

If earthen pits are used in association with the drilling of this well, an OCD pit permit must be obtained prior to pit construction.

OCT 23 2007
OCD-ARTESIA

ATS-07-612
EA-07-1265

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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

Split Estate

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a Type of Work: ☒ DRILL ☐ REENTER		5. Lease Serial No NM-95630
1b Type of Well ☒ Oil Well ☐ Gas Well ☐ Other ☒ Single Zone ☐ Multiple Zone		6 If Indian, Allottee or Tribe Name
2 Name of Operator Cimarex Energy Co. of Colorado 162683		7 If Unit or CA Agreement, Name and No. Pending
3a Address PO Box 140907 Irving, TX 75014		8 Lease Name and Well No Cave Lake 13 Federal Com No. 1 36811
3b Phone No. (include area code) 972-401-3111		9 API Well No 30-015- 35879
4 Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 260' FSL & 330' FEL At proposed prod Zone 660' 330' W - per oper. 330' FSL & 1011' FEL 9-10-07 DM		10 Field and Pool, or Exploratory Wolfcamp; Wildcat
11 Sec, T R M or Blk and Survey or Area 13-16S-28E		12 County or Parish Eddy
13 State NM		
14 Distance in miles and direction from nearest town or post office* 16 miles E/SE of Lake Arthur	15 Distance from proposed* location to nearest property or lease line, ft (Also to nearest drig unit line if any) 230'	16 No of acres in lease 1760
17 Spacing Unit dedicated to this well S2S2 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 11073' TVD 6800'
20. BLM/BIA Bond No on File NM-2575	21 Elevations (Show whether DF, KDB, RT, GL, etc.) 3571' GR	22. Approximate date work will start* 11/25/2007
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 | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above). |
| 2. A Drilling Plan | 5. Operator Certification |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office) | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

25. Signature Zeno Farris	Name (Printed/Typed) Zeno Farris	Date 09.06.07
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Title Manager Operations Administration		
Approved By (Signature) /S/ DON PETERSON	Name (Printed/Typed) /S/ DON PETERSON	Date OCT 16 2007
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

**S****Cimarex Energy Co. of Colorado**

5215 North O'Connor Blvd • Suite 1500 • Irving, TX 75039 • (972) 401-3111 • Fax (972) 443-6486

Mailing Address: P.O. Box 140907 • Irving, TX 75014-0907

*A wholly-owned subsidiary of Cimarex Energy Co., a NYSE Listed Company, "XEC"***OCT 23 2007
OCD-ARTESIA****STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS**

Bureau of Land Management
620 East Greene Street
Carlsbad, NM 88220
Attn: Ms. Linda Denniston

Cimarex Energy Co. of Colorado accepts all applicable terms, conditions, stipulations, and restrictions concerning operations conducted on the leased land, or portion thereof, as described below:

<u>Lease No.:</u>	State Surface	S2SE4	13-16S-28E	80 acres
	NM-95630	S2SW4	13-16S-28E	80

County: Eddy County, NM

Formation(s): Morrow

Bond Coverage: Statewide BLM Bond

BLM Bond File No.: NM-2575

Authorized Signature: Zeno Farris
Representing Cimarex Energy Co. of Colorado

Name: Zeno Farris

Title: Manager Operations Administration

Date: September 6, 2007

DISTRICT I

1626 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 DepartmentForm C-102
Revised October 12, 2005

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

OIL CONSERVATION DIVISION

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

OCT 23 2007

☐ AMENDED REPORT

OCD-ARTESIA

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code 96542	Pool Name Wolfcamp; Wildcat Oil
Property Code	Property Name CAVE LAKE "13" FEDERAL COM	Well Number 1
OGRID No. 162683	Operator Name CIMAREX ENERGY CO. OF COLORADO	Elevation 3571'

Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	13	16 S	28 E		260	SOUTH	330	EAST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
M	13	16 S	28 E		660	SOUTH	330	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
320/60		P	

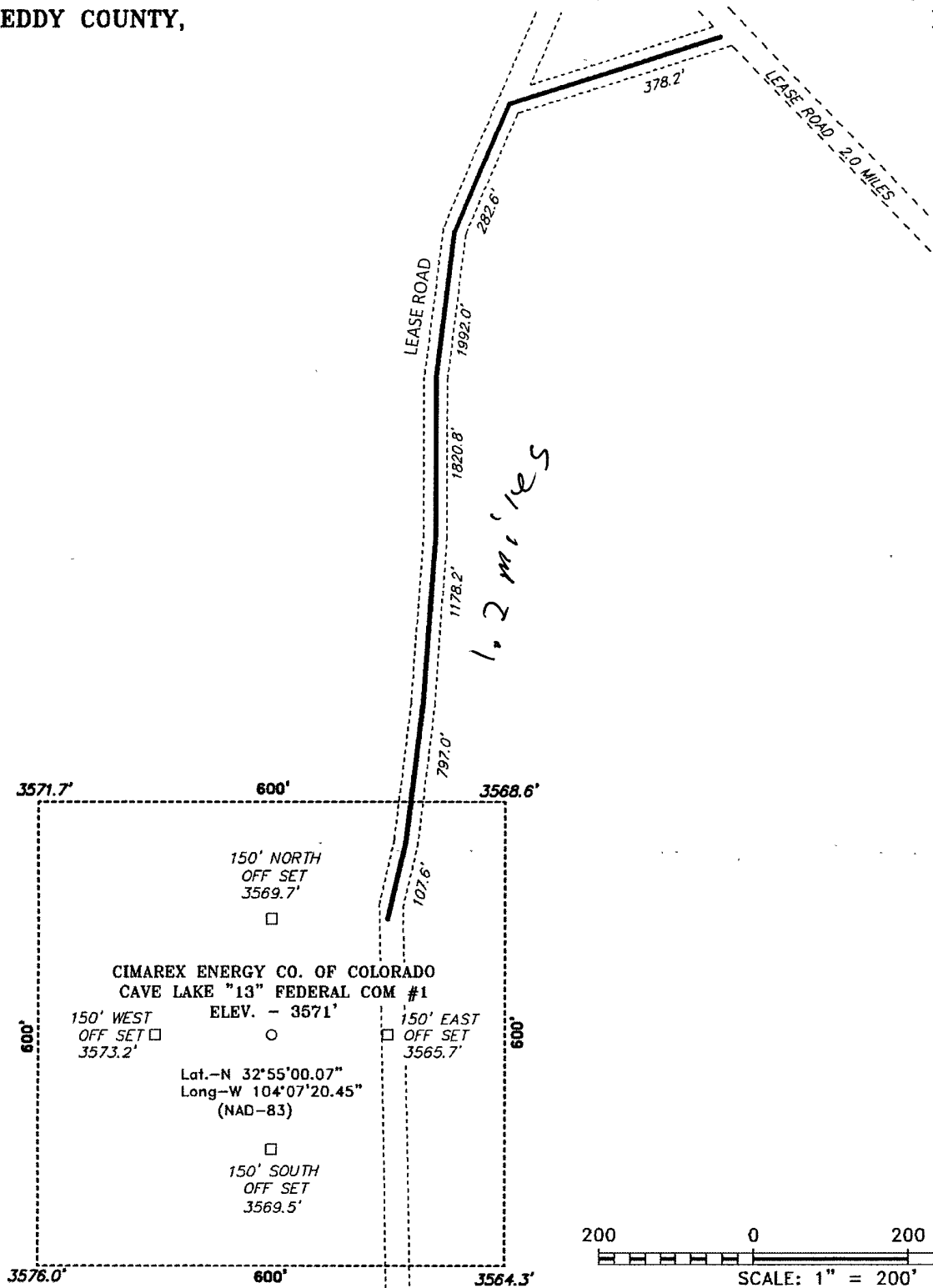
NO ALLOWABLE WILL BE ASSIGNED TO THIS COMPLETION UNTIL ALL INTERESTS HAVE BEEN CONSOLIDATED
OR A NON-STANDARD UNIT HAS BEEN APPROVED BY THE DIVISION

BOTTOM HOLE LOCATION Lat - N32°55'04.7" Long - W104°08'13.9" NMSPCE- N 697753.213 E 601522.749 (NAD-83)		SURFACE LOCATION Lat - N32°55'00.07" Long - W104°07'20.45" NMSPCE- N 697283.269 E 606084.825 (NAD-83)		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. <u>Zeno Farris</u> 09-06-07 Signature Date Zeno Farris Printed Name
BOTTOM HOLE LOCATION Lat - N32°55'04.7" Long - W104°08'13.9" NMSPCE- N 697753.213 E 601522.749 (NAD-83)		SURFACE LOCATION Lat - N32°55'00.07" Long - W104°07'20.45" NMSPCE- N 697283.269 E 606084.825 (NAD-83)		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. SEPTEMBER 05, 2007 Date Surveyed Signature <u>GARY L. JONES</u> Professional Seal Certificate No. Gary L. Jones 7977 BASIN SURVEYS

SECTION 13, TOWNSHIP 16 SOUTH, RANGE 28 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.

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Directions to Location:

FROM JUNCTION OF U.S. HWY 82 AND CO. RD. 214
(BARNAVAL), GO NORTH 6.8 MILES TO "Y"; TAKE
LEFT FORK FOR 2.0 MILES TO LEASE ROAD.

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

W.O. Number: 18506 Drawn By: J. SMALL

Date: 09-05-2007 Disk: JMS 18506W

CIMAREX ENERGY CO. OF COLORADO

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

THE CAVE LAKE "13" FEDERAL COM #1 LOCATED 260' FROM
THE SOUTH LINE AND 330' FROM THE EAST LINE OF
SECTION 13, TOWNSHIP 16 SOUTH, RANGE 28 EAST,
N.M.P.M., EDDY COUNTY, NEW MEXICO.

Survey Date: 09-05-2007 Sheet 1 of 1 Sheets

Application to Drill
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 1
Unit P Section 13
T16S R28E Eddy County, NM

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

- 1 Location SHL 260' FSL & 330' FEL
BHL 660' FSL & 330' FWL
- 2 Elevation above sea level: 3571' GR
- 3 Geologic name of surface formation: Quaternary 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 11073' □ TVD 6800'
- 6 Estimated tops of geological markers:

San Andres	1,820'
Abo Shale	5,340'
Wolfcamp Dolomite	6,870'
Wolfcamp LS	7,000'

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 2,500	10.0	28-29	May lose circ	Brine water
2,500 to 11,073	9.4 - 9.5	28-29	NC	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. Proposed drilling Plan

Drill pilot hole to 7350.' Set kick-off plug at 6200.' Kick off horizontal leg at 6000' and drill 7-7/8" hole to 11073' MD, 6800' TVD. Run 5-1/2" 17# P-110 LTC casing and cement as shown on page 2, production casing details.

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Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 1
Unit P Section 13
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 2,500	New 8-5/8	24#	8-R	LTC STC	J-55
7-7/8	0 to 11,073	New 5-1/2	17#	8-R	LTC	N-80

10 Cementing & Setting Depth:

13-3/8 Surface Set 340 of 13-3/8 48# H-40 STC
Lead: 300 sx Thixotropic/Premium Plus + 10# Gilsomite + 10# Cal-Seal + 1% CaCl + 0.125# Poly-e-flake (wt 14.2, yld 1.64)
Tail: 220 sx Premium Plus + 2% CaCl (wt 14.8, yld 1.35)
 TOC Surface

8-5/8 Intermediate Set 2,500 of 8-5/8 24# J-55 LTC
Lead: 425 sx Interfill C + 0.125# flocele (wt 11.9, yld 2.45)
Tail: 200 sx Prem Plus + 1% CaCl (wt 14.8, yld 1.33)
 TOC Surface

5-1/2 Production Set 11,073 of 5-1/2 17# N-80 LTC
Lead: 640 sx Permian Basin Super H + 0.5% Halad 344 + 0.25% D-AIR 3000 + 0.4% CFR-3 + 1# Salt + 5# Gilsomite + 0.125# Poly-E-Flake + 0.35% HR-7 (wt 13.0, yld 1.68).

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 2,500 and cementing to Surface
 and by setting 5-1/2 casing at 11,073 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". A 13 3/8" 5000 PSI working pressure B.O.P. consisting of one set of blind rams and one set of pipe rams and a 5000 # annular type preventer. 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 BOP will be nipped up on the 8-5/8" casing and 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.

