.93	-8.52	97.64	98.01	30.00	30.00	0.00
6,900.00	63.87	94.99	6,858.57	-9.29	106.46	106.87	30.00	30.00	0.00
6,910.00	66.87	94.99	6,862.74	-10.08	115.52	115.96	30.00	30.00	0.00
6,920.00	69.87	94.99	6,866.42	-10.89	124.78	125.25	30.00	30.00	0.00
6,924.49	71.22	94.99	6,867.92	-11.25	129.00	129.49	30.00	30.00	0.00
Wolfcamp Dolomite									
6,930.00	72.87	94.99	6,869.62	-11.71	134.22	134.73	30.00	30.00	0.00
6,940.00	75.87	94.99	6,872.31	-12.55	143.81	144.35	30.00	30.00	0.00
6,950.00	78.87	94.99	6,874.50	-13.39	153.53	154.11	30.00	30.00	0.00
6,960.00	81.87	94.99	6,876.17	-14.25	163.35	163.97	30.00	30.00	0.00
6,970.00	84.87	94.99	6,877.33	-15.11	173.24	173.90	30.00	30.00	0.00
6,980.00	87.87	94.99	6,877.96	-15.98	183.18	183.88	30.00	30.00	0.00
6,990.51	91.02	94.99	6,878.06	-16.89	193.65	194.39	30.00	30.00	0.00
EOC - Hold 91.02° Inc. :: 94.99° Azi.									
7,000.00	91.02	94.99	6,877.89	-17.72	203.11	203.88	0.00	0.00	0.00
7,100.00	91.02	94.99	6,876.11	-26.41	302.71	303.86	0.00	0.00	0.00
7,200.00	91.02	94.99	6,874.33	-35.10	402.32	403.85	0.00	0.00	0.00
7,300.00	91.02	94.99	6,872.55	-43.79	501.92	503.83	0.00	0.00	0.00
7,400.00	91.02	94.99	6,870.77	-52.48	601.53	603.81	0.00	0.00	0.00
7,500.00	91.02	94.99	6,868.99	-61.17	701.13	703.80	0.00	0.00	0.00
7,600.00	91.02	94.99	6,867.21	-69.86	800.74	803.78	0.00	0.00	0.00
7,700.00	91.02	94.99	6,865.43	-78.54	900.35	903.77	0.00	0.00	0.00
7,800.00	91.02	94.99	6,863.65	-87.23	999.95	1,003.75	0.00	0.00	0.00
7,900.00	91.02	94.99	6,861.87	-95.92	1,099.56	1,103.73	0.00	0.00	0.00
8,000.00	91.02	94.99	6,860.09	-104.61	1,199.16	1,203.72	0.00	0.00	0.00
8,100.00	91.02	94.99	6,858.31	-113.30	1,298.77	1,303.70	0.00	0.00	0.00
8,200.00	91.02	94.99	6,856.53	-121.99	1,398.38	1,403.69	0.00	0.00	0.00
8,300.00	91.02	94.99	6,854.75	-130.68	1,497.98	1,503.67	0.00	0.00	0.00
8,400.00	91.02	94.99	6,852.97	-139.37	1,597.59	1,603.65	0.00	0.00	0.00
8,500.00	91.02	94.99	6,851.19	-148.06	1,697.19	1,703.64	0.00	0.00	0.00
8,600.00	91.02	94.99	6,849.41	-156.75	1,796.80	1,803.62	0.00	0.00	0.00
8,700.00	91.02	94.99	6,847.63	-165.44	1,896.40	1,903.61	0.00	0.00	0.00
8,800.00	91.02	94.99	6,845.85	-174.13	1,996.01	2,003.59	0.00	0.00	0.00
8,900.00	91.02	94.99	6,844.07	-182.82	2,095.62	2,103.58	0.00	0.00	0.00
9,000.00	91.02	94.99	6,842.29	-191.51	2,195.22	2,203.56	0.00	0.00	0.00
9,100.00	91.02	94.99	6,840.51	-200.20	2,294.83	2,303.54	0.00	0.00	0.00
9,200.00	91.02	94.99	6,838.73	-208.89	2,394.43	2,403.53	0.00	0.00	0.00
9,300.00	91.02	94.99	6,836.95	-217.58	2,494.04	2,503.51	0.00	0.00	0.00
9,400.00	91.02	94.99	6,835.17	-226.27	2,593.65	2,603.50	0.00	0.00	0.00
9,500.00	91.02	94.99	6,833.39	-234.95	2,693.25	2,703.48	0.00	0.00	0.00
9,600.00	91.02	94.99	6,831.61	-243.64	2,792.86	2,803.46	0.00	0.00	0.00
9,700.00	91.02	94.99	6,829.83	-252.33	2,892.46	2,903.45	0.00	0.00	0.00
9,800.00	91.02	94.99	6,828.05	-261.02	2,992.07	3,003.43	0.00	0.00	0.00
9,900.00	91.02	94.99	6,826.27	-269.71	3,091.67	3,103.42	0.00	0.00	0.00



