

AUG 27 2008

OCD-ARTESIA OCD-ARTESIA

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ATS-08-165
EA-08-710Form 3160-3
(April 2004)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

Split Estate

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

APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of Work: ☒ DRILL ☐ REENTER		5. Lease Serial No. SHL State Lease BHL 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		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. 2 36811	
3b. Phone No. (include area code) 972-401-3111		9. API Well No. 30-015-36568	
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At Surface 1980' FSL & 330' FEL At proposed prod Zone 1980' FSL & 330' FWL Horizontal Abo test		10. Field and Pool, or Exploratory Abo Crow Flat 97691	
14. Distance in miles and direction from nearest town or post office* Roswell Controlled Water Basin		11. Sec., T. R. M. or Blk. and Survey or Area 13-16S-28E	
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any) 330'	16. No of acres in lease 1760	17. Spacing Unit dedicated to this well N2S2 160	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. N/A	19. Proposed Depth Pilot Hole 7,350' MD 11,243' TVD 6,875'	20. BLM/BIA Bond No. on File NM-2575	
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 3,574' GR	22. Approximate date work will start* 05.01.08	23. Estimated duration 25-30 days	
24. Attachments			

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

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

25. Signature <i>Zeno Farris</i>	Name (Printed/Typed) Zeno Farris	Date 03.31.08
Title Manager Operations Administration		
Approved By (Signature) <i>/s/ Don Peterson</i>	Name (Printed/Typed) /s/ Don Peterson CARLSBAD FIELD OFFICE	Date AUG 18 2008
Title FIELD MANAGER		

Application approval does not warrant or certify that it
conduct operations thereon

Conditions of approval, if any, are attached.

Title 18 U.S.S. Section 1001 and Title 43 U.S.C. Section
States any false, fictitious, or fraudulent statements or

* (Instructions on page 2)

NOTE: NEW PIT RULE
19-15-17 NMAC PART 17
A form C-144 must be approved
before starting drilling operations.

base which would entitle the applicant to

APPROVAL FOR TWO YEARS

to any department or agency of the United

APPROVAL SUBJECT TO
GENERAL REQUIREMENTS
AND SPECIAL STIPULATIONS
ATTACHEDSEE ATTACHED FOR
CONDITIONS OF APPROVAL

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

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

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

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

State of New Mexico
Energy, Minerals and Natural Resources Department

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

Form C-102
Revised October 12, 2005

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code <i>97691</i>	Pool Name <i>Crow Hats</i>
Property Code <i>36811</i>	Property Name CAVE LAKE "13" FEDERAL COM	Well Number 2
OGRID No. 162683	Operator Name CIMAREX ENERGY CO. OF COLORADO	Elevation 3574'

Surface Location

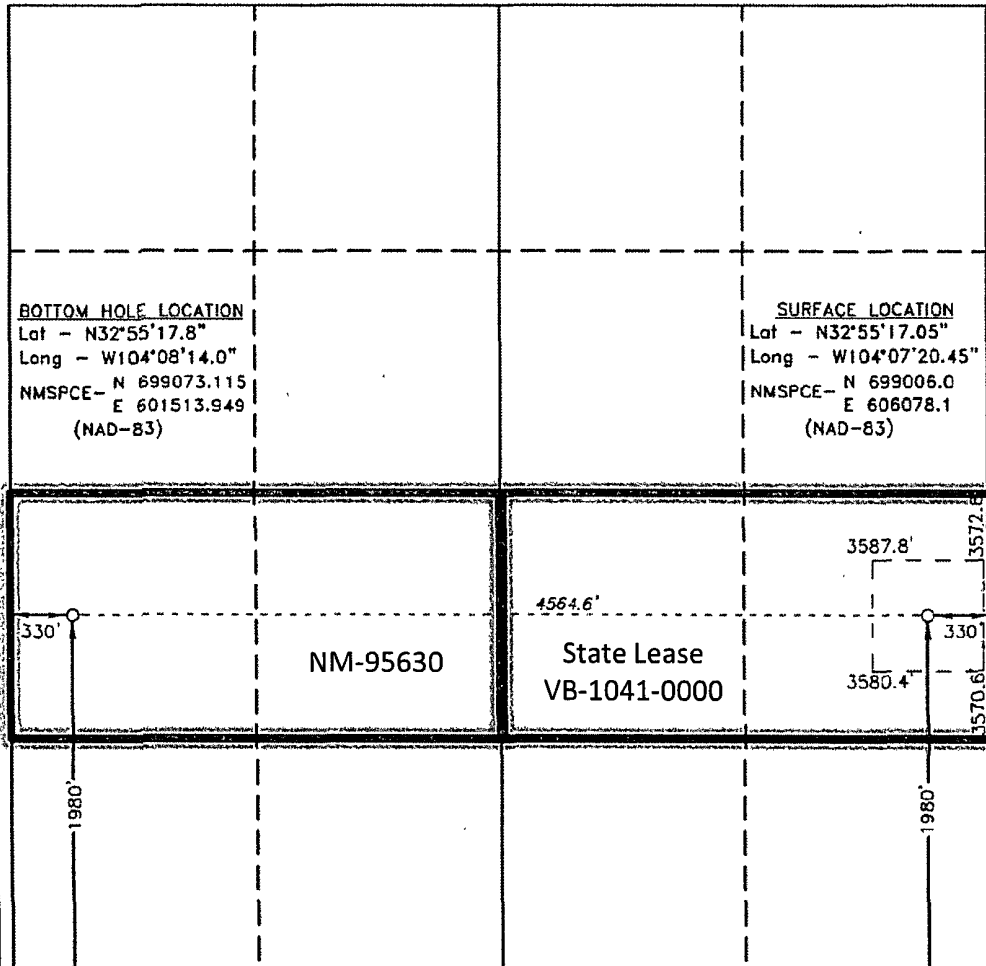
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
I	13	16 S	28 E		1980	SOUTH	330	EAST	EDDY

Bottom Hole Location If Different From Surface

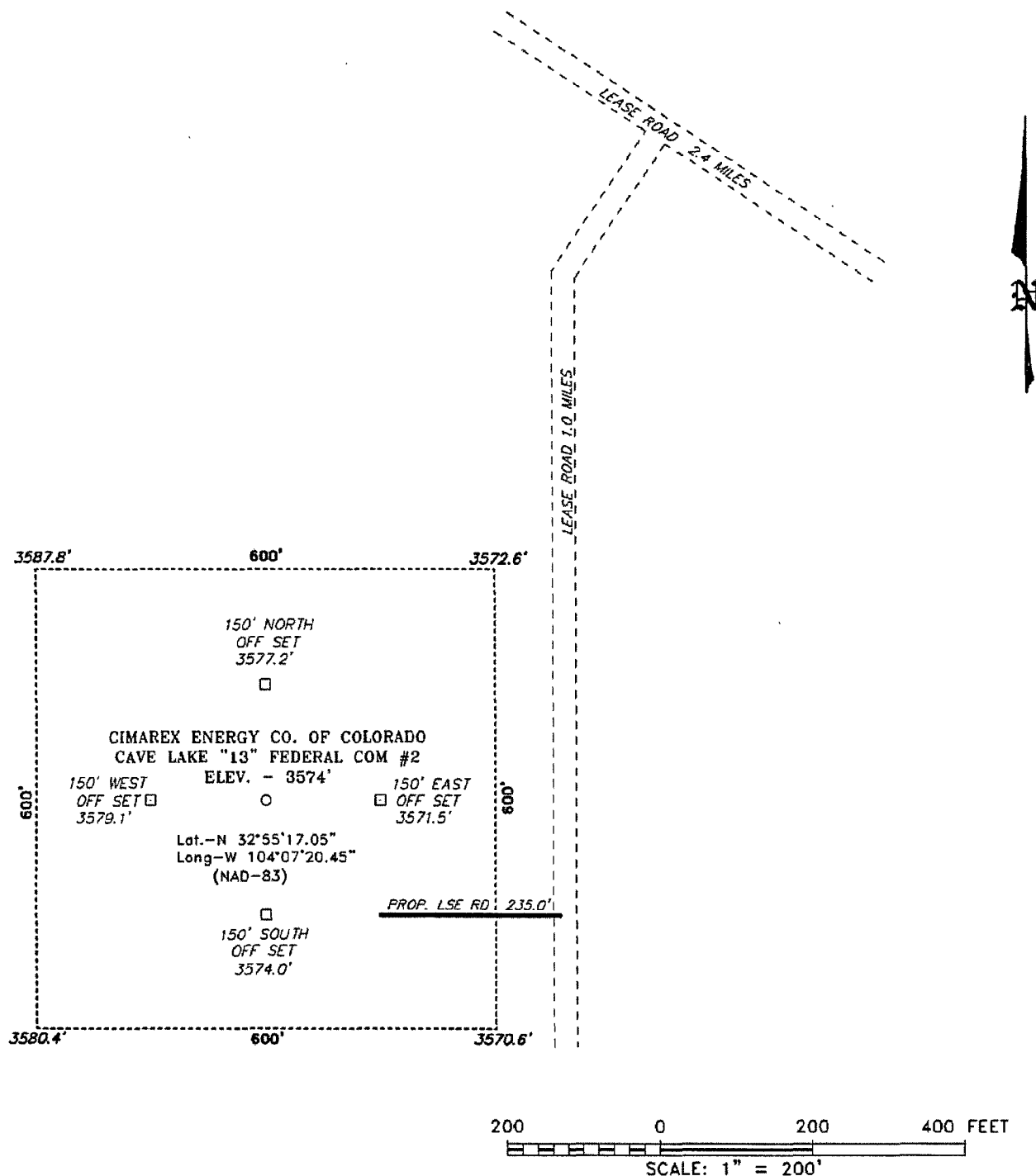
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
L	13	16 S	28 E		1980	SOUTH	330	WEST	EDDY

Dedicated Acres	Joint or Infill	Consolidation Code	Order No.
160		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°55'17.8" Long - W104°08'14.0" NMSPCE- N 699073.115 E 601513.949 (NAD-83)		SURFACE LOCATION Lat - N32°55'17.05" Long - W104°07'20.45" NMSPCE- N 699006.0 E 606078.1 (NAD-83)	
		OPERATOR CERTIFICATION <i>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.</i> <i>Zeno Farris</i> 03-31-08 Signature Date Zeno Farris Printed Name	
SURVEYOR CERTIFICATION <i>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.</i> NOVEMBER 2 2007 Date Surveyed Signature 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 1.0 MILES TO PROPOSED LOCATION.