We are requesting a variance for testing the 13-3/8" surface casing from Onshore Order No. 2, which states that all casing strings below the conductor shall be pressure tested to 0.22 psi per foot or 1500 psi, whichever is greater, but not to exceed 70% of the manufacturer's stated maximum internal yield. We are requesting to test the 13-3/8" casing to 1000 psi using rig pumps. The BOP will be tested to 5000 PSI by an independent service company.

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Application to Drill
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 1
Unit P Section 13
T16S R28E Eddy County, NM

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 potential 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:

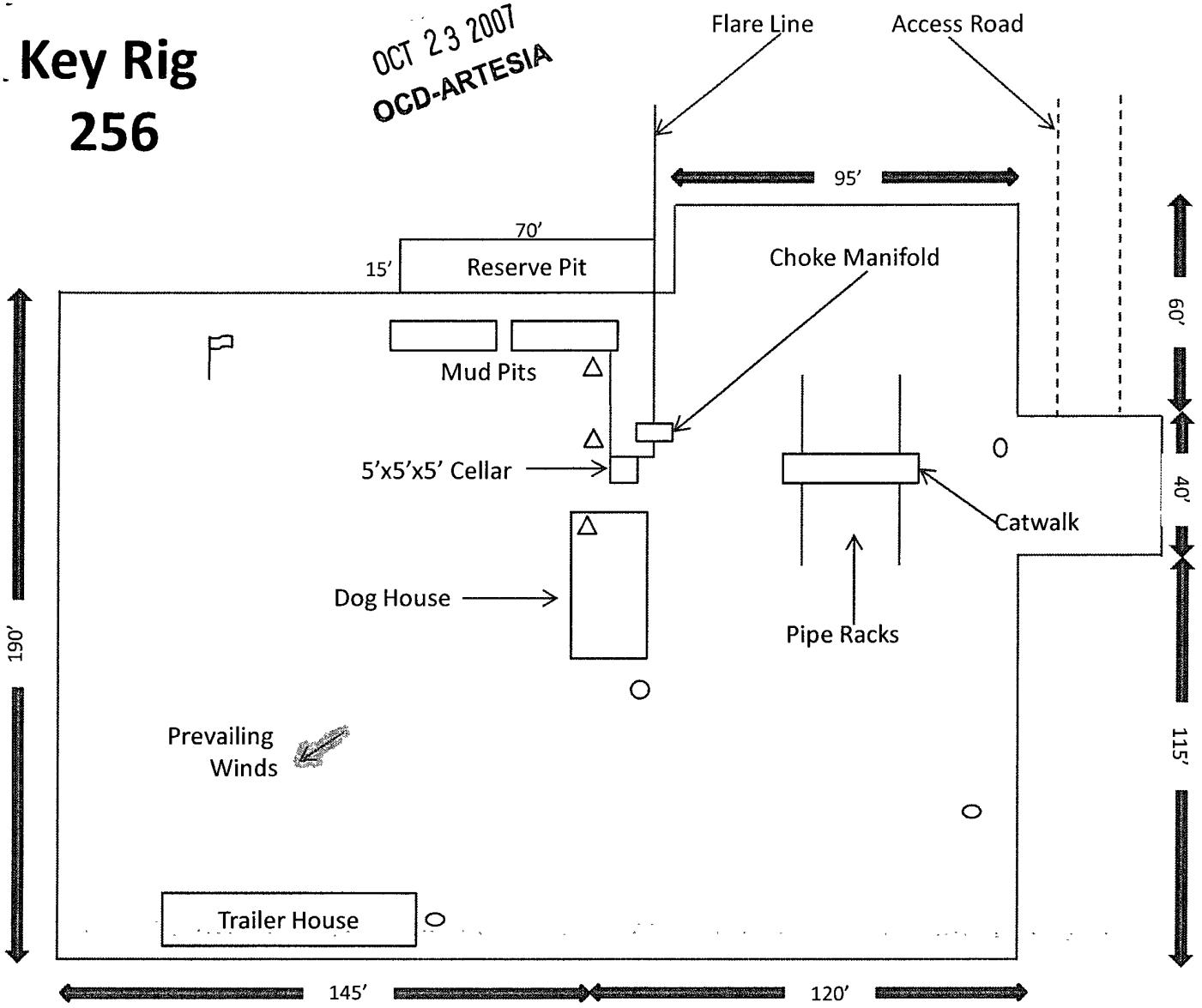
After running casing, cased hole gamma ray neutron collar logs will be run from total depth over possible pay intervals.

Wolfcam pay will be perforated and stimulated.

The proposed well will be tested and potential as **an oil well**

Key Rig 256

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- Wind Direction Indicators
(wind sock or streamers)
- H2S Monitors
(alarms at bell nipple and shale shaker)
- Briefing Areas
- Remote BOP Closing Unit

See COA
Rite West
V-Drill North

Exhibit D – Rig Diagram
Cave Lake 13 Federal Com No. 1
Cimarex Energy Co. of Colorado
SHL 260' FSL & 330' FEL
BHL 660' FSL & 330' FWL
Sec. 13-16S-28E
Eddy County, NM

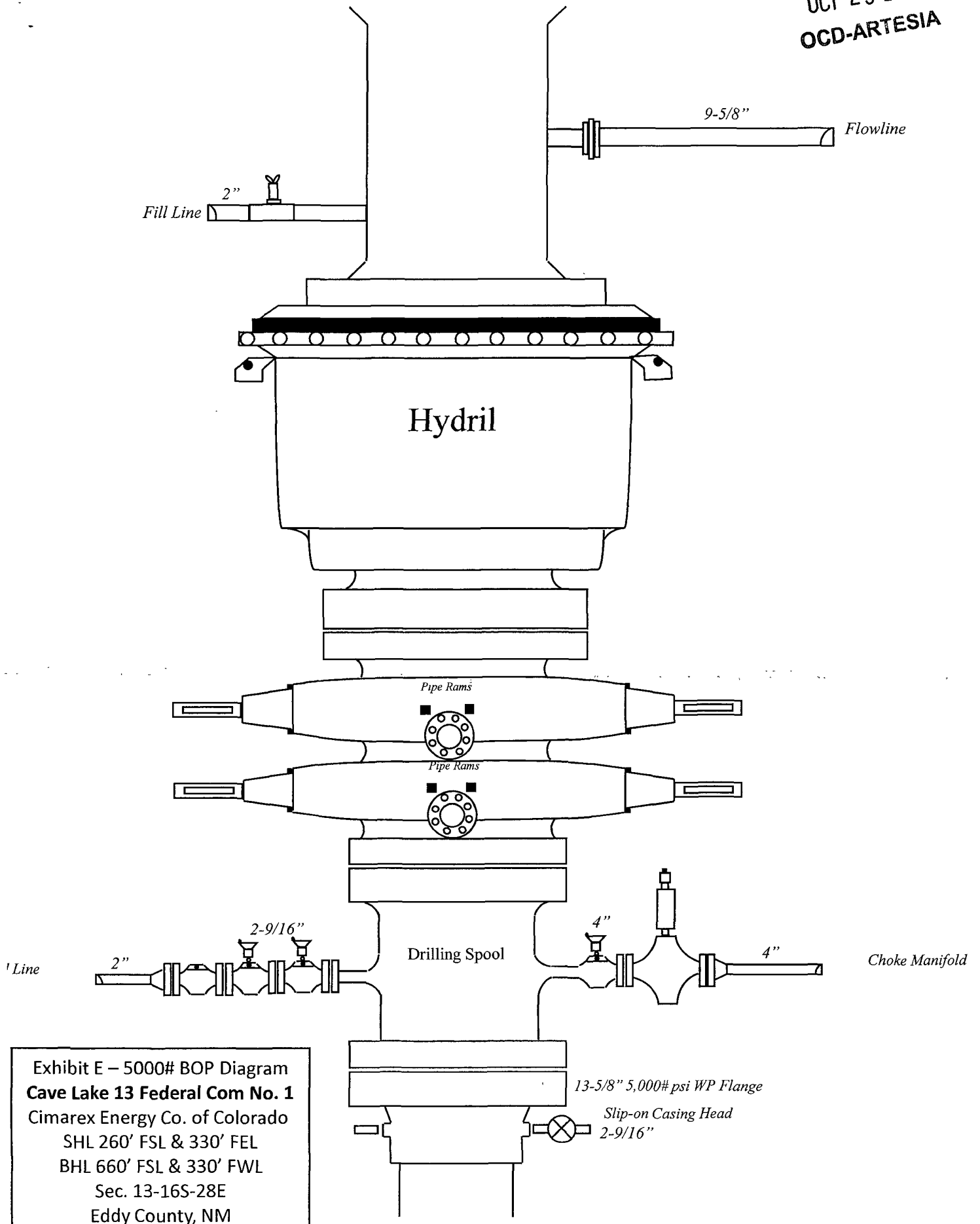


Exhibit E – 5000# BOP Diagram
Cave Lake 13 Federal Com No. 1
 Cimarex Energy Co. of Colorado
 SHL 260' FSL & 330' FEL
 BHL 660' FSL & 330' FWL
 Sec. 13-16S-28E
 Eddy County, NM

**DRILLING OPERATIONS
CHOKE MANIFOLD
5M SERVICE**

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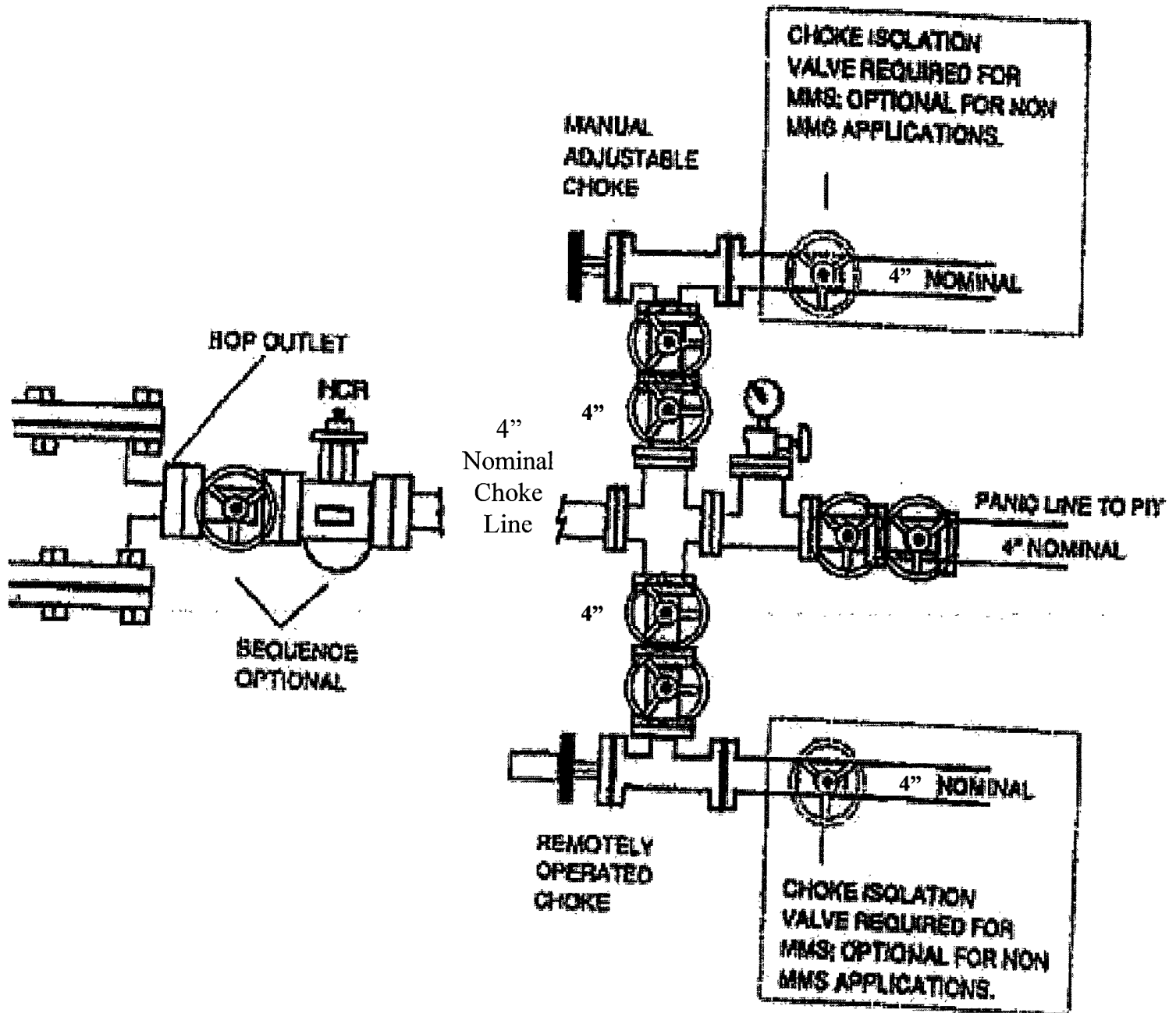
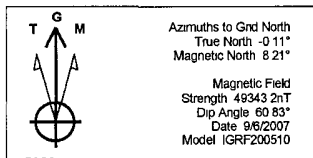
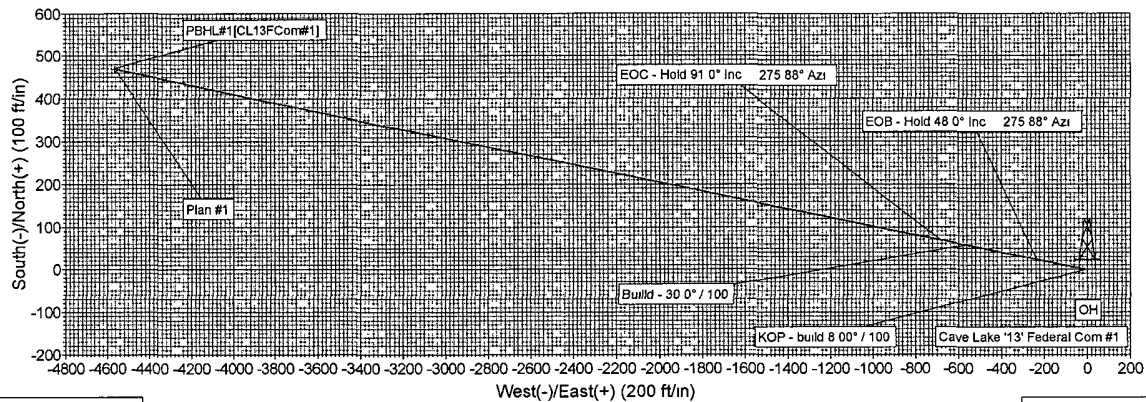