Black Viper Energy
Survey Report



Company: Cimarex Energy Co., Inc.
Project: Eddy Co., New Mexico
Site: Cave Lake '13' Federal Com #1
Well: Cave Lake '13' Federal Com #1
Wellbore: Lateral #1
Design: Plan #1

Local Co-ordinate Reference:
TVD Reference:
MD Reference:
North Reference:
Survey Calculation Method:
Database:

Well Cave Lake '13' Federal Com #1
WELL @ 3571.00ft (Original Well Elev)
WELL @ 3571.00ft (Original Well Elev)
Grid
Minimum Curvature
EDM 2003.14.1.0 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)
10,000.00	91.02	94.99	6,824.49	-278.40	3,191.28	3,203.40	0.00	0.00	0.00
10,100.00	91.02	94.99	6,822.71	-287.09	3,290.89	3,303.39	0.00	0.00	0.00
10,200.00	91.02	94.99	6,820.93	-295.78	3,390.49	3,403.37	0.00	0.00	0.00
10,300.00	91.02	94.99	6,819.15	-304.47	3,490.10	3,503.35	0.00	0.00	0.00
10,400.00	91.02	94.99	6,817.37	-313.16	3,589.70	3,603.34	0.00	0.00	0.00
10,500.00	91.02	94.99	6,815.59	-321.85	3,689.31	3,703.32	0.00	0.00	0.00
10,600.00	91.02	94.99	6,813.81	-330.54	3,788.92	3,803.31	0.00	0.00	0.00
10,700.00	91.02	94.99	6,812.03	-339.23	3,888.52	3,903.29	0.00	0.00	0.00
10,800.00	91.02	94.99	6,810.25	-347.92	3,988.13	4,003.27	0.00	0.00	0.00
10,900.00	91.02	94.99	6,808.47	-356.61	4,087.73	4,103.26	0.00	0.00	0.00
11,000.00	91.02	94.99	6,806.69	-365.30	4,187.34	4,203.24	0.00	0.00	0.00
11,100.00	91.02	94.99	6,804.91	-373.99	4,286.95	4,303.23	0.00	0.00	0.00
11,200.00	91.02	94.99	6,803.13	-382.68	4,386.55	4,403.21	0.00	0.00	0.00
11,300.00	91.02	94.99	6,801.35	-391.36	4,486.16	4,503.20	0.00	0.00	0.00
11,375.74	91.02	94.99	6,800.00	-397.95	4,561.60	4,578.93	0.00	0.00	0.00

PBHL#1[CL13FCom#1]

Targets

Target Name	Dip Angle (°)	Dip Dir. (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
- hit/miss target									
- Shape									
PBHL#1[CL13FCom#1]	0.00	0.00	6,800.00	-397.95	4,561.60	697,683.55	606,083.40	32° 55' 3.953 N	104° 7' 20.435 W
- plan hits target									
- Point									

Formations

Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)
	5,340.00	Abo Shale	Shale	0.92	274.99
6,924.49	6,870.00	Wolfcamp Dolomite	Dolomite	0.92	274.99
	7,000.00	Wolfcamp	Other	0.92	274.99

Plan Annotations

Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates	Comment
		+N/-S (ft) +E/-W (ft)	
6,687.11	6,687.11	0.00 0.00	KOP - Build 30.0° / 100
6,990.51	6,878.06	-16.89 193.65	EOC - Hold 91.02° Inc. .. 94.99° Azi

Checked By: _____ Approved By: _____ Date: _____

V. SPECIAL REQUIREMENT(S)

Cave Lake 13 Federal Com. # 1: Pit North V-Door East

Construct an earthen berm surrounding the location to prevent unwanted water collection on the pad or water/contaminants running off of the pad due to the location occurring near playa lakes.

Conditions of Approval 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. See geologist report for depth.

Florescene Dye (Acid Yellow 73):

Sixteen ounces of Yellow Green (Acid Yellow 73) Florescene dye will be added to the drilling fluid during the drilling of the first 750 feet of the well.

Florescene Dye Orange (Eosin Y):

Sixteen ounces of Orange (Eosin Y) Florescene dye will be added to the drilling fluid during the drilling of the first 2,500 feet of the well.

Directional Drilling:

Kick off for directional drilling will occur at least 100 feet below the bottom of the cave occurrence zone as identified in the geologic report.

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

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,
(505) 361-2822

- 1. A Hydrogen Sulfide (H₂S) Drilling Plan should be activated 500 feet prior to drilling into the **Yates formation**.
- 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. When floor controls are required, (3M or Greater) 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).

- 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.

High cave/karst area.

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.

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

Pressure integrity test of shoe and formation required according to O.O.2.III.B.i.

- 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. **Operator estimating TOC at 1300'. Proposed cement volume will not achieve the 500 feet minimum requirement.**

- 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. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.
- 3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 8-5/8" intermediate casing shoe shall be **5000 (5M)** psi.

4. 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.
 - f. A variance to test **only the surface casing** to the reduced pressure of 1000 psi with the rig pumps is approved. **The BOP/BOPE will be tested to 5000 psi by an independent service company.**

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: (505) 706-2779

WWI 010708