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

W.O. Number: 18789 Drawn By: J. SMALL

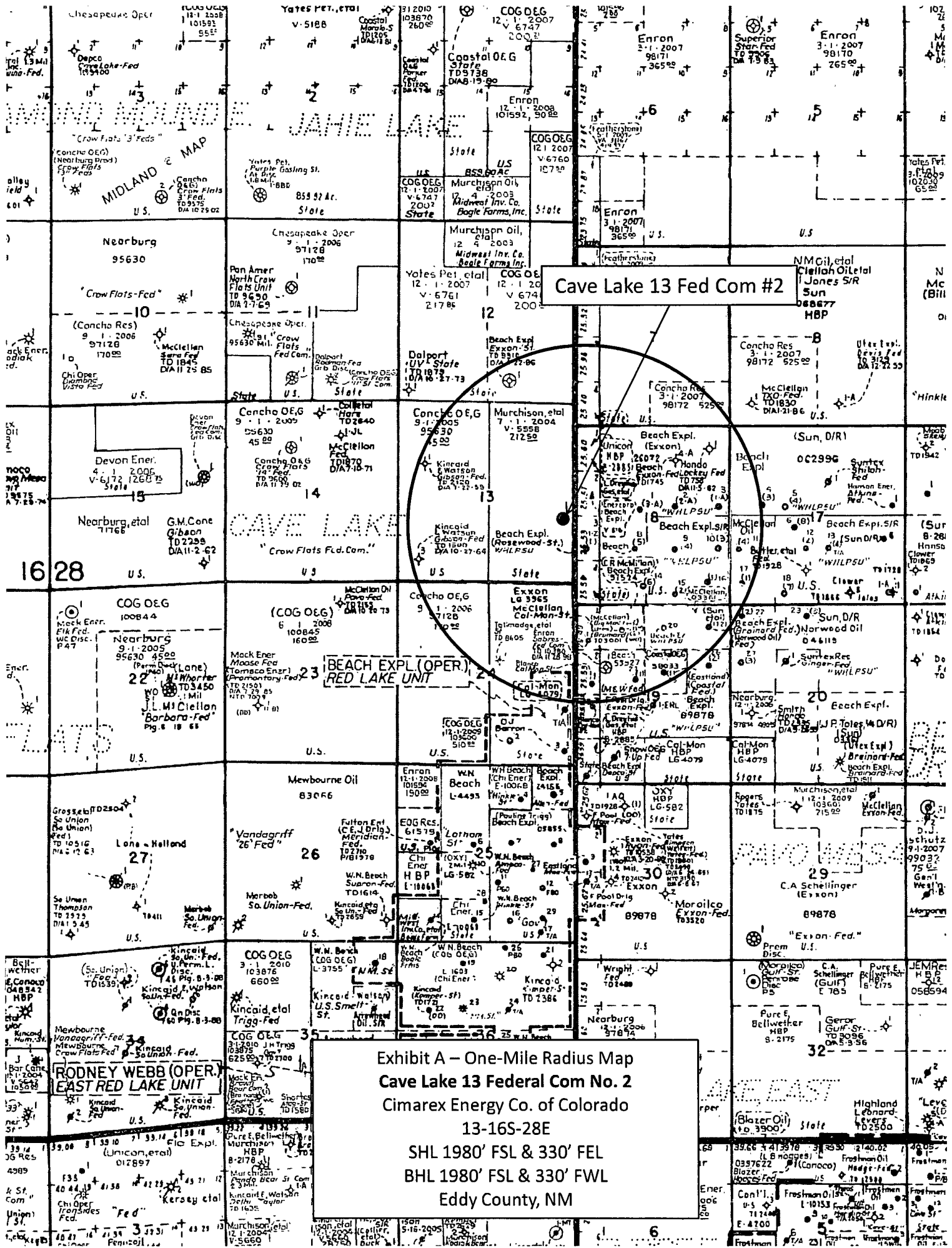
Date: 11-08-2007 Disk: JMS 18789W

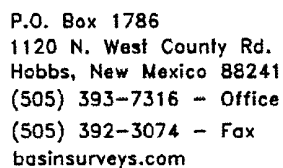
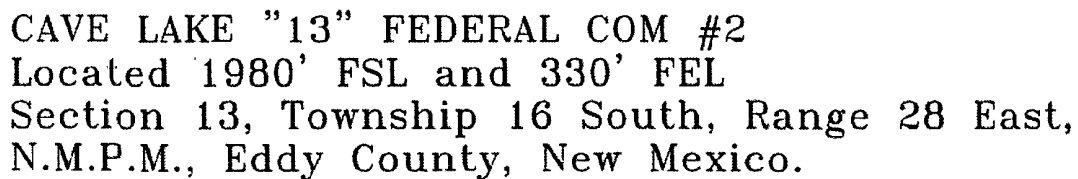
CIMAREX ENERGY CO. OF COLORADO

REF: CAVE LAKE "13" FEDERAL COM #2 / WELL PAD TOPO

THE CAVE LAKE "13" FEDERAL COM #2 LOCATED 1980' 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: 11-06-2007 Sheet 1 of 1 Sheets

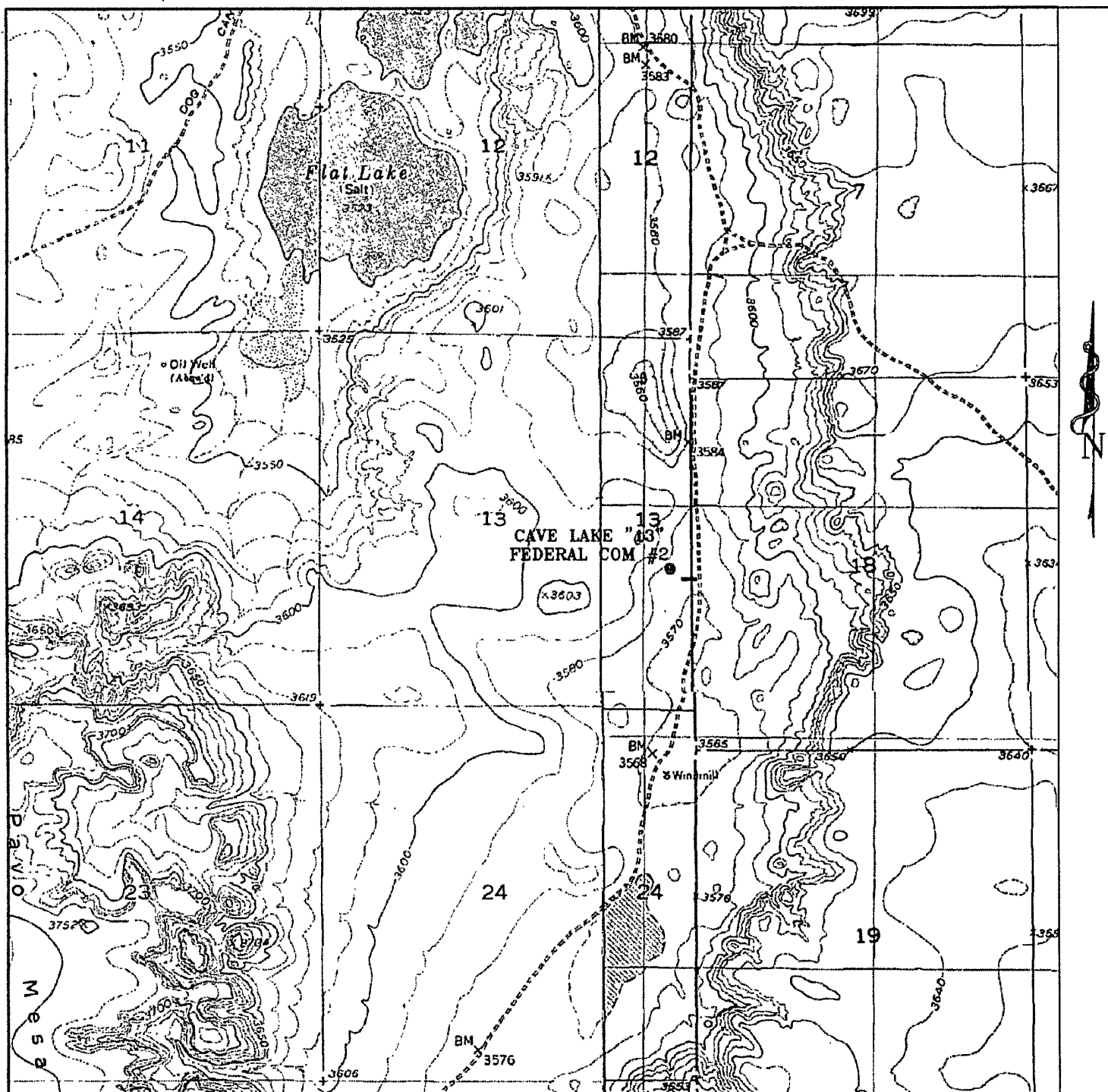




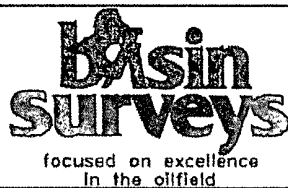
Date: 11-08-2007

CIMAREX
ENERGY CO.
OF COLORADO

Exhibit B



CAVE LAKE "13" FEDERAL COM #2
 Located 1980' FSL and 330' FEL
 Section 13, Township 16 South, Range 28 East,
 N.M.P.M., Eddy County, New Mexico.



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 18789T

Survey Date: 11-06-2007

Scale: 1" = 2000'

Date: 11-08-2007

**CIMAREX
 ENERGY CO.
 OF COLORADO**

Exhibit C

Application to Drill
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 2
Unit I, Section 13
T16S-R28E, Eddy County, NM

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

- 1 Location: SHL 1980' FSL & 330' FEL
BHL 1980' FSL & 330' FWL
- 2 Elevation above sea level: 3,574 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: Pilot Hole 7,350' MD 11,243' TVD 6,875'
- 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:
Abo Oil

8 Proposed Mud Circulating System:

Depth	Mud Wt	Visc	Fluid Loss	Type Mud
0' to 340'	8.4 - 8.6	28	NC	FW
340' to 2,500'	10.0	30-32	NC	Brine water
2,500' to 7,350'	8.4 - 9.5	30-32	NC	FW, brine
6,393' to 6,893'	9.0	28-32	May lose circ	Cut brine
6,894' to 11,243'	9.0	28-32	May lose circ	Cut brine

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.

Proposed drilling Plan

Drill 8½" hole to 7,350' (pilot hole) and cement (see page 2 - Application to Drill). Set whipstock plug @ 6,510.' Mill window from 6,495' to 6,505.' Kick off 6½" lateral @ 6,500.' Drill 6½" hole to MD 11,243' and TVD 6,875.' Install 4½" **Peak Completion Assembly**. BTC from 6,393' to 6,893.' LTC from 6,894' to 11,243.' Liner length 4,849.' Lateral drill hole length 4,565.'

Application to Drill
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 2
Unit I, Section 13
T16S-R28E, Eddy County, NM

9 Casing & Cementing Program:

String	Hole Size	Depth	Casing OD	Weight	Thread	Collar	Grade
Surface	17½"	0' to 340'	New 13½"	48#	8-R	STC	H-40
Intermediate	12¼"	0' to 2,500'	New 9½"	40#	8-R	LTC	J-55
Pilot Hole	8¾"	0' to 7,350'	New 7"	26#	8-R	LTC	P-110
Lateral	6⅝"	6,393' to 6,893'	New 4½"	11.6#	8-R	BTC	P-110
Lateral	6⅝"	6,894' to 11,243'	New 4½"	11.6#	8-R	LTC	P-110

10 Cementing:

Surface

Lead: 110 sx Premium Plus + 1% CaCl₂ + 0.125# Poly-e-flake (wt 12.5, yld 1.97)

Tail: 220 sx Premium Plus + 2% CaCl₂ (wt 14.8, yld 1.35)

TOC Surface

Intermediate

Lead: 415 sks Interfill C + 0.125# Poly-E-Flake (wt 11.9, yld 2.45)

Tail: 215 sks Premium Plus + 1% CaCl₂ (wt 14.8, yld 1.34)

TOC Surface

Pilot Hole

Lead: 270 sx Interfill H + 0.1% HR-7 + 0.125# Poly-e-flake (wt 11.9, yld 2.49)

Tail: 170 sx Super H + 0.5% Halad-344 + 0.4% CFR-3 + 1# Salt + 5# Gilsonite + 0.125# Poly-e-flake + 0.35% HR-7 (wt 13.2, yld 1.61)

TOC 2300'

Lateral

No cement needed. Peak completion assembly.

Fresh water zones will be protected by setting 13½" casing at 340' and cementing to surface. Hydrocarbon zones will be protected by setting 9½" casing at 2500' and cementing to surface, and by setting 7" casing at 7350' and cementing to 2300'.

<u>Collapse Factor</u>	<u>Burst Factor</u>	<u>Tension Factor</u>
1.125	1.125	1.6

11 Pressure control Equipment:

Exhibit "E". A 11" 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 and 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 13½" 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 13½" casing to 1000 psi using rig pumps. The BOP will be tested to 3000 psi by an independent service company.

Application to Drill
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 2
Unit I, Section 13
T16S-R28E, Eddy County, NM

12 Testing, Logging and Coring Program:

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

13 Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex does not anticipate that there will be enough H₂S from the surface to the Abo formations to meet the BLM's minimum requirements for the submission of an "H₂S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H₂S Safety package on all wells, attached is an "H₂S Drilling Operations Plan." 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 **2300 psi** Estimated BHT **110°**

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

Drilling expected to take 10-15 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.

Abo pay will be perforated and stimulated.