Exhibit E-1 – Choke Manifold Diagram
Cave Lake 13 Federal Com No. 1
Cimarex Energy Co. of Colorado
SHL 260' FSL & 330' FEL
BHL 660' FSL & 330' FWL
Sec. 13-16S-28E
Eddy County, NM

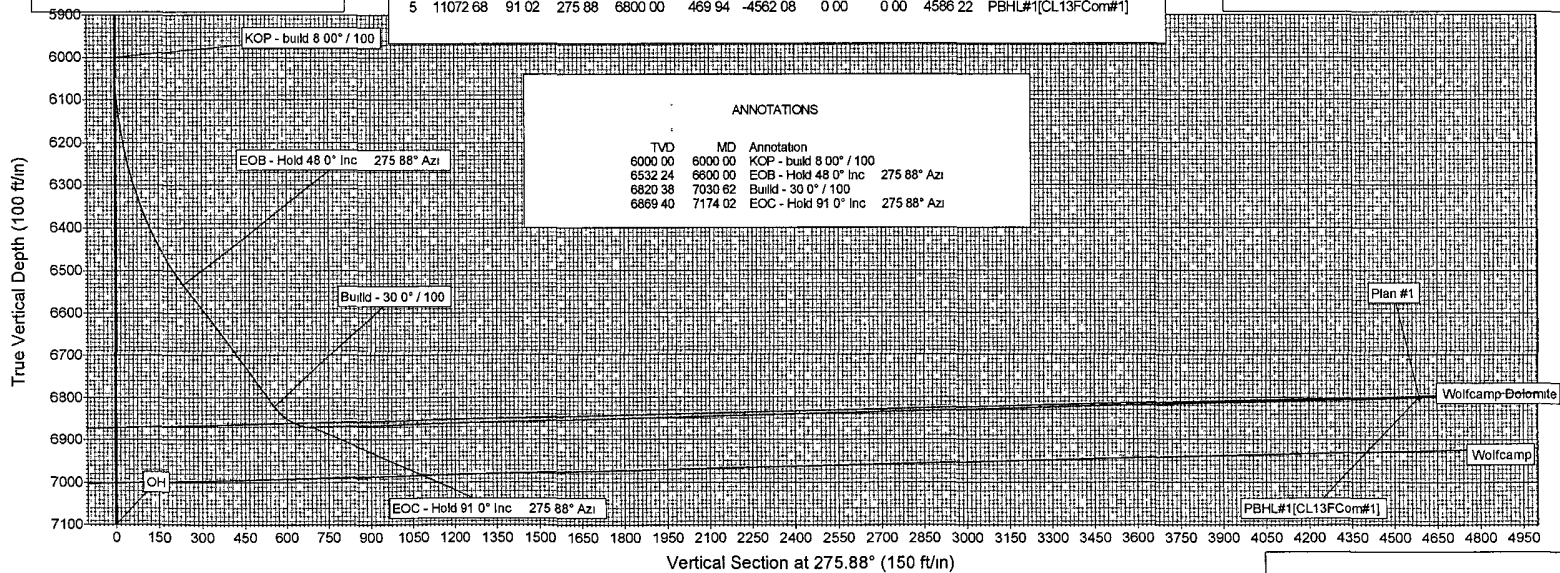


Project: Eddy Co, New Mexico
 Site: Cave Lake '13' Federal Com #1
 Well: Cave Lake '13' Federal Com #1
 Wellbore: Lateral #1
 Plan: Plan #1 (Cave Lake '13' Federal Com #1/Lateral #1)



SECTION DETAILS									
Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec Target
1	6000 00	0 00	0 00	6000 00	0 00	0 00	0 00	0 00	0 00
2	6600 00	48 00	275 88	6532 24	24 28	-235 72	8 00	275 88	236 97
3	7030 62	48 00	275 88	6820 38	57 06	-554 05	0 00	0 00	556 98
4	7174 02	91 02	275 88	6869 40	70 50	-684 55	30 00	0 00	688 17
5	11072 68	91 02	275 88	6800 00	469 94	-4562 08	0 00	0 00	4586 22 PBHL#1[CL13FCor#1]

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 Ground Level



ANNOTATIONS		
TVD	MD	Annotation
6000 00	6000 00	KOP - build 8 00° / 100
6532 24	6600 00	EOB - Hold 48 0° Inc 275 88° Azi
6820 38	7030 62	Build - 30 0° / 100
6869 40	7174 02	EOC - Hold 91 0° Inc 275 88° Azi

Plan: Plan #1 (Cave Lake '13' Federal Com #1/Lateral #1)
 Created By: L.D. Burton Date: September 6 2007

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Cave Lake '13' Federal Com #1 Lateral Plan #1 Report 9-6-07 (2).txt

Cave Lake '13' Federal Com #1 - Plan #1

Eddy Co., New Mexico
Cave Lake '13' Federal Com #1

Measured Dogleg Depth Rate (ft) (°/100ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)
6000.00	0.000	0.000	6000.00	0.00 N	0.00 E	0.00
0.00						
6010.00	0.800	275.880	6010.00	0.01 N	0.07 W	0.07
8.00						
6020.00	1.600	275.880	6020.00	0.03 N	0.28 W	0.28
8.00						
6030.00	2.400	275.880	6029.99	0.06 N	0.62 W	0.63
8.00						
6040.00	3.200	275.880	6039.98	0.11 N	1.11 W	1.12
8.00						
6050.00	4.000	275.880	6049.96	0.18 N	1.74 W	1.74
8.00						
6060.00	4.800	275.880	6059.93	0.26 N	2.50 W	2.51
8.00						
6070.00	5.600	275.880	6069.89	0.35 N	3.40 W	3.42
8.00						
6080.00	6.400	275.880	6079.83	0.46 N	4.44 W	4.46
8.00						
6090.00	7.200	275.880	6089.76	0.58 N	5.62 W	5.65
8.00						
6100.00	8.000	275.880	6099.68	0.71 N	6.93 W	6.97
8.00						
6110.00	8.800	275.880	6109.57	0.86 N	8.39 W	8.43
8.00						
6120.00	9.600	275.880	6119.44	1.03 N	9.98 W	10.03
8.00						
6130.00	10.400	275.880	6129.29	1.21 N	11.70 W	11.77
8.00						
6140.00	11.200	275.880	6139.11	1.40 N	13.57 W	13.64
8.00						
6150.00	12.000	275.880	6148.91	1.60 N	15.57 W	15.65
8.00						
6160.00	12.800	275.880	6158.67	1.82 N	17.70 W	17.80
8.00						
6170.00	13.600	275.880	6168.41	2.06 N	19.98 W	20.08
8.00						
6180.00	14.400	275.880	6178.11	2.31 N	22.38 W	22.50
8.00						
6190.00	15.200	275.880	6187.78	2.57 N	24.92 W	25.06
8.00						
6200.00	16.000	275.880	6197.41	2.84 N	27.60 W	27.74
8.00						
6210.00	16.800	275.880	6207.00	3.13 N	30.41 W	30.57
8.00						
6220.00	17.600	275.880	6216.56	3.43 N	33.35 W	33.52
8.00						
6230.00	18.400	275.880	6226.07	3.75 N	36.42 W	36.61
8.00						
6240.00	19.200	275.880	6235.53	4.08 N	39.63 W	39.84
8.00						

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	Cave	Lake	'13'	Federal	Com #1	Lateral	Plan #1	Report	9-6-07	(2).txt
8.00	6250.00	20.000	275.880	6244.95	4.42	N	42.96	W	43.19	
8.00	6260.00	20.800	275.880	6254.33	4.78	N	46.43	W	46.68	
8.00	6270.00	21.600	275.880	6263.65	5.15	N	50.03	W	50.29	
8.00	6280.00	22.400	275.880	6272.92	5.54	N	53.76	W	54.04	
8.00	6290.00	23.200	275.880	6282.14	5.93	N	57.61	W	57.92	
8.00	6300.00	24.000	275.880	6291.30	6.34	N	61.59	W	61.92	
8.00	6310.00	24.800	275.880	6300.41	6.77	N	65.70	W	66.05	
8.00	6320.00	25.600	275.880	6309.46	7.20	N	69.94	W	70.31	
8.00	6330.00	26.400	275.880	6318.45	7.65	N	74.30	W	74.69	
8.00	6340.00	27.200	275.880	6327.37	8.11	N	78.78	W	79.20	
8.00	6350.00	28.000	275.880	6336.23	8.59	N	83.39	W	83.83	
8.00	6360.00	28.800	275.880	6345.03	9.08	N	88.12	W	88.59	
8.00	6370.00	29.600	275.880	6353.76	9.58	N	92.98	W	93.47	
8.00	6380.00	30.400	275.880	6362.42	10.09	N	97.95	W	98.47	
8.00	6390.00	31.200	275.880	6371.01	10.61	N	103.04	W	103.59	
8.00	6400.00	32.000	275.880	6379.53	11.15	N	108.25	W	108.83	
8.00	6410.00	32.800	275.880	6387.97	11.70	N	113.58	W	114.19	
8.00	6420.00	33.600	275.880	6396.34	12.26	N	119.03	W	119.66	
8.00	6430.00	34.400	275.880	6404.63	12.83	N	124.59	W	125.25	
8.00	6440.00	35.200	275.880	6412.84	13.42	N	130.27	W	130.96	
8.00	6450.00	36.000	275.880	6420.97	14.01	N	136.06	W	136.78	
8.00	6460.00	36.800	275.880	6429.02	14.62	N	141.96	W	142.72	
8.00	6470.00	37.600	275.880	6436.98	15.24	N	147.98	W	148.76	
8.00	6480.00	38.400	275.880	6444.86	15.87	N	154.10	W	154.92	
8.00	6490.00	39.200	275.880	6452.66	16.51	N	160.34	W	161.18	
8.00	6500.00	40.000	275.880	6460.36	17.17	N	166.68	W	167.56	
8.00	6510.00	40.800	275.880	6467.98	17.83	N	173.12	W	174.04	
8.00	6520.00	41.600	275.880	6475.50	18.50	N	179.68	W	180.63	
8.00	6530.00	42.400	275.880	6482.93	19.19	N	186.33	W	187.32	
8.00	6540.00	43.200	275.880	6490.27	19.89	N	193.09	W	194.11	
8.00	6550.00	44.000	275.880	6497.51	20.59	N	199.95	W	201.01	
8.00	6560.00	44.800	275.880	6504.66	21.31	N	206.91	W	208.00	

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8.00							
6570.00	45.600	275.880	6511.70	22.04 N	213.97 W	215.10	
8.00							
6580.00	46.400	275.880	6518.65	22.77 N	221.12 W	222.29	
8.00							
6590.00	47.200	275.880	6525.50	23.52 N	228.38 W	229.58	
8.00							
6600.00	48.000	275.880	6532.24	24.28 N	235.72 W	236.97	
8.00							
6610.00	48.000	275.880	6538.93	25.04 N	243.11 W	244.40	
0.00							
6620.00	48.000	275.880	6545.62	25.80 N	250.51 W	251.83	
0.00							
6630.00	48.000	275.880	6552.31	26.56 N	257.90 W	259.26	
0.00							
6640.00	48.000	275.880	6559.00	27.32 N	265.29 W	266.69	
0.00							
6650.00	48.000	275.880	6565.69	28.08 N	272.68 W	274.12	
0.00							
6660.00	48.000	275.880	6572.39	28.84 N	280.08 W	281.56	
0.00							
6670.00	48.000	275.880	6579.08	29.61 N	287.47 W	288.99	
0.00							
6680.00	48.000	275.880	6585.77	30.37 N	294.86 W	296.42	
0.00							
6690.00	48.000	275.880	6592.46	31.13 N	302.25 W	303.85	
0.00							
6700.00	48.000	275.880	6599.15	31.89 N	309.64 W	311.28	
0.00							
6710.00	48.000	275.880	6605.84	32.65 N	317.04 W	318.71	
0.00							
6720.00	48.000	275.880	6612.53	33.41 N	324.43 W	326.15	
0.00							
6730.00	48.000	275.880	6619.23	34.17 N	331.82 W	333.58	
0.00							
6740.00	48.000	275.880	6625.92	34.93 N	339.21 W	341.01	
0.00							
6750.00	48.000	275.880	6632.61	35.70 N	346.61 W	348.44	
0.00							
6760.00	48.000	275.880	6639.30	36.46 N	354.00 W	355.87	
0.00							
6770.00	48.000	275.880	6645.99	37.22 N	361.39 W	363.30	
0.00							
6780.00	48.000	275.880	6652.68	37.98 N	368.78 W	370.73	
0.00							
6790.00	48.000	275.880	6659.37	38.74 N	376.18 W	378.17	
0.00							
6800.00	48.000	275.880	6666.06	39.50 N	383.57 W	385.60	
0.00							
6810.00	48.000	275.880	6672.76	40.26 N	390.96 W	393.03	
0.00							
6820.00	48.000	275.880	6679.45	41.03 N	398.35 W	400.46	
0.00							
6830.00	48.000	275.880	6686.14	41.79 N	405.74 W	407.89	
0.00							
6840.00	48.000	275.880	6692.83	42.55 N	413.14 W	415.32	
0.00							
6850.00	48.000	275.880	6699.52	43.31 N	420.53 W	422.75	
0.00							
6860.00	48.000	275.880	6706.21	44.07 N	427.92 W	430.19	
0.00							
6870.00	48.000	275.880	6712.90	44.83 N	435.31 W	437.62	
0.00							

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6880.00	48.000	275.880	6719.59	45.59 N	442.71 W	445.05	
0.00							
6890.00	48.000	275.880	6726.29	46.35 N	450.10 W	452.48	
0.00							
6900.00	48.000	275.880	6732.98	47.12 N	457.49 W	459.91	
0.00							
6910.00	48.000	275.880	6739.67	47.88 N	464.88 W	467.34	
0.00							
6920.00	48.000	275.880	6746.36	48.64 N	472.28 W	474.77	
0.00							
6930.00	48.000	275.880	6753.05	49.40 N	479.67 W	482.21	
0.00							
6940.00	48.000	275.880	6759.74	50.16 N	487.06 W	489.64	
0.00							
6950.00	48.000	275.880	6766.43	50.92 N	494.45 W	497.07	
0.00							
6960.00	48.000	275.880	6773.13	51.68 N	501.85 W	504.50	
0.00							
6970.00	48.000	275.880	6779.82	52.44 N	509.24 W	511.93	
0.00							
6980.00	48.000	275.880	6786.51	53.21 N	516.63 W	519.36	
0.00							
6990.00	48.000	275.880	6793.20	53.97 N	524.02 W	526.79	
0.00							
7000.00	48.000	275.880	6799.89	54.73 N	531.41 W	534.23	
0.00							
7010.00	48.000	275.880	6806.58	55.49 N	538.81 W	541.66	
0.00							
7020.00	48.000	275.880	6813.27	56.25 N	546.20 W	549.09	
0.00							
7030.00	48.000	275.880	6819.96	57.01 N	553.59 W	556.52	
0.00							
7040.00	50.815	275.880	6826.48	57.79 N	561.13 W	564.10	
28.15							
7050.00	53.815	275.880	6832.59	58.60 N	569.01 W	572.02	
30.00							
7060.00	56.815	275.880	6838.28	59.44 N	577.19 W	580.24	
30.00							
7070.00	59.815	275.881	6843.54	60.31 N	585.65 W	588.75	
30.00							
7080.00	62.815	275.881	6848.34	61.21 N	594.37 W	597.52	
30.00							
7090.00	65.815	275.881	6852.67	62.14 N	603.34 W	606.53	
30.00							
7100.00	68.815	275.881	6856.53	63.08 N	612.51 W	615.75	
30.00							
7110.00	71.815	275.881	6859.89	64.05 N	621.88 W	625.17	
30.00							
7120.00	74.815	275.881	6862.76	65.03 N	631.41 W	634.75	
30.00							
7130.00	77.815	275.881	6865.13	66.02 N	641.07 W	644.46	
30.00							
7140.00	80.815	275.881	6866.98	67.03 N	650.84 W	654.29	
30.00							
7150.00	83.815	275.881	6868.32	68.05 N	660.70 W	664.20	
30.00							
7160.00	86.815	275.881	6869.14	69.07 N	670.61 W	674.16	
30.00							
7170.00	89.815	275.882	6869.43	70.09 N	680.56 W	684.16	
30.00							
7180.00	91.020	275.882	6869.30	71.12 N	690.50 W	694.16	
12.05							
7190.00	91.020	275.882	6869.12	72.14 N	700.45 W	704.15	



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0.00	7200.00	91.020	275.882	6868.94	73.16 N	710.39 W	714.15
0.00	7210.00	91.020	275.882	6868.76	74.19 N	720.34 W	724.15
0.00	7220.00	91.020	275.882	6868.58	75.21 N	730.29 W	734.15
0.00	7230.00	91.020	275.882	6868.41	76.24 N	740.23 W	744.15
0.00	7240.00	91.020	275.882	6868.23	77.26 N	750.18 W	754.15
0.00	7250.00	91.020	275.882	6868.05	78.29 N	760.12 W	764.14
0.00	7260.00	91.020	275.882	6867.87	79.31 N	770.07 W	774.14
0.00	7270.00	91.020	275.882	6867.69	80.34 N	780.01 W	784.14
0.00	7280.00	91.020	275.882	6867.52	81.36 N	789.96 W	794.14
0.00	7290.00	91.020	275.882	6867.34	82.39 N	799.91 W	804.14
0.00	7300.00	91.020	275.882	6867.16	83.41 N	809.85 W	814.14
0.00	7310.00	91.020	275.882	6866.98	84.43 N	819.80 W	824.13
0.00	7320.00	91.020	275.882	6866.80	85.46 N	829.74 W	834.13
0.00	7330.00	91.020	275.882	6866.62	86.48 N	839.69 W	844.13
0.00	7340.00	91.020	275.882	6866.45	87.51 N	849.64 W	854.13
0.00	7350.00	91.020	275.882	6866.27	88.53 N	859.58 W	864.13
0.00	7360.00	91.020	275.882	6866.09	89.56 N	869.53 W	874.13
0.00	7370.00	91.020	275.882	6865.91	90.58 N	879.47 W	884.13
0.00	7380.00	91.020	275.882	6865.73	91.61 N	889.42 W	894.12
0.00	7390.00	91.020	275.882	6865.56	92.63 N	899.36 W	904.12
0.00	7400.00	91.020	275.882	6865.38	93.66 N	909.31 W	914.12
0.00	7410.00	91.020	275.882	6865.20	94.68 N	919.26 W	924.12
0.00	7420.00	91.020	275.882	6865.02	95.70 N	929.20 W	934.12
0.00	7430.00	91.020	275.882	6864.84	96.73 N	939.15 W	944.12
0.00	7440.00	91.020	275.882	6864.67	97.75 N	949.09 W	954.11
0.00	7450.00	91.020	275.882	6864.49	98.78 N	959.04 W	964.11
0.00	7460.00	91.020	275.882	6864.31	99.80 N	968.98 W	974.11
0.00	7470.00	91.020	275.882	6864.13	100.83 N	978.93 W	984.11
0.00	7480.00	91.020	275.882	6863.95	101.85 N	988.88 W	994.11
0.00	7490.00	91.020	275.882	6863.78	102.88 N	998.82 W	1004.11
0.00	7500.00	91.020	275.882	6863.60	103.90 N	1008.77 W	1014.10

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7510.00	91.020	275.882	6863.42	104.93	N	1018.71	W 1024.10
0.00							
7520.00	91.020	275.882	6863.24	105.95	N	1028.66	W 1034.10
0.00							
7530.00	91.020	275.882	6863.06	106.97	N	1038.61	W 1044.10
0.00							
7540.00	91.020	275.882	6862.89	108.00	N	1048.55	W 1054.10
0.00							
7550.00	91.020	275.882	6862.71	109.02	N	1058.50	W 1064.10
0.00							
7560.00	91.020	275.882	6862.53	110.05	N	1068.44	W 1074.10
0.00							
7570.00	91.020	275.882	6862.35	111.07	N	1078.39	W 1084.09
0.00							
7580.00	91.020	275.882	6862.17	112.10	N	1088.33	W 1094.09
0.00							
7590.00	91.020	275.882	6862.00	113.12	N	1098.28	W 1104.09
0.00							
7600.00	91.020	275.882	6861.82	114.15	N	1108.23	W 1114.09
0.00							
7610.00	91.020	275.882	6861.64	115.17	N	1118.17	W 1124.09
0.00							
7620.00	91.020	275.882	6861.46	116.20	N	1128.12	W 1134.09
0.00							
7630.00	91.020	275.882	6861.28	117.22	N	1138.06	W 1144.08
0.00							
7640.00	91.020	275.882	6861.11	118.24	N	1148.01	W 1154.08
0.00							
7650.00	91.020	275.882	6860.93	119.27	N	1157.95	W 1164.08
0.00							
7660.00	91.020	275.882	6860.75	120.29	N	1167.90	W 1174.08
0.00							
7670.00	91.020	275.882	6860.57	121.32	N	1177.85	W 1184.08
0.00							
7680.00	91.020	275.882	6860.39	122.34	N	1187.79	W 1194.08
0.00							
7690.00	91.020	275.882	6860.22	123.37	N	1197.74	W 1204.07
0.00							
7700.00	91.020	275.882	6860.04	124.39	N	1207.68	W 1214.07
0.00							
7710.00	91.020	275.882	6859.86	125.42	N	1217.63	W 1224.07
0.00							
7720.00	91.020	275.882	6859.68	126.44	N	1227.58	W 1234.07
0.00							
7730.00	91.020	275.882	6859.50	127.47	N	1237.52	W 1244.07
0.00							
7740.00	91.020	275.882	6859.33	128.49	N	1247.47	W 1254.07
0.00							
7750.00	91.020	275.882	6859.15	129.52	N	1257.41	W 1264.07
0.00							
7760.00	91.020	275.882	6858.97	130.54	N	1267.36	W 1274.06
0.00							
7770.00	91.020	275.882	6858.79	131.56	N	1277.30	W 1284.06
0.00							
7780.00	91.020	275.882	6858.61	132.59	N	1287.25	W 1294.06
0.00							
7790.00	91.020	275.882	6858.44	133.61	N	1297.20	W 1304.06
0.00							
7800.00	91.020	275.882	6858.26	134.64	N	1307.14	W 1314.06
0.00							
7810.00	91.020	275.882	6858.08	135.66	N	1317.09	W 1324.06
0.00							
7820.00	91.020	275.882	6857.90	136.69	N	1327.03	W 1334.05