The proposed well will be tested and potentialized as **an oil well.**

Patterson Rig 74

Cimarex Energy Co. of Colorado

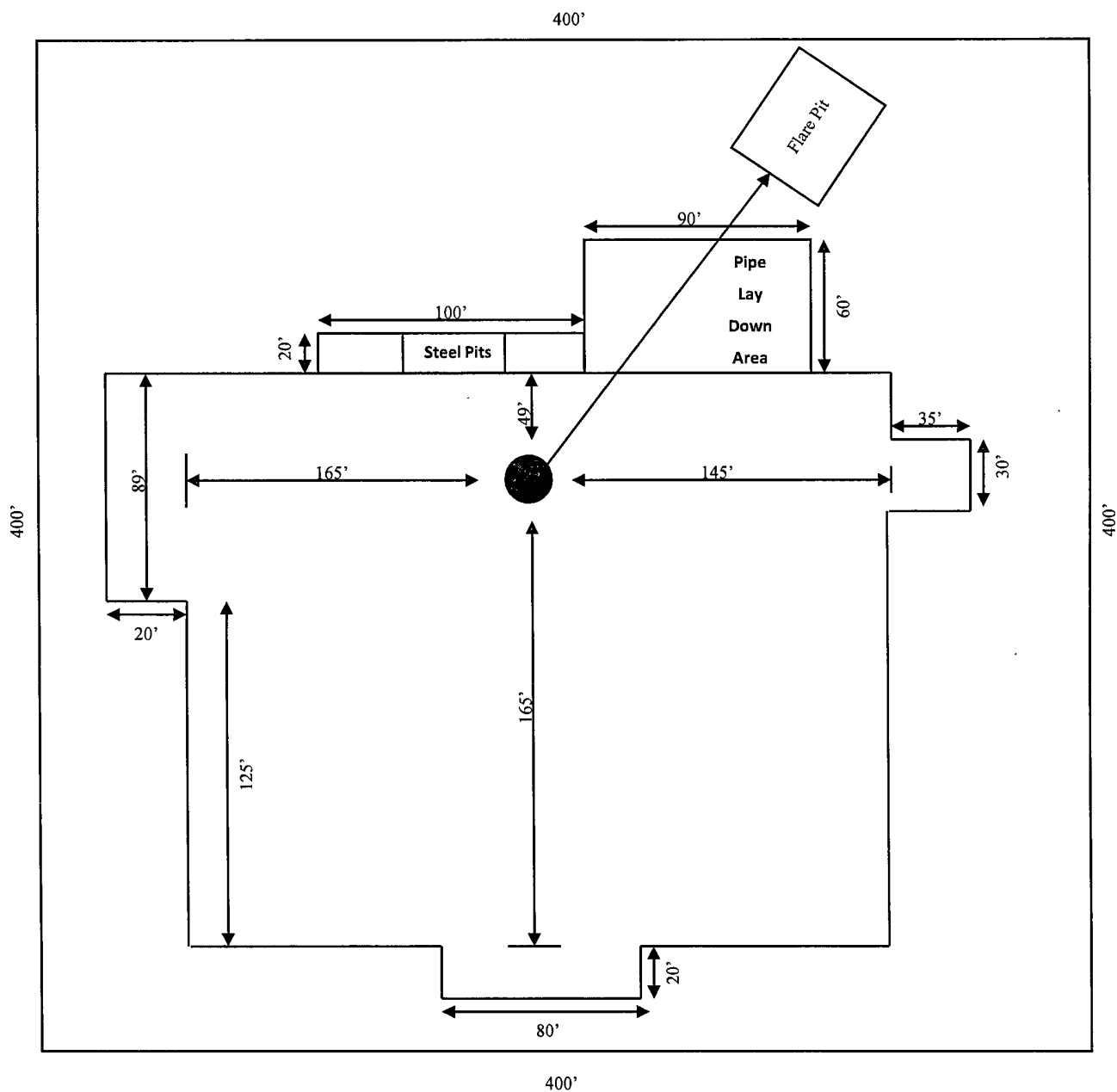
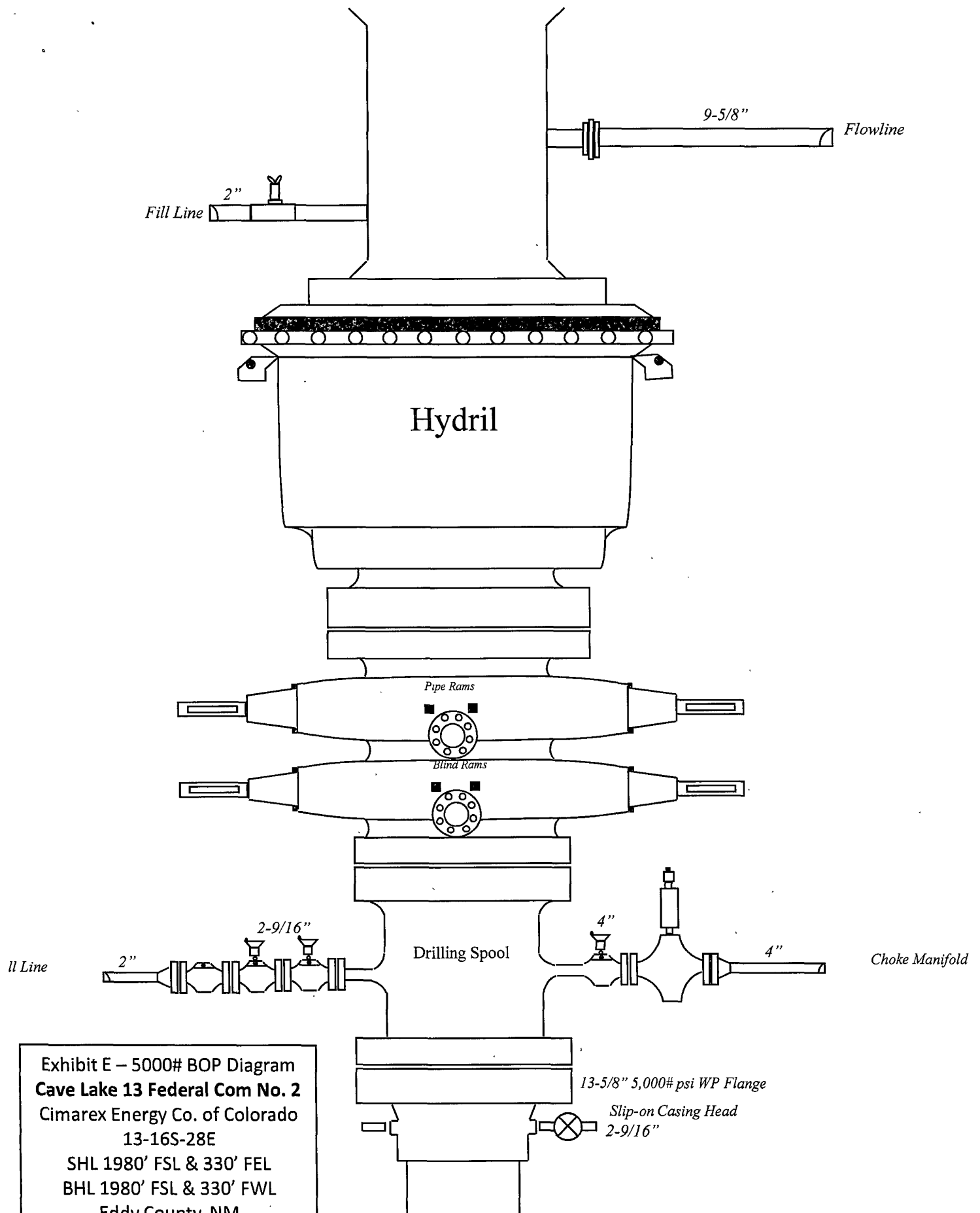


Exhibit D – Rig Layout
Cave Lake 13 Federal Com No. 2
Cimarex Energy Co. of Colorado
13-16S-28E
SHL 1980' FSL & 330' FEL
BHL 1980' FSL & 330' FWL
Eddy County, NM

SR & A



**DRILLING OPERATIONS
CHOKE MANIFOLD
5M SERVICE**

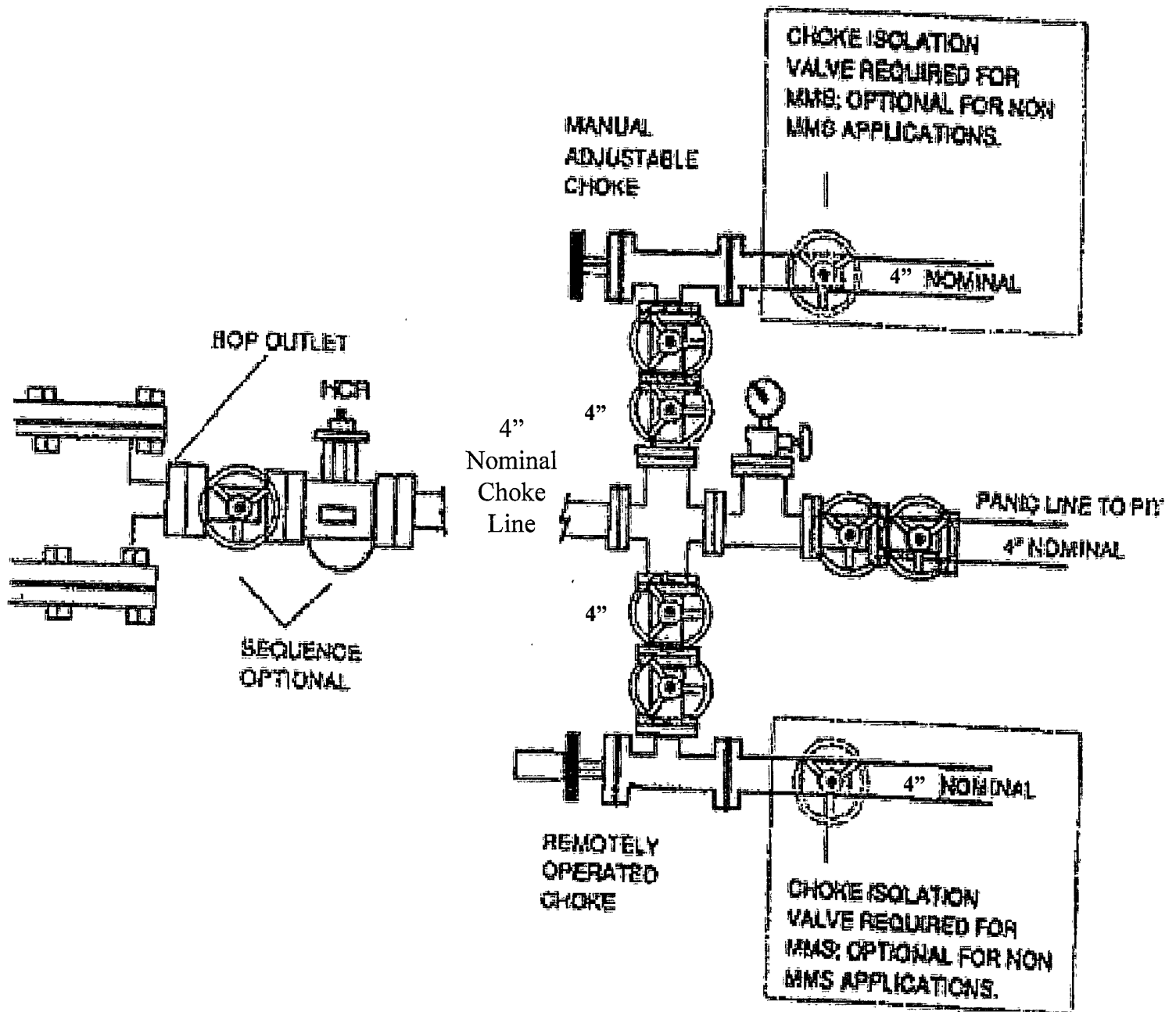


Exhibit E-1 – Choke Manifold Diagram
Cave Lake 13 Federal Com No. 2
 Cimarex Energy Co. of Colorado
 13-16S-28E
 SHL 1980' FSL & 330' FEL
 BHL 1980' FSL & 330' FWL
 Eddy County, NM