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0.00	7830.00	91.020	275.882	6857.72	137.71 N	1336.98 W	1344.05
0.00	7840.00	91.020	275.882	6857.55	138.74 N	1346.92 W	1354.05
0.00	7850.00	91.020	275.882	6857.37	139.76 N	1356.87 W	1364.05
0.00	7860.00	91.020	275.882	6857.19	140.79 N	1366.82 W	1374.05
0.00	7870.00	91.020	275.882	6857.01	141.81 N	1376.76 W	1384.05
0.00	7880.00	91.020	275.882	6856.83	142.83 N	1386.71 W	1394.04
0.00	7890.00	91.020	275.882	6856.66	143.86 N	1396.65 W	1404.04
0.00	7900.00	91.020	275.882	6856.48	144.88 N	1406.60 W	1414.04
0.00	7910.00	91.020	275.882	6856.30	145.91 N	1416.55 W	1424.04
0.00	7920.00	91.020	275.882	6856.12	146.93 N	1426.49 W	1434.04
0.00	7930.00	91.020	275.882	6855.94	147.96 N	1436.44 W	1444.04
0.00	7940.00	91.020	275.882	6855.77	148.98 N	1446.38 W	1454.03
0.00	7950.00	91.020	275.882	6855.59	150.01 N	1456.33 W	1464.03
0.00	7960.00	91.020	275.882	6855.41	151.03 N	1466.27 W	1474.03
0.00	7970.00	91.020	275.882	6855.23	152.06 N	1476.22 W	1484.03
0.00	7980.00	91.020	275.882	6855.05	153.08 N	1486.17 W	1494.03
0.00	7990.00	91.020	275.882	6854.88	154.10 N	1496.11 W	1504.03
0.00	8000.00	91.020	275.882	6854.70	155.13 N	1506.06 W	1514.03
0.00	8010.00	91.020	275.882	6854.52	156.15 N	1516.00 W	1524.02
0.00	8020.00	91.020	275.882	6854.34	157.18 N	1525.95 W	1534.02
0.00	8030.00	91.020	275.882	6854.16	158.20 N	1535.89 W	1544.02
0.00	8040.00	91.020	275.882	6853.99	159.23 N	1545.84 W	1554.02
0.00	8050.00	91.020	275.882	6853.81	160.25 N	1555.79 W	1564.02
0.00	8060.00	91.020	275.882	6853.63	161.28 N	1565.73 W	1574.02
0.00	8070.00	91.020	275.882	6853.45	162.30 N	1575.68 W	1584.01
0.00	8080.00	91.020	275.882	6853.27	163.33 N	1585.62 W	1594.01
0.00	8090.00	91.020	275.882	6853.10	164.35 N	1595.57 W	1604.01
0.00	8100.00	91.020	275.882	6852.92	165.37 N	1605.51 W	1614.01
0.00	8110.00	91.020	275.882	6852.74	166.40 N	1615.46 W	1624.01
0.00	8120.00	91.020	275.882	6852.56	167.42 N	1625.41 W	1634.01
0.00	8130.00	91.020	275.882	6852.38	168.45 N	1635.35 W	1644.00
0.00							

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8140.00	91.020	275.882	6852.21	169.47	N	1645.30	W	1654.00
0.00								
8150.00	91.020	275.882	6852.03	170.50	N	1655.24	W	1664.00
0.00								
8160.00	91.020	275.882	6851.85	171.52	N	1665.19	W	1674.00
0.00								
8170.00	91.020	275.882	6851.67	172.55	N	1675.14	W	1684.00
0.00								
8180.00	91.020	275.882	6851.49	173.57	N	1685.08	W	1694.00
0.00								
8190.00	91.020	275.882	6851.32	174.60	N	1695.03	W	1704.00
0.00								
8200.00	91.020	275.882	6851.14	175.62	N	1704.97	W	1713.99
0.00								
8210.00	91.020	275.882	6850.96	176.64	N	1714.92	W	1723.99
0.00								
8220.00	91.020	275.882	6850.78	177.67	N	1724.86	W	1733.99
0.00								
8230.00	91.020	275.882	6850.60	178.69	N	1734.81	W	1743.99
0.00								
8240.00	91.020	275.882	6850.43	179.72	N	1744.76	W	1753.99
0.00								
8250.00	91.020	275.882	6850.25	180.74	N	1754.70	W	1763.99
0.00								
8260.00	91.020	275.882	6850.07	181.77	N	1764.65	W	1773.98
0.00								
8270.00	91.020	275.882	6849.89	182.79	N	1774.59	W	1783.98
0.00								
8280.00	91.020	275.882	6849.71	183.82	N	1784.54	W	1793.98
0.00								
8290.00	91.020	275.882	6849.54	184.84	N	1794.48	W	1803.98
0.00								
8300.00	91.020	275.882	6849.36	185.87	N	1804.43	W	1813.98
0.00								
8310.00	91.020	275.882	6849.18	186.89	N	1814.38	W	1823.98
0.00								
8320.00	91.020	275.882	6849.00	187.92	N	1824.32	W	1833.97
0.00								
8330.00	91.020	275.882	6848.82	188.94	N	1834.27	W	1843.97
0.00								
8340.00	91.020	275.882	6848.65	189.96	N	1844.21	W	1853.97
0.00								
8350.00	91.020	275.882	6848.47	190.99	N	1854.16	W	1863.97
0.00								
8360.00	91.020	275.882	6848.29	192.01	N	1864.11	W	1873.97
0.00								
8370.00	91.020	275.882	6848.11	193.04	N	1874.05	W	1883.97
0.00								
8380.00	91.020	275.882	6847.93	194.06	N	1884.00	W	1893.97
0.00								
8390.00	91.020	275.882	6847.76	195.09	N	1893.94	W	1903.96
0.00								
8400.00	91.020	275.882	6847.58	196.11	N	1903.89	W	1913.96
0.00								
8410.00	91.020	275.882	6847.40	197.14	N	1913.83	W	1923.96
0.00								
8420.00	91.020	275.882	6847.22	198.16	N	1923.78	W	1933.96
0.00								
8430.00	91.020	275.882	6847.04	199.19	N	1933.73	W	1943.96
0.00								
8440.00	91.020	275.882	6846.87	200.21	N	1943.67	W	1953.96
0.00								
8450.00	91.020	275.882	6846.69	201.23	N	1953.62	W	1963.95

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0.00	8460.00	91.020	275.882	6846.51	202.26 N	1963.56 W	1973.95
0.00	8470.00	91.020	275.882	6846.33	203.28 N	1973.51 W	1983.95
0.00	8480.00	91.020	275.882	6846.15	204.31 N	1983.45 W	1993.95
0.00	8490.00	91.020	275.882	6845.98	205.33 N	1993.40 W	2003.95
0.00	8500.00	91.020	275.882	6845.80	206.36 N	2003.35 W	2013.95
0.00	8510.00	91.020	275.882	6845.62	207.38 N	2013.29 W	2023.94
0.00	8520.00	91.020	275.882	6845.44	208.41 N	2023.24 W	2033.94
0.00	8530.00	91.020	275.882	6845.26	209.43 N	2033.18 W	2043.94
0.00	8540.00	91.020	275.882	6845.09	210.46 N	2043.13 W	2053.94
0.00	8550.00	91.020	275.882	6844.91	211.48 N	2053.08 W	2063.94
0.00	8560.00	91.020	275.882	6844.73	212.50 N	2063.02 W	2073.94
0.00	8570.00	91.020	275.882	6844.55	213.53 N	2072.97 W	2083.94
0.00	8580.00	91.020	275.882	6844.37	214.55 N	2082.91 W	2093.93
0.00	8590.00	91.020	275.882	6844.20	215.58 N	2092.86 W	2103.93
0.00	8600.00	91.020	275.882	6844.02	216.60 N	2102.80 W	2113.93
0.00	8610.00	91.020	275.882	6843.84	217.63 N	2112.75 W	2123.93
0.00	8620.00	91.020	275.882	6843.66	218.65 N	2122.70 W	2133.93
0.00	8630.00	91.020	275.882	6843.48	219.68 N	2132.64 W	2143.93
0.00	8640.00	91.020	275.882	6843.31	220.70 N	2142.59 W	2153.92
0.00	8650.00	91.020	275.882	6843.13	221.73 N	2152.53 W	2163.92
0.00	8660.00	91.020	275.882	6842.95	222.75 N	2162.48 W	2173.92
0.00	8670.00	91.020	275.882	6842.77	223.77 N	2172.42 W	2183.92
0.00	8680.00	91.020	275.882	6842.59	224.80 N	2182.37 W	2193.92
0.00	8690.00	91.020	275.882	6842.42	225.82 N	2192.32 W	2203.92
0.00	8700.00	91.020	275.882	6842.24	226.85 N	2202.26 W	2213.91
0.00	8710.00	91.020	275.882	6842.06	227.87 N	2212.21 W	2223.91
0.00	8720.00	91.020	275.882	6841.88	228.90 N	2222.15 W	2233.91
0.00	8730.00	91.020	275.882	6841.70	229.92 N	2232.10 W	2243.91
0.00	8740.00	91.020	275.882	6841.52	230.95 N	2242.04 W	2253.91
0.00	8750.00	91.020	275.882	6841.35	231.97 N	2251.99 W	2263.91
0.00	8760.00	91.020	275.882	6841.17	233.00 N	2261.94 W	2273.90
0.00							

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8770.00	91.020	275.882	6840.99	234.02 N	2271.88 W	2283.90
0.00						
8780.00	91.020	275.882	6840.81	235.05 N	2281.83 W	2293.90
0.00						
8790.00	91.020	275.882	6840.63	236.07 N	2291.77 W	2303.90
0.00						
8800.00	91.020	275.882	6840.46	237.09 N	2301.72 W	2313.90
0.00						
8810.00	91.020	275.882	6840.28	238.12 N	2311.67 W	2323.90
0.00						
8820.00	91.020	275.882	6840.10	239.14 N	2321.61 W	2333.90
0.00						
8830.00	91.020	275.882	6839.92	240.17 N	2331.56 W	2343.89
0.00						
8840.00	91.020	275.882	6839.74	241.19 N	2341.50 W	2353.89
0.00						
8850.00	91.020	275.882	6839.57	242.22 N	2351.45 W	2363.89
0.00						
8860.00	91.020	275.882	6839.39	243.24 N	2361.39 W	2373.89
0.00						
8870.00	91.020	275.882	6839.21	244.27 N	2371.34 W	2383.89
0.00						
8880.00	91.020	275.882	6839.03	245.29 N	2381.29 W	2393.89
0.00						
8890.00	91.020	275.882	6838.85	246.32 N	2391.23 W	2403.88
0.00						
8900.00	91.020	275.882	6838.68	247.34 N	2401.18 W	2413.88
0.00						
8910.00	91.020	275.882	6838.50	248.36 N	2411.12 W	2423.88
0.00						
8920.00	91.020	275.882	6838.32	249.39 N	2421.07 W	2433.88
0.00						
8930.00	91.020	275.882	6838.14	250.41 N	2431.01 W	2443.88
0.00						
8940.00	91.020	275.882	6837.96	251.44 N	2440.96 W	2453.88
0.00						
8950.00	91.020	275.882	6837.79	252.46 N	2450.91 W	2463.87
0.00						
8960.00	91.020	275.882	6837.61	253.49 N	2460.85 W	2473.87
0.00						
8970.00	91.020	275.882	6837.43	254.51 N	2470.80 W	2483.87
0.00						
8980.00	91.020	275.882	6837.25	255.54 N	2480.74 W	2493.87
0.00						
8990.00	91.020	275.882	6837.07	256.56 N	2490.69 W	2503.87
0.00						
9000.00	91.020	275.882	6836.90	257.59 N	2500.64 W	2513.87
0.00						
9010.00	91.020	275.882	6836.72	258.61 N	2510.58 W	2523.87
0.00						
9020.00	91.020	275.882	6836.54	259.63 N	2520.53 W	2533.86
0.00						
9030.00	91.020	275.882	6836.36	260.66 N	2530.47 W	2543.86
0.00						
9040.00	91.020	275.882	6836.18	261.68 N	2540.42 W	2553.86
0.00						
9050.00	91.020	275.882	6836.01	262.71 N	2550.36 W	2563.86
0.00						
9060.00	91.020	275.882	6835.83	263.73 N	2560.31 W	2573.86
0.00						
9070.00	91.020	275.882	6835.65	264.76 N	2570.26 W	2583.86
0.00						
9080.00	91.020	275.882	6835.47	265.78 N	2580.20 W	2593.85

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0.00	9090.00	91.020	275.882	6835.29	266.81 N	2590.15 W	2603.85
0.00	9100.00	91.020	275.882	6835.12	267.83 N	2600.09 W	2613.85
0.00	9110.00	91.020	275.882	6834.94	268.86 N	2610.04 W	2623.85
0.00	9120.00	91.020	275.882	6834.76	269.88 N	2619.98 W	2633.85
0.00	9130.00	91.020	275.882	6834.58	270.90 N	2629.93 W	2643.85
0.00	9140.00	91.020	275.882	6834.40	271.93 N	2639.88 W	2653.84
0.00	9150.00	91.020	275.882	6834.23	272.95 N	2649.82 W	2663.84
0.00	9160.00	91.020	275.882	6834.05	273.98 N	2659.77 W	2673.84
0.00	9170.00	91.020	275.882	6833.87	275.00 N	2669.71 W	2683.84
0.00	9180.00	91.020	275.882	6833.69	276.03 N	2679.66 W	2693.84
0.00	9190.00	91.020	275.882	6833.51	277.05 N	2689.61 W	2703.84
0.00	9200.00	91.020	275.882	6833.34	278.08 N	2699.55 W	2713.84
0.00	9210.00	91.020	275.882	6833.16	279.10 N	2709.50 W	2723.83
0.00	9220.00	91.020	275.882	6832.98	280.13 N	2719.44 W	2733.83
0.00	9230.00	91.020	275.882	6832.80	281.15 N	2729.39 W	2743.83
0.00	9240.00	91.020	275.882	6832.62	282.17 N	2739.33 W	2753.83
0.00	9250.00	91.020	275.882	6832.45	283.20 N	2749.28 W	2763.83
0.00	9260.00	91.020	275.882	6832.27	284.22 N	2759.23 W	2773.83
0.00	9270.00	91.020	275.882	6832.09	285.25 N	2769.17 W	2783.82
0.00	9280.00	91.020	275.882	6831.91	286.27 N	2779.12 W	2793.82
0.00	9290.00	91.020	275.882	6831.73	287.30 N	2789.06 W	2803.82
0.00	9300.00	91.020	275.882	6831.56	288.32 N	2799.01 W	2813.82
0.00	9310.00	91.020	275.882	6831.38	289.35 N	2808.95 W	2823.82
0.00	9320.00	91.020	275.882	6831.20	290.37 N	2818.90 W	2833.82
0.00	9330.00	91.020	275.882	6831.02	291.40 N	2828.85 W	2843.81
0.00	9340.00	91.020	275.882	6830.84	292.42 N	2838.79 W	2853.81
0.00	9350.00	91.020	275.882	6830.67	293.45 N	2848.74 W	2863.81
0.00	9360.00	91.020	275.882	6830.49	294.47 N	2858.68 W	2873.81
0.00	9370.00	91.020	275.882	6830.31	295.49 N	2868.63 W	2883.81
0.00	9380.00	91.020	275.882	6830.13	296.52 N	2878.58 W	2893.81
0.00	9390.00	91.020	275.882	6829.95	297.54 N	2888.52 W	2903.81
0.00							

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9400.00	91.020	275.882	6829.78	298.57 N	2898.47 W	2913.80	
0.00							
9410.00	91.020	275.882	6829.60	299.59 N	2908.41 W	2923.80	
0.00							
9420.00	91.020	275.882	6829.42	300.62 N	2918.36 W	2933.80	
0.00							
9430.00	91.020	275.882	6829.24	301.64 N	2928.30 W	2943.80	
0.00							
9440.00	91.020	275.882	6829.06	302.67 N	2938.25 W	2953.80	
0.00							
9450.00	91.020	275.882	6828.89	303.69 N	2948.20 W	2963.80	
0.00							
9460.00	91.020	275.882	6828.71	304.72 N	2958.14 W	2973.79	
0.00							
9470.00	91.020	275.882	6828.53	305.74 N	2968.09 W	2983.79	
0.00							
9480.00	91.020	275.882	6828.35	306.76 N	2978.03 W	2993.79	
0.00							
9490.00	91.020	275.882	6828.17	307.79 N	2987.98 W	3003.79	
0.00							
9500.00	91.020	275.882	6828.00	308.81 N	2997.92 W	3013.79	
0.00							
9510.00	91.020	275.882	6827.82	309.84 N	3007.87 W	3023.79	
0.00							
9520.00	91.020	275.882	6827.64	310.86 N	3017.82 W	3033.78	
0.00							
9530.00	91.020	275.882	6827.46	311.89 N	3027.76 W	3043.78	
0.00							
9540.00	91.020	275.882	6827.28	312.91 N	3037.71 W	3053.78	
0.00							
9550.00	91.020	275.882	6827.11	313.94 N	3047.65 W	3063.78	
0.00							
9560.00	91.020	275.882	6826.93	314.96 N	3057.60 W	3073.78	
0.00							
9570.00	91.020	275.882	6826.75	315.99 N	3067.54 W	3083.78	
0.00							
9580.00	91.020	275.882	6826.57	317.01 N	3077.49 W	3093.78	
0.00							
9590.00	91.020	275.882	6826.39	318.03 N	3087.44 W	3103.77	
0.00							
9600.00	91.020	275.882	6826.22	319.06 N	3097.38 W	3113.77	
0.00							
9610.00	91.020	275.882	6826.04	320.08 N	3107.33 W	3123.77	
0.00							
9620.00	91.020	275.882	6825.86	321.11 N	3117.27 W	3133.77	
0.00							
9630.00	91.020	275.882	6825.68	322.13 N	3127.22 W	3143.77	
0.00							
9640.00	91.020	275.882	6825.50	323.16 N	3137.17 W	3153.77	
0.00							
9650.00	91.020	275.882	6825.33	324.18 N	3147.11 W	3163.76	
0.00							
9660.00	91.020	275.882	6825.15	325.21 N	3157.06 W	3173.76	
0.00							
9670.00	91.020	275.882	6824.97	326.23 N	3167.00 W	3183.76	
0.00							
9680.00	91.020	275.882	6824.79	327.26 N	3176.95 W	3193.76	
0.00							
9690.00	91.020	275.882	6824.61	328.28 N	3186.89 W	3203.76	
0.00							
9700.00	91.020	275.882	6824.44	329.30 N	3196.84 W	3213.76	
0.00							
9710.00	91.020	275.882	6824.26	330.33 N	3206.79 W	3223.75	

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0.00	9720.00	91.020	275.882	6824.08	331.35 N	3216.73 W	3233.75
0.00	9730.00	91.020	275.882	6823.90	332.38 N	3226.68 W	3243.75
0.00	9740.00	91.020	275.882	6823.72	333.40 N	3236.62 W	3253.75
0.00	9750.00	91.020	275.882	6823.55	334.43 N	3246.57 W	3263.75
0.00	9760.00	91.020	275.882	6823.37	335.45 N	3256.51 W	3273.75
0.00	9770.00	91.020	275.882	6823.19	336.48 N	3266.46 W	3283.74
0.00	9780.00	91.020	275.882	6823.01	337.50 N	3276.41 W	3293.74
0.00	9790.00	91.020	275.882	6822.83	338.53 N	3286.35 W	3303.74
0.00	9800.00	91.020	275.882	6822.66	339.55 N	3296.30 W	3313.74
0.00	9810.00	91.020	275.882	6822.48	340.57 N	3306.24 W	3323.74
0.00	9820.00	91.020	275.882	6822.30	341.60 N	3316.19 W	3333.74
0.00	9830.00	91.020	275.882	6822.12	342.62 N	3326.14 W	3343.74
0.00	9840.00	91.020	275.882	6821.94	343.65 N	3336.08 W	3353.73
0.00	9850.00	91.020	275.882	6821.77	344.67 N	3346.03 W	3363.73
0.00	9860.00	91.020	275.882	6821.59	345.70 N	3355.97 W	3373.73
0.00	9870.00	91.020	275.882	6821.41	346.72 N	3365.92 W	3383.73
0.00	9880.00	91.020	275.882	6821.23	347.75 N	3375.86 W	3393.73
0.00	9890.00	91.020	275.882	6821.05	348.77 N	3385.81 W	3403.73
0.00	9900.00	91.020	275.882	6820.88	349.80 N	3395.76 W	3413.72
0.00	9910.00	91.020	275.882	6820.70	350.82 N	3405.70 W	3423.72
0.00	9920.00	91.020	275.882	6820.52	351.85 N	3415.65 W	3433.72
0.00	9930.00	91.020	275.882	6820.34	352.87 N	3425.59 W	3443.72
0.00	9940.00	91.020	275.882	6820.16	353.89 N	3435.54 W	3453.72
0.00	9950.00	91.020	275.882	6819.99	354.92 N	3445.48 W	3463.72
0.00	9960.00	91.020	275.882	6819.81	355.94 N	3455.43 W	3473.71
0.00	9970.00	91.020	275.882	6819.63	356.97 N	3465.38 W	3483.71
0.00	9980.00	91.020	275.882	6819.45	357.99 N	3475.32 W	3493.71
0.00	9990.00	91.020	275.882	6819.27	359.02 N	3485.27 W	3503.71
0.00	10000.00	91.020	275.882	6819.10	360.04 N	3495.21 W	3513.71
0.00	10010.00	91.020	275.882	6818.92	361.07 N	3505.16 W	3523.71
0.00	10020.00	91.020	275.882	6818.74	362.09 N	3515.11 W	3533.71
0.00							

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10030.00	91.020	275.882	6818.56	363.12 N	3525.05 W	3543.70
0.00						
10040.00	91.020	275.882	6818.38	364.14 N	3535.00 W	3553.70
0.00						
10050.00	91.020	275.882	6818.21	365.16 N	3544.94 W	3563.70
0.00						
10060.00	91.020	275.882	6818.03	366.19 N	3554.89 W	3573.70
0.00						
10070.00	91.020	275.882	6817.85	367.21 N	3564.83 W	3583.70
0.00						
10080.00	91.020	275.882	6817.67	368.24 N	3574.78 W	3593.70
0.00						
10090.00	91.020	275.882	6817.49	369.26 N	3584.73 W	3603.69
0.00						
10100.00	91.020	275.882	6817.32	370.29 N	3594.67 W	3613.69
0.00						
10110.00	91.020	275.882	6817.14	371.31 N	3604.62 W	3623.69
0.00						
10120.00	91.020	275.882	6816.96	372.34 N	3614.56 W	3633.69
0.00						
10130.00	91.020	275.882	6816.78	373.36 N	3624.51 W	3643.69
0.00						
10140.00	91.020	275.882	6816.60	374.39 N	3634.45 W	3653.69
0.00						
10150.00	91.020	275.882	6816.42	375.41 N	3644.40 W	3663.68
0.00						
10160.00	91.020	275.882	6816.25	376.43 N	3654.35 W	3673.68
0.00						
10170.00	91.020	275.882	6816.07	377.46 N	3664.29 W	3683.68
0.00						
10180.00	91.020	275.882	6815.89	378.48 N	3674.24 W	3693.68
0.00						
10190.00	91.020	275.882	6815.71	379.51 N	3684.18 W	3703.68
0.00						
10200.00	91.020	275.882	6815.53	380.53 N	3694.13 W	3713.68
0.00						
10210.00	91.020	275.882	6815.36	381.56 N	3704.07 W	3723.68
0.00						
10220.00	91.020	275.882	6815.18	382.58 N	3714.02 W	3733.67
0.00						
10230.00	91.020	275.882	6815.00	383.61 N	3723.97 W	3743.67
0.00						
10240.00	91.020	275.882	6814.82	384.63 N	3733.91 W	3753.67
0.00						
10250.00	91.020	275.882	6814.64	385.66 N	3743.86 W	3763.67
0.00						
10260.00	91.020	275.882	6814.47	386.68 N	3753.80 W	3773.67
0.00						
10270.00	91.020	275.882	6814.29	387.70 N	3763.75 W	3783.67
0.00						
10280.00	91.020	275.882	6814.11	388.73 N	3773.70 W	3793.66
0.00						
10290.00	91.020	275.882	6813.93	389.75 N	3783.64 W	3803.66
0.00						
10300.00	91.020	275.882	6813.75	390.78 N	3793.59 W	3813.66
0.00						
10310.00	91.020	275.882	6813.58	391.80 N	3803.53 W	3823.66
0.00						
10320.00	91.020	275.882	6813.40	392.83 N	3813.48 W	3833.66
0.00						
10330.00	91.020	275.882	6813.22	393.85 N	3823.42 W	3843.66
0.00						
10340.00	91.020	275.882	6813.04	394.88 N	3833.37 W	3853.65