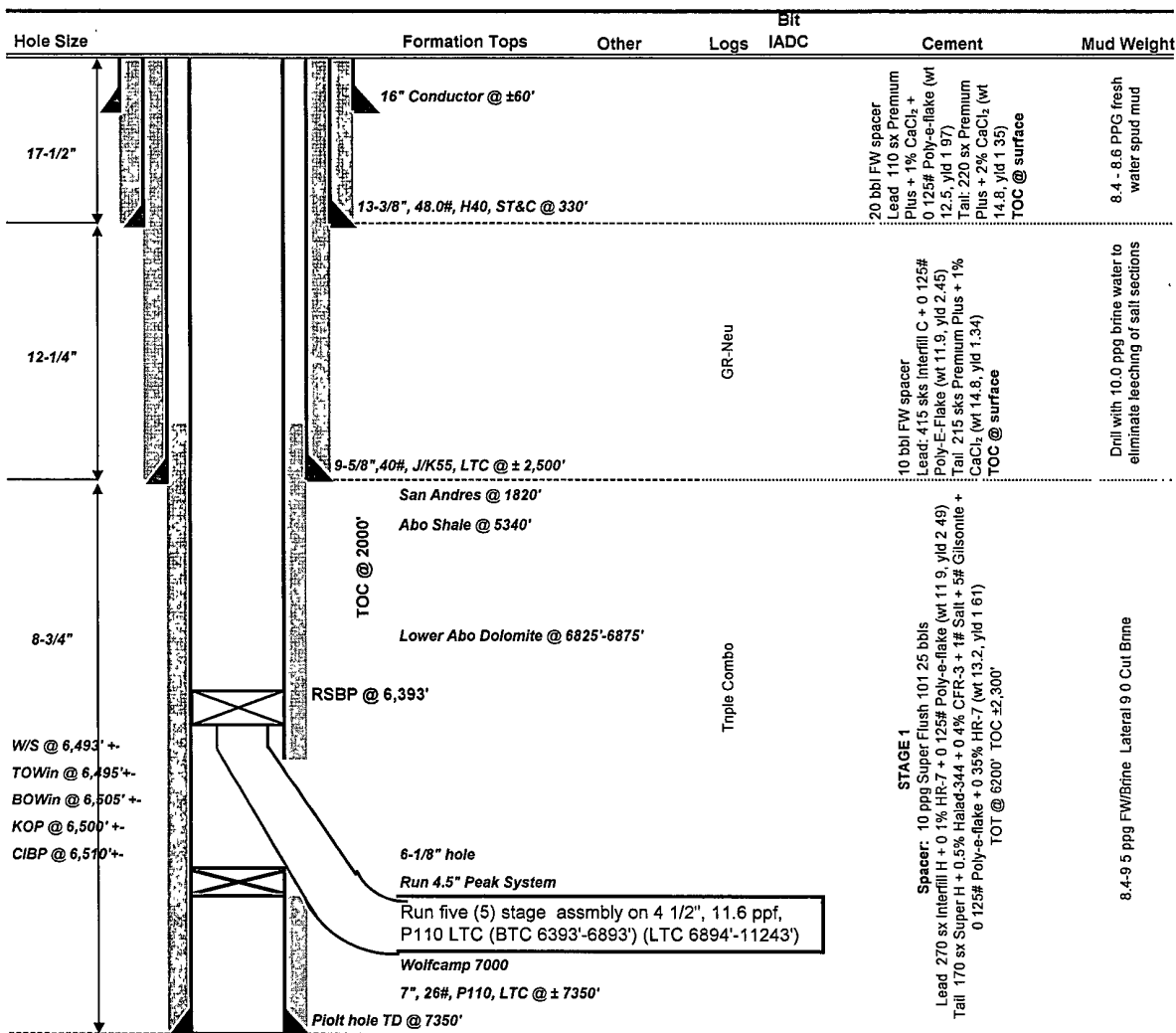
DRILLING PROGNOSIS Cimarex Energy Company

3/24/2008

Well: Cave Lake 13 Fed Com #2
Location: 13-16S-28E
County, State: Eddy County, NM
Surface Location: 1980 FS, 330 FE
Bottomhole Loc: 1980 FS, 330 FW
E-Mail:
Wellhead:

Lse Serial #:
Field:
Objective:
TVD/MD: 7350 / 11250
Cementing: Halliburton
Mud:
Motors:
OH Logs: Halliburton
Rlg: Pat 74
Offset Wells:

Xmas Tree
Tubing:
Superintendent:
Engineer:



NOTES:

Install wellhead on 13 3/4" and NU BOP. Test this installation to 1000 psi w/ ng pump. Then after setting 9 3/4" in slips and installing the csg spool, NU BOP (5M) w/ rotating head and test BOP to 5M w/ test unit. Test casing
Cement volumes for surface csg include a 100% excess in the open hole section. If drilling conditions deem necessary, fluid caliper hole and adjust volumes
Cement volumes for intermediate csg include a 70% excess in the open hole section. If drilling conditions deem necessary, fluid caliper hole and adjust volumes.
Cement volumes for production csg include a 25% excess in the open hole section. Adjust volumes after caliper + 25% excess.

ALL INVOICES ARE TO SHOW **CIMAREX ENERGY** AS OPERATOR AND USE CIMAREX ACCOUNTING CODES.

Cimarex Energy Co., Inc.

Eddy Co., New Mexico

Cave Lake 13 fed Com #2

Cave Lake 13 Fed Com #2

Lateral #1

Plan: Plan #1

Standard Survey Report

27 March, 2008

Black Viper Energy

Survey Report

Company:	Cimarex Energy Co., Inc.	Local Co-ordinate Reference:	Well Cave Lake 13 Fed Com #2
Project:	Eddy Co., New Mexico	TVD Reference:	WELL @ 3574.00ft (Original Well Elev)
Site:	Cave Lake 13 fed Com #2	MD Reference:	WELL @ 3574.00ft (Original Well Elev)
Well:	Cave Lake 13 Fed Com #2	North Reference:	True
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.14 Server Db

Project:	Eddy Co., New Mexico		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site:	Cave Lake 13 fed Com #2		
Site Position:		Northing:	699,006.00 ft
From:	Map	Easting:	606,078.10 ft
Position Uncertainty:	0.00 ft	Slot Radius:	"
		Latitude:	32° 55' 17.039 N
		Longitude:	104° 7' 20.466 W
		Grid Convergence:	0.11 °

Well:	Cave Lake 13 Fed Com #2		
Well Position	+N/-S	0.00 ft	Northing: 699,006.00 ft
	+E/-W	0.00 ft	Easting: 606,078.10 ft
Position Uncertainty	0.00 ft	Wellhead Elevation:	ft
		Latitude:	32° 55' 17.039 N
		Longitude:	104° 7' 20.466 W
		Ground Level:	3,574.00 ft

Wellbore:	Lateral #1		
Magnetics:	Model Name	Sample Date	Declination
	IGRF200510	3/27/2008	(°)
			8.27
			Dip Angle
			(°)
			60.83
			Field Strength
			(nT)
			49,320

Design:	Plan #1		
Audit Notes:			
Version:	Phase:	PROTOTYPE	Tie On Depth: 6,490.00
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(ft)	(ft)	(ft)
	0.00	0.00	0.00
			Direction
			(°)
			270.00

Survey Tool Program	Date 3/27/2008		
From	To	Survey (Wellbore)	Tool Name
(ft)	(ft)		
6,490.00	11,242.87	Plan #1 (Lateral #1)	MWD
			Description
			MWD - Standard

Planned Survey:										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Vertical	Dogleg	Build	Turn	
Depth	(°)	(°)	Depth	(ft)	(ft)	Section	Rate	Rate	Rate	
(ft)			(ft)			(ft)	(°/100ft)	(°/100ft)	(°/100ft)	
6,490.00	0.00	0.00	6,490.00	0.00	0.00	0.00	0.00	0.00	0.00	
Tie In										
6,493.00	0.00	0.00	6,493.00	0.00	0.00	0.00	0.00	0.00	0.00	
Top of Whipstock										
6,495.00	3.00	270.00	6,495.00	0.00	-0.05	0.05	150.00	150.00	0.00	
Top of Window										
6,500.00	3.00	270.00	6,499.99	0.00	-0.31	0.31	0.00	0.00	0.00	
KOP Build 16.71°/100										
7,016.74	89.32	270.00	6,825.00	0.00	-338.77	338.77	16.71	16.71	0.00	
EOC Hold 89.32° INC :: 270° AZI										
7,016.84	89.32	270.00	6,825.00	0.00	-338.87	338.87	0.00	0.00	0.00	
L Abo Shale										

Black Viper Energy

Survey Report

Company:	Cimarex Energy Co., Inc.	Local Co-ordinate Reference:	Well Cave Lake 13 Fed Com #2
Project:	Eddy Co., New Mexico	TVD Reference:	WELL @ 3574.00ft (Original Well Elev)
Site:	Cave Lake 13 fed Com #2	MD Reference:	WELL @ 3574.00ft (Original Well Elev)
Well:	Cave Lake 13 Fed Com #2	North Reference:	True
Wellbore:	Lateral #1	Survey Calculation Method:	Minimum Curvature
Design:	Plan #1	Database:	EDM 2003.14 Server Db

Planned Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
11,242.87	89.32	270.00	6,875.00	0.00	-4,564.60	4,564.60	0.00	0.00	0.00	

Targets										
Target Name	hit/miss target	Dip Angle (°)	Dip Dir (°)	TVD (ft)	+N/-S (ft)	+E/-W (ft)	Northing (ft)	Easting (ft)	Latitude	Longitude
HL[CL13FC#2]	- plan misses by 6490.00ft at 6490.00ft MD (6490.00 TVD, 0.00 N, 0.00 E) - Rectangle (sides W4,620.00 H4,564.60 D0.00)	0.00	0.00	0.00	0.00	0.00	699,006.00	606,078.10	32° 55' 17.039 N	104° 7' 20.466 W
PBHL#1[CL13FC#2]	- plan hits target - Point	0.00	0.00	6,875.00	0.00	-4,564.60	698,996.86	601,513.51	32° 55' 17.036 N	104° 8' 14.018 W
LL[CL13FC#2]	- plan misses by 6490.00ft at 6490.00ft MD (6490.00 TVD, 0.00 N, 0.00 E) - Rectangle (sides W5,280.00 H5,224.60 D0.00)	0.00	0.00	0.00	0.00	0.00	699,006.00	606,078.10	32° 55' 17.039 N	104° 7' 20.466 W

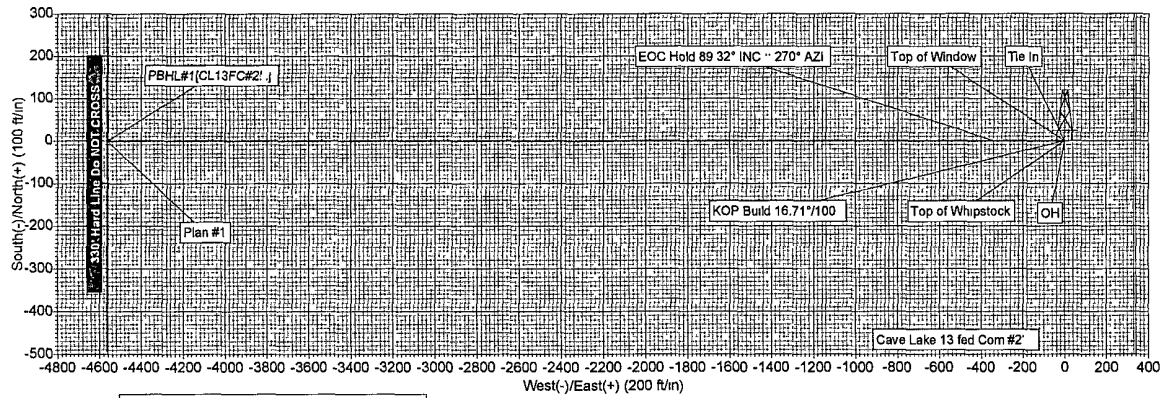
Formations										
Measured Depth (ft)	Vertical Depth (ft)	Name	Lithology	Dip (°)	Dip Direction (°)					
	1,820.00	San Andres		0.00						
	5,340.00	Abo Shale		0.00						
7,016.84	6,825.00	L Abo Shale		0.00						
	7,000.00	Wolfcamp		0.00						

Plan Annotations										
Measured Depth (ft)	Vertical Depth (ft)	Local Coordinates								
		+N/-S (ft)	+E/-W (ft)							
6,490.00	6,490.00	0.00	0.00	Tie In						
6,493.00	6,493.00	0.00	0.00	Top of Whipstock						
6,495.00	6,495.00	0.00	-0.05	Top of Window						
6,500.00	6,499.99	0.00	-0.31	KOP Build 16.71°/100						
7,016.74	6,825.00	0.00	-338.77	EOC Hold 89.32° INC :: 270° AZI						

Checked By: _____ Approved By: _____ Date: _____



Project: Eddy Co., New Mexico
 Site: Cave Lake 13 Fed Com #2'
 Well: Cave Lake 13 Fed Com #2'
 Wellbore: Lateral #1
 Plan: Plan #1 (Cave Lake 13 Fed Com #2H/Lateral #1)



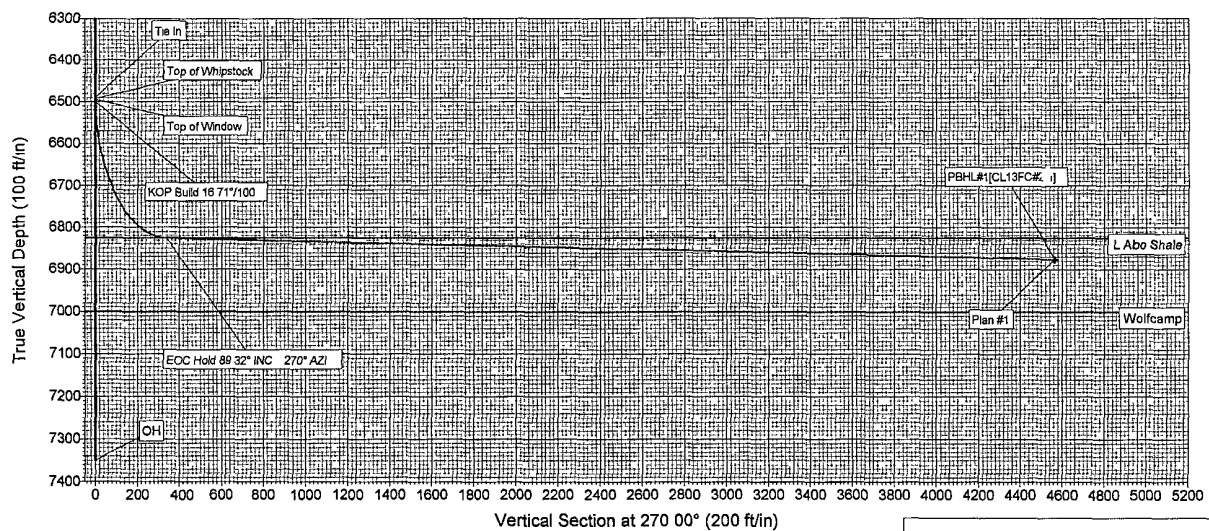
Azimuths to True North
 Magnetic North 8.27°
 Magnetic Field
 Strength 49319 nT
 Dip Angle 60.83°
 Date: 3/27/2008
 Model IGRF200510