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0.00	10350.00	91.020	275.882	6812.86	395.90 N	3843.32 W	3863.65
0.00	10360.00	91.020	275.882	6812.69	396.93 N	3853.26 W	3873.65
0.00	10370.00	91.020	275.882	6812.51	397.95 N	3863.21 W	3883.65
0.00	10380.00	91.020	275.882	6812.33	398.97 N	3873.15 W	3893.65
0.00	10390.00	91.020	275.882	6812.15	400.00 N	3883.10 W	3903.65
0.00	10400.00	91.020	275.882	6811.97	401.02 N	3893.04 W	3913.65
0.00	10410.00	91.020	275.882	6811.80	402.05 N	3902.99 W	3923.64
0.00	10420.00	91.020	275.882	6811.62	403.07 N	3912.94 W	3933.64
0.00	10430.00	91.020	275.882	6811.44	404.10 N	3922.88 W	3943.64
0.00	10440.00	91.020	275.882	6811.26	405.12 N	3932.83 W	3953.64
0.00	10450.00	91.020	275.882	6811.08	406.15 N	3942.77 W	3963.64
0.00	10460.00	91.020	275.882	6810.91	407.17 N	3952.72 W	3973.64
0.00	10470.00	91.020	275.882	6810.73	408.20 N	3962.67 W	3983.63
0.00	10480.00	91.020	275.882	6810.55	409.22 N	3972.61 W	3993.63
0.00	10490.00	91.020	275.882	6810.37	410.25 N	3982.56 W	4003.63
0.00	10500.00	91.020	275.882	6810.19	411.27 N	3992.50 W	4013.63
0.00	10510.00	91.020	275.882	6810.02	412.29 N	4002.45 W	4023.63
0.00	10520.00	91.020	275.882	6809.84	413.32 N	4012.39 W	4033.63
0.00	10530.00	91.020	275.882	6809.66	414.34 N	4022.34 W	4043.62
0.00	10540.00	91.020	275.882	6809.48	415.37 N	4032.29 W	4053.62
0.00	10550.00	91.020	275.882	6809.30	416.39 N	4042.23 W	4063.62
0.00	10560.00	91.020	275.882	6809.13	417.42 N	4052.18 W	4073.62
0.00	10570.00	91.020	275.882	6808.95	418.44 N	4062.12 W	4083.62
0.00	10580.00	91.020	275.882	6808.77	419.47 N	4072.07 W	4093.62
0.00	10590.00	91.020	275.882	6808.59	420.49 N	4082.01 W	4103.62
0.00	10600.00	91.020	275.882	6808.41	421.52 N	4091.96 W	4113.61
0.00	10610.00	91.020	275.882	6808.24	422.54 N	4101.91 W	4123.61
0.00	10620.00	91.020	275.882	6808.06	423.56 N	4111.85 W	4133.61
0.00	10630.00	91.020	275.882	6807.88	424.59 N	4121.80 W	4143.61
0.00	10640.00	91.020	275.882	6807.70	425.61 N	4131.74 W	4153.61
0.00	10650.00	91.020	275.882	6807.52	426.64 N	4141.69 W	4163.61
0.00							

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	Cave	Lake	'13'	Federal	Com #1	Lateral	Plan #1	Report	9-6-07	(2).txt
10660.00	91.020	275.882	6807.35	427.66 N	4151.64 W	4173.60				
0.00										
10670.00	91.020	275.882	6807.17	428.69 N	4161.58 W	4183.60				
0.00										
10680.00	91.020	275.882	6806.99	429.71 N	4171.53 W	4193.60				
0.00										
10690.00	91.020	275.882	6806.81	430.74 N	4181.47 W	4203.60				
0.00										
10700.00	91.020	275.882	6806.63	431.76 N	4191.42 W	4213.60				
0.00										
10710.00	91.020	275.882	6806.46	432.79 N	4201.36 W	4223.60				
0.00										
10720.00	91.020	275.882	6806.28	433.81 N	4211.31 W	4233.59				
0.00										
10730.00	91.020	275.882	6806.10	434.83 N	4221.26 W	4243.59				
0.00										
10740.00	91.020	275.882	6805.92	435.86 N	4231.20 W	4253.59				
0.00										
10750.00	91.020	275.882	6805.74	436.88 N	4241.15 W	4263.59				
0.00										
10760.00	91.020	275.882	6805.57	437.91 N	4251.09 W	4273.59				
0.00										
10770.00	91.020	275.882	6805.39	438.93 N	4261.04 W	4283.59				
0.00										
10780.00	91.020	275.882	6805.21	439.96 N	4270.98 W	4293.58				
0.00										
10790.00	91.020	275.882	6805.03	440.98 N	4280.93 W	4303.58				
0.00										
10800.00	91.020	275.882	6804.85	442.01 N	4290.88 W	4313.58				
0.00										
10810.00	91.020	275.882	6804.68	443.03 N	4300.82 W	4323.58				
0.00										
10820.00	91.020	275.882	6804.50	444.06 N	4310.77 W	4333.58				
0.00										
10830.00	91.020	275.882	6804.32	445.08 N	4320.71 W	4343.58				
0.00										
10840.00	91.020	275.882	6804.14	446.10 N	4330.66 W	4353.58				
0.00										
10850.00	91.020	275.882	6803.96	447.13 N	4340.61 W	4363.57				
0.00										
10860.00	91.020	275.882	6803.79	448.15 N	4350.55 W	4373.57				
0.00										
10870.00	91.020	275.882	6803.61	449.18 N	4360.50 W	4383.57				
0.00										
10880.00	91.020	275.882	6803.43	450.20 N	4370.44 W	4393.57				
0.00										
10890.00	91.020	275.882	6803.25	451.23 N	4380.39 W	4403.57				
0.00										
10900.00	91.020	275.882	6803.07	452.25 N	4390.33 W	4413.57				
0.00										
10910.00	91.020	275.882	6802.90	453.28 N	4400.28 W	4423.56				
0.00										
10920.00	91.020	275.882	6802.72	454.30 N	4410.23 W	4433.56				
0.00										
10930.00	91.020	275.882	6802.54	455.33 N	4420.17 W	4443.56				
0.00										
10940.00	91.020	275.882	6802.36	456.35 N	4430.12 W	4453.56				
0.00										
10950.00	91.020	275.882	6802.18	457.37 N	4440.06 W	4463.56				
0.00										
10960.00	91.020	275.882	6802.01	458.40 N	4450.01 W	4473.56				
0.00										
10970.00	91.020	275.882	6801.83	459.42 N	4459.95 W	4483.55				

Cave Lake '13' Federal Com #1 Lateral Plan #1 Report 9-6-07 (2).txt

0.00	10980.00	91.020	275.882	6801.65	460.45 N	4469.90 W	4493.55
0.00	10990.00	91.020	275.882	6801.47	461.47 N	4479.85 W	4503.55
0.00	11000.00	91.020	275.882	6801.29	462.50 N	4489.79 W	4513.55
0.00	11010.00	91.020	275.882	6801.12	463.52 N	4499.74 W	4523.55
0.00	11020.00	91.020	275.882	6800.94	464.55 N	4509.68 W	4533.55
0.00	11030.00	91.020	275.882	6800.76	465.57 N	4519.63 W	4543.55
0.00	11040.00	91.020	275.882	6800.58	466.60 N	4529.57 W	4553.54
0.00	11050.00	91.020	275.882	6800.40	467.62 N	4539.52 W	4563.54
0.00	11060.00	91.020	275.882	6800.23	468.65 N	4549.47 W	4573.54
0.00	11070.00	91.020	275.882	6800.05	469.67 N	4559.41 W	4583.54
0.00	11072.68	91.020	275.882	6800.00	469.94 N	4562.08 W	4586.22
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 275.881° (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 0.115°.

Based upon Minimum Curvature type calculations, at a Measured Depth of 11072.68ft., the Bottom Hole Displacement is 4586.22ft., in the Direction of 275.881° (Grid).

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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

06 September, 2007



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OCT 23 2007



Black Viper Energy Survey Report

OCD-AR 1201A



Company:	Cimarex Energy Co., Inc.	Local Co-ordinate Reference:	Well Cave Lake '13' Federal Com #1
Project:	Eddy Co., New Mexico	TVD Reference:	WELL @ 3571.00ft (Original Well Elev)
Site:	Cave Lake '13' Federal Com #1	MD Reference:	WELL @ 3571.00ft (Original Well Elev)
Well:	Cave Lake '13' Federal Com #1	North Reference:	Grd
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.14.10 Server DB

Project: Eddy Co., New Mexico

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

Site: Cave Lake '13' Federal Com #1

Site Position:	From:	Map	Northing:	697,283.27 ft	Latitude:	32° 54' 59.993 N
			Easting:	606,084.82 ft	Longitude:	104° 7' 20.427 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:	697,283.27 ft	Latitude:	32° 54' 59.993 N
	+E-W	0.00 ft	Easting:	606,084.82 ft	Longitude:	104° 7' 20.427 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	9/6/2007	8.33	60.83	49,343

Design: Plan #1

Audit Notes:

Version:	Phase:	PROTOTYPE	Tie On Depth:	6,000.00
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Vertical Section	Depth From (TVD) (ft)	+N/S (ft)	+E/W (ft)	Direction (°)
	0.00	0.00	0.00	275.88

Survey Tool Program Date: 9/6/2007

From (ft)	To (ft)	Survey (Wellbore)	Tool Name	Description
6,000.00	11,072.68	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)
6,000.00	0.00	0.00	6,000.00	0.00	0.00	0.00	0.00	0.00	0.00
KOP - build 8.00° / 100									
6,050.00	4.00	275.88	6,049.96	0.18	-1.74	1.74	8.00	8.00	0.00
6,100.00	8.00	275.88	6,099.68	0.71	-6.93	6.97	8.00	8.00	0.00
6,150.00	12.00	275.88	6,148.91	1.60	-15.57	15.65	8.00	8.00	0.00
6,200.00	16.00	275.88	6,197.41	2.84	-27.60	27.74	8.00	8.00	0.00
6,250.00	20.00	275.88	6,244.95	4.42	-42.96	43.19	8.00	8.00	0.00
6,300.00	24.00	275.88	6,291.30	6.34	-61.59	61.92	8.00	8.00	0.00
6,350.00	28.00	275.88	6,336.23	8.59	-83.39	83.83	8.00	8.00	0.00
6,400.00	32.00	275.88	6,379.53	11.15	-108.25	108.83	8.00	8.00	0.00
6,450.00	36.00	275.88	6,420.97	14.01	-136.06	136.78	8.00	8.00	0.00
6,500.00	40.00	275.88	6,460.36	17.17	-166.68	167.56	8.00	8.00	0.00
6,550.00	44.00	275.88	6,497.51	20.59	-199.95	201.01	8.00	8.00	0.00