ANNOTATIONS

TVD	MD	Annotation
6490.00	6490.00	Tie In
6493.00	6493.00	Top of Whipstock
6495.00	6495.00	Top of Window
6499.99	6500.00	KOP Build 16.71°/100
6825.00	7016.74	EOC Hold 89.32° INC 270° AZI

SECTION DETAILS

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	DLeg	TFace	VSec	Target
1	6490.00	0.00	0.00	6490.00	0.00	0.00	0.00	0.00	0.00	
2	6493.00	0.00	0.00	6493.00	0.00	0.00	0.00	0.00	0.00	
3	6495.00	3.00	270.00	6495.00	0.00	-0.05	150.00	270.00	0.05	
4	6500.00	3.00	270.00	6499.99	0.00	-0.31	0.00	0.00	0.31	
5	7016.74	89.32	270.00	6825.00	0.00	-338.77	16.71	0.00	338.77	
6	11242.87	89.32	270.00	6875.00	0.00	-4564.60	0.00	0.00	4564.60	PBL#1[CL13FC#2]



Plan: Plan #1 (Cave Lake 13 Fed Com #2H/Lateral #1)
 Created By: Heather Vennoy Date: March 27, 2008

Cimarex Energy Co., Inc.
Cave Lake 13 Fed Com #2 - Plan #1

Eddy Co., New Mexico
Cave Lake 13 fed Com #2

Measured Dogleg Depth Rate (ft) (°/100ft)	Incl.	Azim.	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)
6490.00	0.000	0.000	6490.00	0.00 N	0.00 E	0.00
0.00						
6493.00	0.000	0.000	6493.00	0.00 N	0.00 E	0.00
0.00						
6495.00	3.000	270.000	6495.00	0.00 N	0.05 W	0.05
150.00						
6500.00	3.000	270.000	6499.99	0.00 N	0.31 W	0.31
0.00						
6510.00	4.671	270.000	6509.97	0.00 N	0.98 W	0.98
16.71						
6520.00	6.341	270.000	6519.92	0.00 N	1.94 W	1.94
16.71						
6530.00	8.012	270.000	6529.84	0.00 N	3.19 W	3.19
16.71						
6540.00	9.682	270.000	6539.72	0.00 N	4.73 W	4.73
16.71						
6550.00	11.353	270.000	6549.56	0.00 N	6.55 W	6.55
16.71						
6560.00	13.023	270.000	6559.33	0.00 N	8.67 W	8.67
16.71						
6570.00	14.694	270.000	6569.04	0.00 N	11.06 W	11.06
16.71						
6580.00	16.364	270.000	6578.67	0.00 N	13.74 W	13.74
16.71						
6590.00	18.035	270.000	6588.23	0.00 N	16.69 W	16.69
16.71						
6600.00	19.705	270.000	6597.69	0.00 N	19.93 W	19.93
16.71						
6610.00	21.376	270.000	6607.05	0.00 N	23.44 W	23.44
16.71						
6620.00	23.046	270.000	6616.31	0.00 N	27.22 W	27.22
16.71						
6630.00	24.717	270.000	6625.45	0.00 N	31.27 W	31.27
16.71						
6640.00	26.387	270.000	6634.48	0.00 N	35.58 W	35.58
16.71						
6650.00	28.058	270.000	6643.37	0.00 N	40.15 W	40.15
16.71						
6660.00	29.728	270.000	6652.12	0.00 N	44.99 W	44.99
16.71						
6670.00	31.399	270.000	6660.73	0.00 N	50.07 W	50.07
16.71						
6680.00	33.069	270.000	6669.19	0.00 N	55.40 W	55.40
16.71						
6690.00	34.740	270.000	6677.49	0.00 N	60.98 W	60.98
16.71						
6700.00	36.410	270.000	6685.62	0.00 N	66.80 W	66.80
16.71						
6710.00	38.081	270.000	6693.58	0.00 N	72.85 W	72.85
16.71						
6720.00	39.752	270.000	6701.36	0.00 N	79.13 W	79.13

16.71						
6730.00	41.422	270.000	6708.96	0.00 N	85.64 W	85.64
16.71						
6740.00	43.093	270.000	6716.36	0.00 N	92.36 W	92.36
16.71						
6750.00	44.763	270.000	6723.56	0.00 N	99.30 W	99.30
16.71						
6760.00	46.434	270.000	6730.56	0.00 N	106.44 W	106.44
16.71						
6770.00	48.104	270.000	6737.34	0.00 N	113.79 W	113.79
16.71						
6780.00	49.775	270.000	6743.91	0.00 N	121.33 W	121.33
16.71						
6790.00	51.445	270.000	6750.26	0.00 S	129.06 W	129.06
16.71						
6800.00	53.116	270.000	6756.38	0.00 S	136.97 W	136.97
16.71						
6810.00	54.786	270.000	6762.26	0.00 S	145.05 W	145.05
16.71						
6820.00	56.457	270.000	6767.91	0.00 S	153.31 W	153.31
16.71						
6830.00	58.127	270.000	6773.31	0.00 S	161.72 W	161.72
16.71						
6840.00	59.798	270.000	6778.47	0.00 S	170.29 W	170.29
16.71						
6850.00	61.468	270.000	6783.37	0.00 S	179.00 W	179.00
16.71						
6860.00	63.139	270.000	6788.02	0.00 S	187.86 W	187.86
16.71						
6870.00	64.809	270.000	6792.40	0.00 S	196.84 W	196.84
16.71						
6880.00	66.480	270.000	6796.53	0.00 S	205.95 W	205.95
16.71						
6890.00	68.150	270.000	6800.38	0.00 S	215.18 W	215.18
16.71						
6900.00	69.821	270.000	6803.97	0.00 S	224.51 W	224.51
16.71						
6910.00	71.492	270.000	6807.28	0.00 S	233.95 W	233.95
16.71						
6920.00	73.162	270.000	6810.32	0.00 S	243.47 W	243.47
16.71						
6930.00	74.833	270.000	6813.08	0.00 S	253.09 W	253.09
16.71						
6940.00	76.503	270.000	6815.55	0.00 S	262.78 W	262.78
16.71						
6950.00	78.174	270.000	6817.74	0.00 S	272.53 W	272.53
16.71						
6960.00	79.844	270.000	6819.65	0.00 S	282.35 W	282.35
16.71						
6970.00	81.515	270.000	6821.27	0.00 S	292.22 W	292.22
16.71						
6980.00	83.185	270.000	6822.60	0.00 S	302.13 W	302.13
16.71						
6990.00	84.856	270.000	6823.64	0.00 S	312.07 W	312.07
16.71						
7000.00	86.526	270.000	6824.39	0.00 S	322.04 W	322.04
16.71						
7010.00	88.197	270.000	6824.85	0.00 S	332.03 W	332.03
16.71						
7016.74	89.322	270.000	6825.00	0.00 N	338.77 W	338.77
16.71						
7020.00	89.322	270.000	6825.04	0.00 N	342.03 W	342.03
0.00						
7030.00	89.322	270.000	6825.16	0.00 N	352.03 W	352.03

0.00							
7040.00	89.322	270.000	6825.27	0.00 N	362.03 W	362.03	
0.00							
7050.00	89.322	270.000	6825.39	0.00 N	372.03 W	372.03	
0.00							
7060.00	89.322	270.000	6825.51	0.00 N	382.03 W	382.03	
0.00							
7070.00	89.322	270.000	6825.63	0.00 N	392.03 W	392.03	
0.00							
7080.00	89.322	270.000	6825.75	0.00 N	402.03 W	402.03	
0.00							
7090.00	89.322	270.000	6825.87	0.00 N	412.03 W	412.03	
0.00							
7100.00	89.322	270.000	6825.98	0.00 N	422.02 W	422.02	
0.00							
7110.00	89.322	270.000	6826.10	0.00 N	432.02 W	432.02	
0.00							
7120.00	89.322	270.000	6826.22	0.00 N	442.02 W	442.02	
0.00							
7130.00	89.322	270.000	6826.34	0.00 N	452.02 W	452.02	
0.00							
7140.00	89.322	270.000	6826.46	0.00 N	462.02 W	462.02	
0.00							
7150.00	89.322	270.000	6826.58	0.00 N	472.02 W	472.02	
0.00							
7160.00	89.322	270.000	6826.69	0.00 N	482.02 W	482.02	
0.00							
7170.00	89.322	270.000	6826.81	0.00 N	492.02 W	492.02	
0.00							
7180.00	89.322	270.000	6826.93	0.00 N	502.02 W	502.02	
0.00							
7190.00	89.322	270.000	6827.05	0.00 N	512.02 W	512.02	
0.00							
7200.00	89.322	270.000	6827.17	0.00 N	522.02 W	522.02	
0.00							
7210.00	89.322	270.000	6827.29	0.00 N	532.02 W	532.02	
0.00							
7220.00	89.322	270.000	6827.40	0.00 N	542.02 W	542.02	
0.00							
7230.00	89.322	270.000	6827.52	0.00 N	552.02 W	552.02	
0.00							
7240.00	89.322	270.000	6827.64	0.00 N	562.01 W	562.01	
0.00							
7250.00	89.322	270.000	6827.76	0.00 N	572.01 W	572.01	
0.00							
7260.00	89.322	270.000	6827.88	0.00 N	582.01 W	582.01	
0.00							
7270.00	89.322	270.000	6828.00	0.00 N	592.01 W	592.01	
0.00							
7280.00	89.322	270.000	6828.11	0.00 N	602.01 W	602.01	
0.00							
7290.00	89.322	270.000	6828.23	0.00 N	612.01 W	612.01	
0.00							
7300.00	89.322	270.000	6828.35	0.00 N	622.01 W	622.01	
0.00							
7310.00	89.322	270.000	6828.47	0.00 N	632.01 W	632.01	
0.00							
7320.00	89.322	270.000	6828.59	0.00 N	642.01 W	642.01	
0.00							
7330.00	89.322	270.000	6828.71	0.00 N	652.01 W	652.01	
0.00							
7340.00	89.322	270.000	6828.82	0.00 N	662.01 W	662.01	
0.00							
7350.00	89.322	270.000	6828.94	0.00 N	672.01 W	672.01	

0.00							
7360.00	89.322	270.000	6829.06	0.00 N	682.01 W	682.01	
0.00							
7370.00	89.322	270.000	6829.18	0.00 N	692.01 W	692.01	
0.00							
7380.00	89.322	270.000	6829.30	0.00 N	702.00 W	702.00	
0.00							
7390.00	89.322	270.000	6829.41	0.00 N	712.00 W	712.00	
0.00							
7400.00	89.322	270.000	6829.53	0.00 N	722.00 W	722.00	
0.00							
7410.00	89.322	270.000	6829.65	0.00 N	732.00 W	732.00	
0.00							
7420.00	89.322	270.000	6829.77	0.00 N	742.00 W	742.00	
0.00							
7430.00	89.322	270.000	6829.89	0.00 N	752.00 W	752.00	
0.00							
7440.00	89.322	270.000	6830.01	0.00 N	762.00 W	762.00	
0.00							
7450.00	89.322	270.000	6830.12	0.00 N	772.00 W	772.00	
0.00							
7460.00	89.322	270.000	6830.24	0.00 S	782.00 W	782.00	
0.00							
7470.00	89.322	270.000	6830.36	0.00 S	792.00 W	792.00	
0.00							
7480.00	89.322	270.000	6830.48	0.00 S	802.00 W	802.00	
0.00							
7490.00	89.322	270.000	6830.60	0.00 S	812.00 W	812.00	
0.00							
7500.00	89.322	270.000	6830.72	0.00 S	822.00 W	822.00	
0.00							
7510.00	89.322	270.000	6830.83	0.00 S	832.00 W	832.00	
0.00							
7520.00	89.322	270.000	6830.95	0.00 S	842.00 W	842.00	
0.00							
7530.00	89.322	270.000	6831.07	0.00 S	851.99 W	851.99	
0.00							
7540.00	89.322	270.000	6831.19	0.00 S	861.99 W	861.99	
0.00							
7550.00	89.322	270.000	6831.31	0.00 S	871.99 W	871.99	
0.00							
7560.00	89.322	270.000	6831.43	0.00 S	881.99 W	881.99	
0.00							
7570.00	89.322	270.000	6831.54	0.00 S	891.99 W	891.99	
0.00							
7580.00	89.322	270.000	6831.66	0.00 S	901.99 W	901.99	
0.00							
7590.00	89.322	270.000	6831.78	0.00 S	911.99 W	911.99	
0.00							
7600.00	89.322	270.000	6831.90	0.00 S	921.99 W	921.99	
0.00							
7610.00	89.322	270.000	6832.02	0.00 S	931.99 W	931.99	
0.00							
7620.00	89.322	270.000	6832.14	0.00 S	941.99 W	941.99	
0.00							
7630.00	89.322	270.000	6832.25	0.00 S	951.99 W	951.99	
0.00							
7640.00	89.322	270.000	6832.37	0.00 S	961.99 W	961.99	
0.00							
7650.00	89.322	270.000	6832.49	0.00 S	971.99 W	971.99	
0.00							
7660.00	89.322	270.000	6832.61	0.00 S	981.99 W	981.99	
0.00							
7670.00	89.322	270.000	6832.73	0.00 S	991.98 W	991.98	

0.00							
7680.00	89.322	270.000	6832.85	0.00 S	1001.98 W	1001.98	
0.00							
7690.00	89.322	270.000	6832.96	0.00 S	1011.98 W	1011.98	
0.00							
7700.00	89.322	270.000	6833.08	0.00 S	1021.98 W	1021.98	
0.00							
7710.00	89.322	270.000	6833.20	0.00 S	1031.98 W	1031.98	
0.00							
7720.00	89.322	270.000	6833.32	0.00 S	1041.98 W	1041.98	
0.00							
7730.00	89.322	270.000	6833.44	0.00 S	1051.98 W	1051.98	
0.00							
7740.00	89.322	270.000	6833.56	0.00 S	1061.98 W	1061.98	
0.00							
7750.00	89.322	270.000	6833.67	0.00 S	1071.98 W	1071.98	
0.00							
7760.00	89.322	270.000	6833.79	0.00 S	1081.98 W	1081.98	
0.00							
7770.00	89.322	270.000	6833.91	0.00 S	1091.98 W	1091.98	
0.00							
7780.00	89.322	270.000	6834.03	0.00 S	1101.98 W	1101.98	
0.00							
7790.00	89.322	270.000	6834.15	0.00 S	1111.98 W	1111.98	
0.00							
7800.00	89.322	270.000	6834.27	0.00 S	1121.98 W	1121.98	
0.00							
7810.00	89.322	270.000	6834.38	0.00 S	1131.97 W	1131.97	
0.00							
7820.00	89.322	270.000	6834.50	0.00 S	1141.97 W	1141.97	
0.00							
7830.00	89.322	270.000	6834.62	0.00 S	1151.97 W	1151.97	
0.00							
7840.00	89.322	270.000	6834.74	0.00 S	1161.97 W	1161.97	
0.00							
7850.00	89.322	270.000	6834.86	0.00 S	1171.97 W	1171.97	
0.00							
7860.00	89.322	270.000	6834.98	0.00 S	1181.97 W	1181.97	
0.00							
7870.00	89.322	270.000	6835.09	0.00 S	1191.97 W	1191.97	
0.00							
7880.00	89.322	270.000	6835.21	0.00 S	1201.97 W	1201.97	
0.00							
7890.00	89.322	270.000	6835.33	0.00 S	1211.97 W	1211.97	
0.00							
7900.00	89.322	270.000	6835.45	0.00 S	1221.97 W	1221.97	
0.00							
7910.00	89.322	270.000	6835.57	0.00 S	1231.97 W	1231.97	
0.00							
7920.00	89.322	270.000	6835.69	0.00 S	1241.97 W	1241.97	
0.00							
7930.00	89.322	270.000	6835.80	0.00 S	1251.97 W	1251.97	
0.00							
7940.00	89.322	270.000	6835.92	0.00 S	1261.97 W	1261.97	
0.00							
7950.00	89.322	270.000	6836.04	0.00 S	1271.97 W	1271.97	
0.00							
7960.00	89.322	270.000	6836.16	0.00 S	1281.96 W	1281.96	
0.00							
7970.00	89.322	270.000	6836.28	0.00 S	1291.96 W	1291.96	
0.00							
7980.00	89.322	270.000	6836.40	0.00 S	1301.96 W	1301.96	
0.00							
7990.00	89.322	270.000	6836.51	0.00 S	1311.96 W	1311.96	

0.00						
8000.00	89.322	270.000	6836.63	0.00 S	1321.96 W	1321.96
0.00						
8010.00	89.322	270.000	6836.75	0.00 S	1331.96 W	1331.96
0.00						
8020.00	89.322	270.000	6836.87	0.00 S	1341.96 W	1341.96
0.00						
8030.00	89.322	270.000	6836.99	0.00 S	1351.96 W	1351.96
0.00						
8040.00	89.322	270.000	6837.11	0.00 S	1361.96 W	1361.96
0.00						
8050.00	89.322	270.000	6837.22	0.00 S	1371.96 W	1371.96
0.00						
8060.00	89.322	270.000	6837.34	0.00 S	1381.96 W	1381.96
0.00						
8070.00	89.322	270.000	6837.46	0.00 S	1391.96 W	1391.96
0.00						
8080.00	89.322	270.000	6837.58	0.00 S	1401.96 W	1401.96
0.00						
8090.00	89.322	270.000	6837.70	0.00 S	1411.96 W	1411.96
0.00						
8100.00	89.322	270.000	6837.82	0.00 S	1421.95 W	1421.95
0.00						
8110.00	89.322	270.000	6837.93	0.00 S	1431.95 W	1431.95
0.00						
8120.00	89.322	270.000	6838.05	0.00 S	1441.95 W	1441.95
0.00						
8130.00	89.322	270.000	6838.17	0.00 S	1451.95 W	1451.95
0.00						
8140.00	89.322	270.000	6838.29	0.00 S	1461.95 W	1461.95
0.00						
8150.00	89.322	270.000	6838.41	0.00 S	1471.95 W	1471.95
0.00						
8160.00	89.322	270.000	6838.53	0.00 S	1481.95 W	1481.95
0.00						
8170.00	89.322	270.000	6838.64	0.00 S	1491.95 W	1491.95
0.00						
8180.00	89.322	270.000	6838.76	0.00 S	1501.95 W	1501.95
0.00						
8190.00	89.322	270.000	6838.88	0.00 S	1511.95 W	1511.95
0.00						
8200.00	89.322	270.000	6839.00	0.00 S	1521.95 W	1521.95
0.00						
8210.00	89.322	270.000	6839.12	0.00 S	1531.95 W	1531.95
0.00						
8220.00	89.322	270.000	6839.24	0.00 S	1541.95 W	1541.95
0.00						
8230.00	89.322	270.000	6839.35	0.00 S	1551.95 W	1551.95
0.00						
8240.00	89.322	270.000	6839.47	0.00 S	1561.94 W	1561.94
0.00						
8250.00	89.322	270.000	6839.59	0.00 S	1571.94 W	1571.94
0.00						
8260.00	89.322	270.000	6839.71	0.00 S	1581.94 W	1581.94
0.00						
8270.00	89.322	270.000	6839.83	0.00 S	1591.94 W	1591.94
0.00						
8280.00	89.322	270.000	6839.94	0.00 S	1601.94 W	1601.94
0.00						
8290.00	89.322	270.000	6840.06	0.00 S	1611.94 W	1611.94
0.00						
8300.00	89.322	270.000	6840.18	0.00 S	1621.94 W	1621.94
0.00						
8310.00	89.322	270.000	6840.30	0.00 S	1631.94 W	1631.94

0.00							
8320.00	89.322	270.000	6840.42	0.00 S	1641.94 W	1641.94	
0.00							
8330.00	89.322	270.000	6840.54	0.00 S	1651.94 W	1651.94	
0.00							
8340.00	89.322	270.000	6840.65	0.00 S	1661.94 W	1661.94	
0.00							
8350.00	89.322	270.000	6840.77	0.00 S	1671.94 W	1671.94	
0.00							
8360.00	89.322	270.000	6840.89	0.00 S	1681.94 W	1681.94	
0.00							
8370.00	89.322	270.000	6841.01	0.00 S	1691.94 W	1691.94	
0.00							
8380.00	89.322	270.000	6841.13	0.00 S	1701.93 W	1701.93	
0.00							
8390.00	89.322	270.000	6841.25	0.00 S	1711.93 W	1711.93	
0.00							
8400.00	89.322	270.000	6841.36	0.00 S	1721.93 W	1721.93	
0.00							
8410.00	89.322	270.000	6841.48	0.00 S	1731.93 W	1731.93	
0.00							
8420.00	89.322	270.000	6841.60	0.00 S	1741.93 W	1741.93	
0.00							
8430.00	89.322	270.000	6841.72	0.00 S	1751.93 W	1751.93	
0.00							
8440.00	89.322	270.000	6841.84	0.00 S	1761.93 W	1761.93	
0.00							
8450.00	89.322	270.000	6841.96	0.00 S	1771.93 W	1771.93	
0.00							
8460.00	89.322	270.000	6842.07	0.00 S	1781.93 W	1781.93	
0.00							
8470.00	89.322	270.000	6842.19	0.00 S	1791.93 W	1791.93	
0.00							
8480.00	89.322	270.000	6842.31	0.00 S	1801.93 W	1801.93	
0.00							
8490.00	89.322	270.000	6842.43	0.00 S	1811.93 W	1811.93	
0.00							
8500.00	89.322	270.000	6842.55	0.00 S	1821.93 W	1821.93	
0.00							
8510.00	89.322	270.000	6842.67	0.00 S	1831.93 W	1831.93	
0.00							
8520.00	89.322	270.000	6842.78	0.00 S	1841.93 W	1841.93	
0.00							
8530.00	89.322	270.000	6842.90	0.00 S	1851.92 W	1851.92	
0.00							
8540.00	89.322	270.000	6843.02	0.00 S	1861.92 W	1861.92	
0.00							
8550.00	89.322	270.000	6843.14	0.00 S	1871.92 W	1871.92	
0.00							
8560.00	89.322	270.000	6843.26	0.00 S	1881.92 W	1881.92	
0.00							
8570.00	89.322	270.000	6843.38	0.00 S	1891.92 W	1891.92	
0.00							
8580.00	89.322	270.000	6843.49	0.00 S	1901.92 W	1901.92	
0.00							
8590.00	89.322	270.000	6843.61	0.00 S	1911.92 W	1911.92	
0.00							
8600.00	89.322	270.000	6843.73	0.00 S	1921.92 W	1921.92	
0.00							
8610.00	89.322	270.000	6843.85	0.00 S	1931.92 W	1931.92	
0.00							
8620.00	89.322	270.000	6843.97	0.00 S	1941.92 W	1941.92	
0.00							
8630.00	89.322	270.000	6844.09	0.00 S	1951.92 W	1951.92	