Black Viper Energy Survey Report

OCT 23 2007
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Company:	Cimarex Energy Co., Inc	Local Co-ordinate Reference:	Well Cave Lake '13' Federal Com #1
Project:	Eddy Co., New Mexico	TVD Reference:	WELL @ 3571.00ft (Original Well Elev)
Site:	Cave Lake '13' Federal Com #1	MD Reference:	WELL @ 3571.00ft (Original Well Elev)
Well:	Cave Lake '13' Federal Com #1	North Reference:	Grid
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	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)
6,600.00	48.00	275.88	6,532.24	24.28	-235.72	236.97	8.00	8.00	0.00
EOB - Hold 48.0° Inc. :: 275.88° Azi.									
6,700.00	48.00	275.88	6,599.15	31.89	-309.64	311.28	0.00	0.00	0.00
6,800.00	48.00	275.88	6,666.06	39.50	-383.57	385.60	0.00	0.00	0.00
6,900.00	48.00	275.88	6,732.98	47.12	-457.49	459.91	0.00	0.00	0.00
7,000.00	48.00	275.88	6,799.89	54.73	-531.41	534.23	0.00	0.00	0.00
7,030.62	48.00	275.88	6,820.38	57.06	-554.05	556.98	0.00	0.00	0.00
Build - 30.0° / 100									
7,040.00	50.82	275.88	6,826.48	57.79	-561.13	564.10	30.00	30.00	0.00
7,050.00	53.82	275.88	6,832.59	58.60	-569.01	572.02	30.00	30.00	0.00
7,060.00	56.82	275.88	6,838.28	59.44	-577.19	580.24	30.00	30.00	0.00
7,070.00	59.82	275.88	6,843.54	60.31	-585.65	588.75	30.00	30.00	0.00
7,080.00	62.82	275.88	6,848.34	61.21	-594.37	597.52	30.00	30.00	0.00
7,090.00	65.82	275.88	6,852.67	62.14	-603.34	606.53	30.00	30.00	0.00
7,100.00	68.82	275.88	6,856.53	63.08	-612.51	615.75	30.00	30.00	0.00
7,110.00	71.82	275.88	6,859.89	64.05	-621.88	625.17	30.00	30.00	0.00
7,110.21	71.82	275.88	6,859.96	64.07	-622.07	625.37	0.00	0.00	0.00
Wolfcamp, Dolomite									
7,120.00	74.82	275.88	6,862.76	65.03	-631.41	634.75	30.63	30.63	0.00
7,130.00	77.82	275.88	6,865.13	66.02	-641.07	644.46	30.00	30.00	0.00
7,140.00	80.82	275.88	6,866.98	67.03	-650.84	654.29	30.00	30.00	0.00
7,150.00	83.82	275.88	6,868.32	68.05	-660.70	664.20	30.00	30.00	0.00
7,160.00	86.82	275.88	6,869.14	69.07	-670.61	674.16	30.00	30.00	0.00
7,170.00	89.82	275.88	6,869.43	70.09	-680.56	684.16	30.00	30.00	0.00
7,174.02	91.02	275.88	6,869.40	70.50	-684.55	688.17	30.00	30.00	0.00
EOC - Hold 91.0° Inc. :: 275.88° Azi.									
7,200.00	91.02	275.88	6,868.94	73.16	-710.39	714.15	0.00	0.00	0.00
7,300.00	91.02	275.88	6,867.16	83.41	-809.85	814.14	0.00	0.00	0.00
7,400.00	91.02	275.88	6,865.38	93.66	-909.31	914.12	0.00	0.00	0.00
7,500.00	91.02	275.88	6,863.60	103.90	-1,008.77	1,014.10	0.00	0.00	0.00
7,600.00	91.02	275.88	6,861.82	114.15	-1,108.23	1,114.09	0.00	0.00	0.00
7,700.00	91.02	275.88	6,860.04	124.39	-1,207.68	1,214.07	0.00	0.00	0.00
7,800.00	91.02	275.88	6,858.26	134.64	-1,307.14	1,314.06	0.00	0.00	0.00
7,900.00	91.02	275.88	6,856.48	144.88	-1,406.60	1,414.04	0.00	0.00	0.00
8,000.00	91.02	275.88	6,854.70	155.13	-1,506.06	1,514.03	0.00	0.00	0.00
8,100.00	91.02	275.88	6,852.92	165.37	-1,605.51	1,614.01	0.00	0.00	0.00
8,200.00	91.02	275.88	6,851.14	175.62	-1,704.97	1,713.99	0.00	0.00	0.00
8,300.00	91.02	275.88	6,849.36	185.87	-1,804.43	1,813.98	0.00	0.00	0.00
8,400.00	91.02	275.88	6,847.58	196.11	-1,903.89	1,913.96	0.00	0.00	0.00
8,500.00	91.02	275.88	6,845.80	206.36	-2,003.35	2,013.95	0.00	0.00	0.00
8,600.00	91.02	275.88	6,844.02	216.60	-2,102.80	2,113.93	0.00	0.00	0.00
8,700.00	91.02	275.88	6,842.24	226.85	-2,202.26	2,213.91	0.00	0.00	0.00
8,800.00	91.02	275.88	6,840.46	237.09	-2,301.72	2,313.90	0.00	0.00	0.00
8,900.00	91.02	275.88	6,838.68	247.34	-2,401.18	2,413.88	0.00	0.00	0.00
9,000.00	91.02	275.88	6,836.90	257.59	-2,500.64	2,513.87	0.00	0.00	0.00
9,100.00	91.02	275.88	6,835.12	267.83	-2,600.09	2,613.85	0.00	0.00	0.00
9,200.00	91.02	275.88	6,833.34	278.08	-2,699.55	2,713.84	0.00	0.00	0.00
9,300.00	91.02	275.88	6,831.56	288.32	-2,799.01	2,813.82	0.00	0.00	0.00
9,400.00	91.02	275.88	6,829.78	298.57	-2,898.47	2,913.80	0.00	0.00	0.00
9,500.00	91.02	275.88	6,828.00	308.81	-2,997.92	3,013.79	0.00	0.00	0.00
9,600.00	91.02	275.88	6,826.22	319.06	-3,097.38	3,113.77	0.00	0.00	0.00
9,700.00	91.02	275.88	6,824.44	329.30	-3,196.84	3,213.76	0.00	0.00	0.00
9,800.00	91.02	275.88	6,822.66	339.55	-3,296.30	3,313.74	0.00	0.00	0.00
9,900.00	91.02	275.88	6,820.88	349.80	-3,395.76	3,413.72	0.00	0.00	0.00



Black Viper Energy
Survey Report

OCT 23 2007
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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

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	275.88	6,819.10	360.04	-3,495.21	3,513.71	0.00	0.00	0.00
10,100.00	91.02	275.88	6,817.32	370.29	-3,594.67	3,613.69	0.00	0.00	0.00
10,200.00	91.02	275.88	6,815.53	380.53	-3,694.13	3,713.68	0.00	0.00	0.00
10,300.00	91.02	275.88	6,813.75	390.78	-3,793.59	3,813.66	0.00	0.00	0.00
10,400.00	91.02	275.88	6,811.97	401.02	-3,893.04	3,913.65	0.00	0.00	0.00
10,500.00	91.02	275.88	6,810.19	411.27	-3,992.50	4,013.63	0.00	0.00	0.00
10,600.00	91.02	275.88	6,808.41	421.52	-4,091.96	4,113.61	0.00	0.00	0.00
10,700.00	91.02	275.88	6,806.63	431.76	-4,191.42	4,213.60	0.00	0.00	0.00
10,800.00	91.02	275.88	6,804.85	442.01	-4,290.88	4,313.58	0.00	0.00	0.00
10,900.00	91.02	275.88	6,803.07	452.25	-4,390.33	4,413.57	0.00	0.00	0.00
11,000.00	91.02	275.88	6,801.29	462.50	-4,489.79	4,513.55	0.00	0.00	0.00
11,072.68	91.02	275.88	6,800.00	469.94	-4,562.08	4,586.22	0.00	0.00	0.00

PBHL#1[CL13FCom#1]

Targets

Target Name

hit/miss	target Dip	Angle	Dip Dir	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	(ft)		

PBHL#1[CL13FCom#10

Hydrogen Sulfide Drilling Operations Plan
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 1
Unit P Section 13
T16S R28E Eddy County, NM

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- 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.

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Surface Use Plan
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- 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 the junction of US Hwy 82 and Co Rd 214 (Barnaval), go North 6.8 miles to "Y " Take left fork for 2.0 miles to lease road.

- 2 PLANNED ACCESS ROADS: No new roads will be constructed.

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"

Surface Use Plan
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 1
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- 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.
- 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 allowed to dry in the reserve pit until the pit is dry enough for breaking out. In the event that drillings fluids do not dry out in a reasonable time they 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.

Surface Use Plan
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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, the reserve pit will be allowed to dry properly, and fluid 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 recountered 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.

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

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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 State of New Mexico. 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.

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Operator Certification Statement
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 1
Unit P Section 13
T16S R28E Eddy County, NM

OPERATOR'S REPRESENTATIVE:

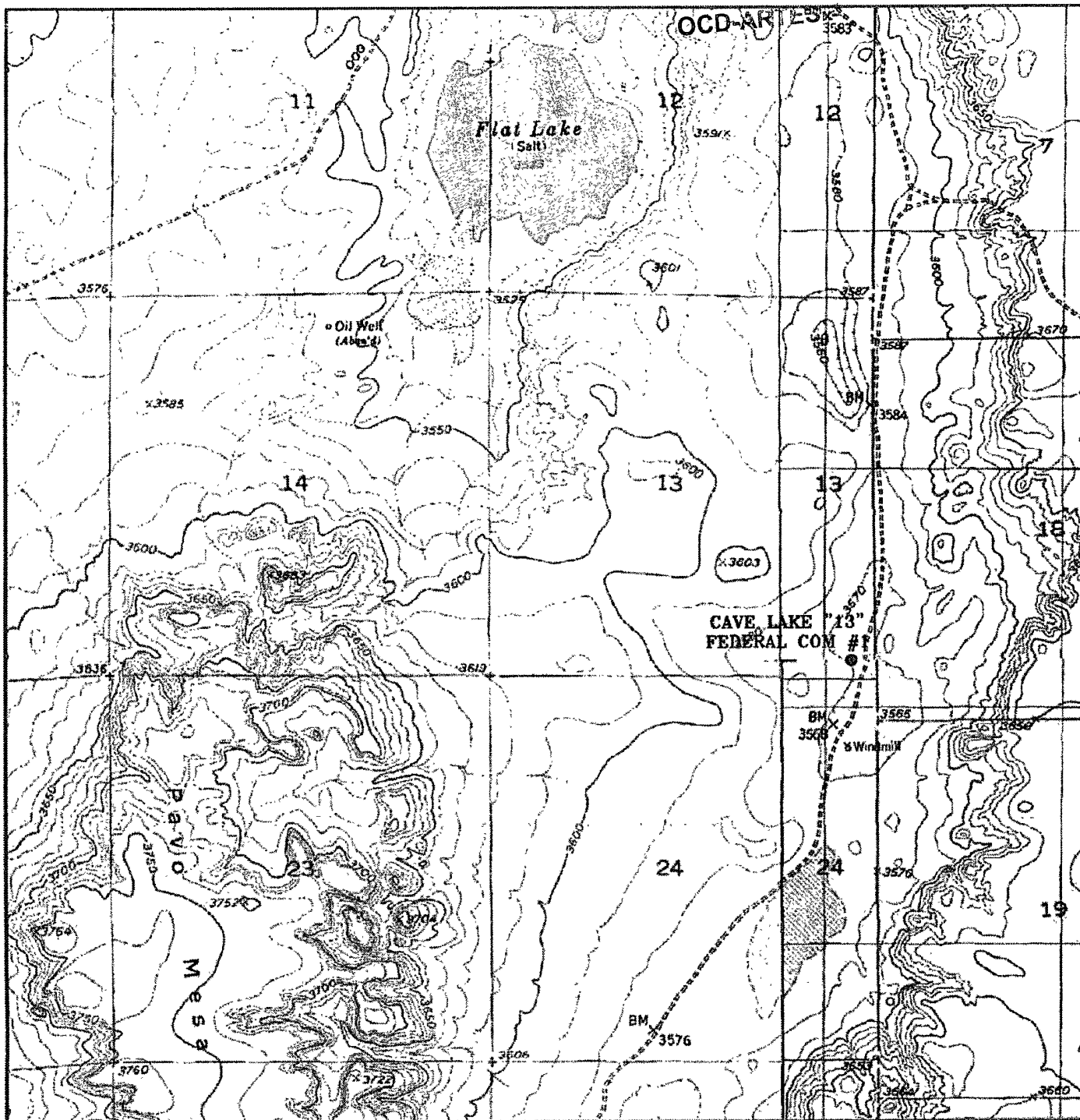
Cimarex Energy Co. of Colorado
P.O. Box 140907
Irving, TX 75014
Office Phone: (972) 443-6489
Zeno Farris

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
DATE: September 6, 2007
TITLE: Manager Operations Administration

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CAVE LAKE "13" FEDERAL COM #1
 Located 260' FSL and 330' FEL
 Section 13, 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 18506T

Survey Date: 09-05-2007

Scale: 1" = 2000'

Date: 09-05-2007

CIMAREX
ENERGY CO.
OF COLORADO

Exhibit C



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V. SPECIAL REQUIREMENT(S)

Cave & 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.

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.

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.

Regardless of the type of drilling machinery used, if a void (bit drops) of four feet or more and circulation losses greater than 75 percent occur simultaneously while drilling in any cave-bearing zone, drilling operations will immediately stop and the BLM will be notified by the operator. The BLM will assess the consequences of the situation and work with operator on corrective actions to resolve the problem.

Delayed Blasting:

Any blasting will be a phased and time delayed.



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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.

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 092607