0.00							
8640.00	89.322	270.000	6844.20	0.00 S	1961.92 W	1961.92	
0.00							
8650.00	89.322	270.000	6844.32	0.00 S	1971.92 W	1971.92	
0.00							
8660.00	89.322	270.000	6844.44	0.00 S	1981.92 W	1981.92	
0.00							
8670.00	89.322	270.000	6844.56	0.00 S	1991.91 W	1991.91	
0.00							
8680.00	89.322	270.000	6844.68	0.00 S	2001.91 W	2001.91	
0.00							
8690.00	89.322	270.000	6844.80	0.00 S	2011.91 W	2011.91	
0.00							
8700.00	89.322	270.000	6844.91	0.00 S	2021.91 W	2021.91	
0.00							
8710.00	89.322	270.000	6845.03	0.00 S	2031.91 W	2031.91	
0.00							
8720.00	89.322	270.000	6845.15	0.00 S	2041.91 W	2041.91	
0.00							
8730.00	89.322	270.000	6845.27	0.00 S	2051.91 W	2051.91	
0.00							
8740.00	89.322	270.000	6845.39	0.00 S	2061.91 W	2061.91	
0.00							
8750.00	89.322	270.000	6845.51	0.00 S	2071.91 W	2071.91	
0.00							
8760.00	89.322	270.000	6845.62	0.00 S	2081.91 W	2081.91	
0.00							
8770.00	89.322	270.000	6845.74	0.00 S	2091.91 W	2091.91	
0.00							
8780.00	89.322	270.000	6845.86	0.00 S	2101.91 W	2101.91	
0.00							
8790.00	89.322	270.000	6845.98	0.00 S	2111.91 W	2111.91	
0.00							
8800.00	89.322	270.000	6846.10	0.00 S	2121.91 W	2121.91	
0.00							
8810.00	89.322	270.000	6846.22	0.00 S	2131.90 W	2131.90	
0.00							
8820.00	89.322	270.000	6846.33	0.00 S	2141.90 W	2141.90	
0.00							
8830.00	89.322	270.000	6846.45	0.00 S	2151.90 W	2151.90	
0.00							
8840.00	89.322	270.000	6846.57	0.00 S	2161.90 W	2161.90	
0.00							
8850.00	89.322	270.000	6846.69	0.00 S	2171.90 W	2171.90	
0.00							
8860.00	89.322	270.000	6846.81	0.00 S	2181.90 W	2181.90	
0.00							
8870.00	89.322	270.000	6846.93	0.00 S	2191.90 W	2191.90	
0.00							
8880.00	89.322	270.000	6847.04	0.00 S	2201.90 W	2201.90	
0.00							
8890.00	89.322	270.000	6847.16	0.00 S	2211.90 W	2211.90	
0.00							
8900.00	89.322	270.000	6847.28	0.00 S	2221.90 W	2221.90	
0.00							
8910.00	89.322	270.000	6847.40	0.00 S	2231.90 W	2231.90	
0.00							
8920.00	89.322	270.000	6847.52	0.00 S	2241.90 W	2241.90	
0.00							
8930.00	89.322	270.000	6847.64	0.00 S	2251.90 W	2251.90	
0.00							
8940.00	89.322	270.000	6847.75	0.00 S	2261.90 W	2261.90	
0.00							
8950.00	89.322	270.000	6847.87	0.00 S	2271.90 W	2271.90	

0.00							
8960.00	89.322	270.000	6847.99	0.00 S	2281.89 W	2281.89	
0.00							
8970.00	89.322	270.000	6848.11	0.00 S	2291.89 W	2291.89	
0.00							
8980.00	89.322	270.000	6848.23	0.00 S	2301.89 W	2301.89	
0.00							
8990.00	89.322	270.000	6848.35	0.00 S	2311.89 W	2311.89	
0.00							
9000.00	89.322	270.000	6848.46	0.00 S	2321.89 W	2321.89	
0.00							
9010.00	89.322	270.000	6848.58	0.00 S	2331.89 W	2331.89	
0.00							
9020.00	89.322	270.000	6848.70	0.00 S	2341.89 W	2341.89	
0.00							
9030.00	89.322	270.000	6848.82	0.00 S	2351.89 W	2351.89	
0.00							
9040.00	89.322	270.000	6848.94	0.00 S	2361.89 W	2361.89	
0.00							
9050.00	89.322	270.000	6849.06	0.00 S	2371.89 W	2371.89	
0.00							
9060.00	89.322	270.000	6849.17	0.00 S	2381.89 W	2381.89	
0.00							
9070.00	89.322	270.000	6849.29	0.00 S	2391.89 W	2391.89	
0.00							
9080.00	89.322	270.000	6849.41	0.00 S	2401.89 W	2401.89	
0.00							
9090.00	89.322	270.000	6849.53	0.00 S	2411.89 W	2411.89	
0.00							
9100.00	89.322	270.000	6849.65	0.00 S	2421.88 W	2421.88	
0.00							
9110.00	89.322	270.000	6849.77	0.00 S	2431.88 W	2431.88	
0.00							
9120.00	89.322	270.000	6849.88	0.00 S	2441.88 W	2441.88	
0.00							
9130.00	89.322	270.000	6850.00	0.00 S	2451.88 W	2451.88	
0.00							
9140.00	89.322	270.000	6850.12	0.00 S	2461.88 W	2461.88	
0.00							
9150.00	89.322	270.000	6850.24	0.00 S	2471.88 W	2471.88	
0.00							
9160.00	89.322	270.000	6850.36	0.00 S	2481.88 W	2481.88	
0.00							
9170.00	89.322	270.000	6850.47	0.00 S	2491.88 W	2491.88	
0.00							
9180.00	89.322	270.000	6850.59	0.00 S	2501.88 W	2501.88	
0.00							
9190.00	89.322	270.000	6850.71	0.00 S	2511.88 W	2511.88	
0.00							
9200.00	89.322	270.000	6850.83	0.00 S	2521.88 W	2521.88	
0.00							
9210.00	89.322	270.000	6850.95	0.00 S	2531.88 W	2531.88	
0.00							
9220.00	89.322	270.000	6851.07	0.00 S	2541.88 W	2541.88	
0.00							
9230.00	89.322	270.000	6851.18	0.00 S	2551.88 W	2551.88	
0.00							
9240.00	89.322	270.000	6851.30	0.00 S	2561.87 W	2561.87	
0.00							
9250.00	89.322	270.000	6851.42	0.00 S	2571.87 W	2571.87	
0.00							
9260.00	89.322	270.000	6851.54	0.00 S	2581.87 W	2581.87	
0.00							
9270.00	89.322	270.000	6851.66	0.00 S	2591.87 W	2591.87	

0.00							
9280.00	89.322	270.000	6851.78	0.00 S	2601.87 W	2601.87	
0.00							
9290.00	89.322	270.000	6851.89	0.00 S	2611.87 W	2611.87	
0.00							
9300.00	89.322	270.000	6852.01	0.00 S	2621.87 W	2621.87	
0.00							
9310.00	89.322	270.000	6852.13	0.00 S	2631.87 W	2631.87	
0.00							
9320.00	89.322	270.000	6852.25	0.00 S	2641.87 W	2641.87	
0.00							
9330.00	89.322	270.000	6852.37	0.00 S	2651.87 W	2651.87	
0.00							
9340.00	89.322	270.000	6852.49	0.00 S	2661.87 W	2661.87	
0.00							
9350.00	89.322	270.000	6852.60	0.00 S	2671.87 W	2671.87	
0.00							
9360.00	89.322	270.000	6852.72	0.00 S	2681.87 W	2681.87	
0.00							
9370.00	89.322	270.000	6852.84	0.00 S	2691.87 W	2691.87	
0.00							
9380.00	89.322	270.000	6852.96	0.00 S	2701.86 W	2701.86	
0.00							
9390.00	89.322	270.000	6853.08	0.00 S	2711.86 W	2711.86	
0.00							
9400.00	89.322	270.000	6853.20	0.00 S	2721.86 W	2721.86	
0.00							
9410.00	89.322	270.000	6853.31	0.00 S	2731.86 W	2731.86	
0.00							
9420.00	89.322	270.000	6853.43	0.00 S	2741.86 W	2741.86	
0.00							
9430.00	89.322	270.000	6853.55	0.00 S	2751.86 W	2751.86	
0.00							
9440.00	89.322	270.000	6853.67	0.00 S	2761.86 W	2761.86	
0.00							
9450.00	89.322	270.000	6853.79	0.00 S	2771.86 W	2771.86	
0.00							
9460.00	89.322	270.000	6853.91	0.00 S	2781.86 W	2781.86	
0.00							
9470.00	89.322	270.000	6854.02	0.00 S	2791.86 W	2791.86	
0.00							
9480.00	89.322	270.000	6854.14	0.00 S	2801.86 W	2801.86	
0.00							
9490.00	89.322	270.000	6854.26	0.00 S	2811.86 W	2811.86	
0.00							
9500.00	89.322	270.000	6854.38	0.00 S	2821.86 W	2821.86	
0.00							
9510.00	89.322	270.000	6854.50	0.00 S	2831.86 W	2831.86	
0.00							
9520.00	89.322	270.000	6854.62	0.00 S	2841.86 W	2841.86	
0.00							
9530.00	89.322	270.000	6854.73	0.00 S	2851.85 W	2851.85	
0.00							
9540.00	89.322	270.000	6854.85	0.00 S	2861.85 W	2861.85	
0.00							
9550.00	89.322	270.000	6854.97	0.00 S	2871.85 W	2871.85	
0.00							
9560.00	89.322	270.000	6855.09	0.00 S	2881.85 W	2881.85	
0.00							
9570.00	89.322	270.000	6855.21	0.00 S	2891.85 W	2891.85	
0.00							
9580.00	89.322	270.000	6855.33	0.00 S	2901.85 W	2901.85	
0.00							
9590.00	89.322	270.000	6855.44	0.00 S	2911.85 W	2911.85	

0.00							
9600.00	89.322	270.000	6855.56	0.00 S	2921.85 W	2921.85	
0.00							
9610.00	89.322	270.000	6855.68	0.00 S	2931.85 W	2931.85	
0.00							
9620.00	89.322	270.000	6855.80	0.00 S	2941.85 W	2941.85	
0.00							
9630.00	89.322	270.000	6855.92	0.00 S	2951.85 W	2951.85	
0.00							
9640.00	89.322	270.000	6856.04	0.00 S	2961.85 W	2961.85	
0.00							
9650.00	89.322	270.000	6856.15	0.00 S	2971.85 W	2971.85	
0.00							
9660.00	89.322	270.000	6856.27	0.00 S	2981.85 W	2981.85	
0.00							
9670.00	89.322	270.000	6856.39	0.00 S	2991.84 W	2991.84	
0.00							
9680.00	89.322	270.000	6856.51	0.00 S	3001.84 W	3001.84	
0.00							
9690.00	89.322	270.000	6856.63	0.00 S	3011.84 W	3011.84	
0.00							
9700.00	89.322	270.000	6856.75	0.00 S	3021.84 W	3021.84	
0.00							
9710.00	89.322	270.000	6856.86	0.00 S	3031.84 W	3031.84	
0.00							
9720.00	89.322	270.000	6856.98	0.00 S	3041.84 W	3041.84	
0.00							
9730.00	89.322	270.000	6857.10	0.00 S	3051.84 W	3051.84	
0.00							
9740.00	89.322	270.000	6857.22	0.00 S	3061.84 W	3061.84	
0.00							
9750.00	89.322	270.000	6857.34	0.00 S	3071.84 W	3071.84	
0.00							
9760.00	89.322	270.000	6857.46	0.00 S	3081.84 W	3081.84	
0.00							
9770.00	89.322	270.000	6857.57	0.00 S	3091.84 W	3091.84	
0.00							
9780.00	89.322	270.000	6857.69	0.00 S	3101.84 W	3101.84	
0.00							
9790.00	89.322	270.000	6857.81	0.00 S	3111.84 W	3111.84	
0.00							
9800.00	89.322	270.000	6857.93	0.00 S	3121.84 W	3121.84	
0.00							
9810.00	89.322	270.000	6858.05	0.00 S	3131.83 W	3131.83	
0.00							
9820.00	89.322	270.000	6858.17	0.00 S	3141.83 W	3141.83	
0.00							
9830.00	89.322	270.000	6858.28	0.00 S	3151.83 W	3151.83	
0.00							
9840.00	89.322	270.000	6858.40	0.00 S	3161.83 W	3161.83	
0.00							
9850.00	89.322	270.000	6858.52	0.00 S	3171.83 W	3171.83	
0.00							
9860.00	89.322	270.000	6858.64	0.00 S	3181.83 W	3181.83	
0.00							
9870.00	89.322	270.000	6858.76	0.00 S	3191.83 W	3191.83	
0.00							
9880.00	89.322	270.000	6858.88	0.00 S	3201.83 W	3201.83	
0.00							
9890.00	89.322	270.000	6858.99	0.00 S	3211.83 W	3211.83	
0.00							
9900.00	89.322	270.000	6859.11	0.00 S	3221.83 W	3221.83	
0.00							
9910.00	89.322	270.000	6859.23	0.00 S	3231.83 W	3231.83	

0.00							
9920.00	89.322	270.000	6859.35	0.00 S	3241.83 W	3241.83	
0.00							
9930.00	89.322	270.000	6859.47	0.00 S	3251.83 W	3251.83	
0.00							
9940.00	89.322	270.000	6859.59	0.00 S	3261.83 W	3261.83	
0.00							
9950.00	89.322	270.000	6859.70	0.00 S	3271.83 W	3271.83	
0.00							
9960.00	89.322	270.000	6859.82	0.00 S	3281.82 W	3281.82	
0.00							
9970.00	89.322	270.000	6859.94	0.00 S	3291.82 W	3291.82	
0.00							
9980.00	89.322	270.000	6860.06	0.00 S	3301.82 W	3301.82	
0.00							
9990.00	89.322	270.000	6860.18	0.00 S	3311.82 W	3311.82	
0.00							
10000.00	89.322	270.000	6860.30	0.00 S	3321.82 W	3321.82	
0.00							
10010.00	89.322	270.000	6860.41	0.00 S	3331.82 W	3331.82	
0.00							
10020.00	89.322	270.000	6860.53	0.00 S	3341.82 W	3341.82	
0.00							
10030.00	89.322	270.000	6860.65	0.00 S	3351.82 W	3351.82	
0.00							
10040.00	89.322	270.000	6860.77	0.00 S	3361.82 W	3361.82	
0.00							
10050.00	89.322	270.000	6860.89	0.00 S	3371.82 W	3371.82	
0.00							
10060.00	89.322	270.000	6861.00	0.00 S	3381.82 W	3381.82	
0.00							
10070.00	89.322	270.000	6861.12	0.00 S	3391.82 W	3391.82	
0.00							
10080.00	89.322	270.000	6861.24	0.00 S	3401.82 W	3401.82	
0.00							
10090.00	89.322	270.000	6861.36	0.00 S	3411.82 W	3411.82	
0.00							
10100.00	89.322	270.000	6861.48	0.00 S	3421.81 W	3421.81	
0.00							
10110.00	89.322	270.000	6861.60	0.00 S	3431.81 W	3431.81	
0.00							
10120.00	89.322	270.000	6861.71	0.00 S	3441.81 W	3441.81	
0.00							
10130.00	89.322	270.000	6861.83	0.00 S	3451.81 W	3451.81	
0.00							
10140.00	89.322	270.000	6861.95	0.00 S	3461.81 W	3461.81	
0.00							
10150.00	89.322	270.000	6862.07	0.00 S	3471.81 W	3471.81	
0.00							
10160.00	89.322	270.000	6862.19	0.00 S	3481.81 W	3481.81	
0.00							
10170.00	89.322	270.000	6862.31	0.00 S	3491.81 W	3491.81	
0.00							
10180.00	89.322	270.000	6862.42	0.00 S	3501.81 W	3501.81	
0.00							
10190.00	89.322	270.000	6862.54	0.00 S	3511.81 W	3511.81	
0.00							
10200.00	89.322	270.000	6862.66	0.00 S	3521.81 W	3521.81	
0.00							
10210.00	89.322	270.000	6862.78	0.00 S	3531.81 W	3531.81	
0.00							
10220.00	89.322	270.000	6862.90	0.00 S	3541.81 W	3541.81	
0.00							
10230.00	89.322	270.000	6863.02	0.00 S	3551.81 W	3551.81	

0.00							
10240.00	89.322	270.000	6863.13	0.00 S	3561.80 W	3561.80	
0.00							
10250.00	89.322	270.000	6863.25	0.00 S	3571.80 W	3571.80	
0.00							
10260.00	89.322	270.000	6863.37	0.00 S	3581.80 W	3581.80	
0.00							
10270.00	89.322	270.000	6863.49	0.00 S	3591.80 W	3591.80	
0.00							
10280.00	89.322	270.000	6863.61	0.00 S	3601.80 W	3601.80	
0.00							
10290.00	89.322	270.000	6863.73	0.00 S	3611.80 W	3611.80	
0.00							
10300.00	89.322	270.000	6863.84	0.00 S	3621.80 W	3621.80	
0.00							
10310.00	89.322	270.000	6863.96	0.00 S	3631.80 W	3631.80	
0.00							
10320.00	89.322	270.000	6864.08	0.00 S	3641.80 W	3641.80	
0.00							
10330.00	89.322	270.000	6864.20	0.00 S	3651.80 W	3651.80	
0.00							
10340.00	89.322	270.000	6864.32	0.00 S	3661.80 W	3661.80	
0.00							
10350.00	89.322	270.000	6864.44	0.00 S	3671.80 W	3671.80	
0.00							
10360.00	89.322	270.000	6864.55	0.00 S	3681.80 W	3681.80	
0.00							
10370.00	89.322	270.000	6864.67	0.00 S	3691.80 W	3691.80	
0.00							
10380.00	89.322	270.000	6864.79	0.00 S	3701.79 W	3701.79	
0.00							
10390.00	89.322	270.000	6864.91	0.00 S	3711.79 W	3711.79	
0.00							
10400.00	89.322	270.000	6865.03	0.00 S	3721.79 W	3721.79	
0.00							
10410.00	89.322	270.000	6865.15	0.00 S	3731.79 W	3731.79	
0.00							
10420.00	89.322	270.000	6865.26	0.00 S	3741.79 W	3741.79	
0.00							
10430.00	89.322	270.000	6865.38	0.00 S	3751.79 W	3751.79	
0.00							
10440.00	89.322	270.000	6865.50	0.00 S	3761.79 W	3761.79	
0.00							
10450.00	89.322	270.000	6865.62	0.00 S	3771.79 W	3771.79	
0.00							
10460.00	89.322	270.000	6865.74	0.00 S	3781.79 W	3781.79	
0.00							
10470.00	89.322	270.000	6865.86	0.00 S	3791.79 W	3791.79	
0.00							
10480.00	89.322	270.000	6865.97	0.00 S	3801.79 W	3801.79	
0.00							
10490.00	89.322	270.000	6866.09	0.00 S	3811.79 W	3811.79	
0.00							
10500.00	89.322	270.000	6866.21	0.00 S	3821.79 W	3821.79	
0.00							
10510.00	89.322	270.000	6866.33	0.00 S	3831.79 W	3831.79	
0.00							
10520.00	89.322	270.000	6866.45	0.00 S	3841.79 W	3841.79	
0.00							
10530.00	89.322	270.000	6866.57	0.00 S	3851.78 W	3851.78	
0.00							
10540.00	89.322	270.000	6866.68	0.00 S	3861.78 W	3861.78	
0.00							
10550.00	89.322	270.000	6866.80	0.00 S	3871.78 W	3871.78	

0.00							
10560.00	89.322	270.000	6866.92	0.00 S	3881.78 W	3881.78	
0.00							
10570.00	89.322	270.000	6867.04	0.00 S	3891.78 W	3891.78	
0.00							
10580.00	89.322	270.000	6867.16	0.00 S	3901.78 W	3901.78	
0.00							
10590.00	89.322	270.000	6867.28	0.00 S	3911.78 W	3911.78	
0.00							
10600.00	89.322	270.000	6867.39	0.00 S	3921.78 W	3921.78	
0.00							
10610.00	89.322	270.000	6867.51	0.00 S	3931.78 W	3931.78	
0.00							
10620.00	89.322	270.000	6867.63	0.00 S	3941.78 W	3941.78	
0.00							
10630.00	89.322	270.000	6867.75	0.00 S	3951.78 W	3951.78	
0.00							
10640.00	89.322	270.000	6867.87	0.00 S	3961.78 W	3961.78	
0.00							
10650.00	89.322	270.000	6867.99	0.00 S	3971.78 W	3971.78	
0.00							
10660.00	89.322	270.000	6868.10	0.00 S	3981.78 W	3981.78	
0.00							
10670.00	89.322	270.000	6868.22	0.00 S	3991.77 W	3991.77	
0.00							
10680.00	89.322	270.000	6868.34	0.00 S	4001.77 W	4001.77	
0.00							
10690.00	89.322	270.000	6868.46	0.00 S	4011.77 W	4011.77	
0.00							
10700.00	89.322	270.000	6868.58	0.00 S	4021.77 W	4021.77	
0.00							
10710.00	89.322	270.000	6868.70	0.00 S	4031.77 W	4031.77	
0.00							
10720.00	89.322	270.000	6868.81	0.00 S	4041.77 W	4041.77	
0.00							
10730.00	89.322	270.000	6868.93	0.00 S	4051.77 W	4051.77	
0.00							
10740.00	89.322	270.000	6869.05	0.00 S	4061.77 W	4061.77	
0.00							
10750.00	89.322	270.000	6869.17	0.00 S	4071.77 W	4071.77	
0.00							
10760.00	89.322	270.000	6869.29	0.00 S	4081.77 W	4081.77	
0.00							
10770.00	89.322	270.000	6869.41	0.00 S	4091.77 W	4091.77	
0.00							
10780.00	89.322	270.000	6869.52	0.00 S	4101.77 W	4101.77	
0.00							
10790.00	89.322	270.000	6869.64	0.00 S	4111.77 W	4111.77	
0.00							
10800.00	89.322	270.000	6869.76	0.00 S	4121.77 W	4121.77	
0.00							
10810.00	89.322	270.000	6869.88	0.00 S	4131.76 W	4131.76	
0.00							
10820.00	89.322	270.000	6870.00	0.00 S	4141.76 W	4141.76	
0.00							
10830.00	89.322	270.000	6870.12	0.00 S	4151.76 W	4151.76	
0.00							
10840.00	89.322	270.000	6870.23	0.00 S	4161.76 W	4161.76	
0.00							
10850.00	89.322	270.000	6870.35	0.00 S	4171.76 W	4171.76	
0.00							
10860.00	89.322	270.000	6870.47	0.00 S	4181.76 W	4181.76	
0.00							
10870.00	89.322	270.000	6870.59	0.00 S	4191.76 W	4191.76	

0.00							
10880.00	89.322	270.000	6870.71	0.00 S	4201.76 W	4201.76	
0.00							
10890.00	89.322	270.000	6870.83	0.00 S	4211.76 W	4211.76	
0.00							
10900.00	89.322	270.000	6870.94	0.00 S	4221.76 W	4221.76	
0.00							
10910.00	89.322	270.000	6871.06	0.00 S	4231.76 W	4231.76	
0.00							
10920.00	89.322	270.000	6871.18	0.00 S	4241.76 W	4241.76	
0.00							
10930.00	89.322	270.000	6871.30	0.00 S	4251.76 W	4251.76	
0.00							
10940.00	89.322	270.000	6871.42	0.00 S	4261.76 W	4261.76	
0.00							
10950.00	89.322	270.000	6871.53	0.00 S	4271.76 W	4271.76	
0.00							
10960.00	89.322	270.000	6871.65	0.00 S	4281.75 W	4281.75	
0.00							
10970.00	89.322	270.000	6871.77	0.00 S	4291.75 W	4291.75	
0.00							
10980.00	89.322	270.000	6871.89	0.00 S	4301.75 W	4301.75	
0.00							
10990.00	89.322	270.000	6872.01	0.00 S	4311.75 W	4311.75	
0.00							
11000.00	89.322	270.000	6872.13	0.00 S	4321.75 W	4321.75	
0.00							
11010.00	89.322	270.000	6872.24	0.00 S	4331.75 W	4331.75	
0.00							
11020.00	89.322	270.000	6872.36	0.00 S	4341.75 W	4341.75	
0.00							
11030.00	89.322	270.000	6872.48	0.00 S	4351.75 W	4351.75	
0.00							
11040.00	89.322	270.000	6872.60	0.00 S	4361.75 W	4361.75	
0.00							
11050.00	89.322	270.000	6872.72	0.00 S	4371.75 W	4371.75	
0.00							
11060.00	89.322	270.000	6872.84	0.00 S	4381.75 W	4381.75	
0.00							
11070.00	89.322	270.000	6872.95	0.00 S	4391.75 W	4391.75	
0.00							
11080.00	89.322	270.000	6873.07	0.00 S	4401.75 W	4401.75	
0.00							
11090.00	89.322	270.000	6873.19	0.00 S	4411.75 W	4411.75	
0.00							
11100.00	89.322	270.000	6873.31	0.00 S	4421.74 W	4421.74	
0.00							
11110.00	89.322	270.000	6873.43	0.00 S	4431.74 W	4431.74	
0.00							
11120.00	89.322	270.000	6873.55	0.00 S	4441.74 W	4441.74	
0.00							
11130.00	89.322	270.000	6873.66	0.00 S	4451.74 W	4451.74	
0.00							
11140.00	89.322	270.000	6873.78	0.00 S	4461.74 W	4461.74	
0.00							
11150.00	89.322	270.000	6873.90	0.00 S	4471.74 W	4471.74	
0.00							
11160.00	89.322	270.000	6874.02	0.00 S	4481.74 W	4481.74	
0.00							
11170.00	89.322	270.000	6874.14	0.00 S	4491.74 W	4491.74	
0.00							
11180.00	89.322	270.000	6874.26	0.00 S	4501.74 W	4501.74	
0.00							
11190.00	89.322	270.000	6874.37	0.00 S	4511.74 W	4511.74	

0.00							
11200.00	89.322	270.000	6874.49	0.00 S	4521.74 W	4521.74	
0.00							
11210.00	89.322	270.000	6874.61	0.00 S	4531.74 W	4531.74	
0.00							
11220.00	89.322	270.000	6874.73	0.00 S	4541.74 W	4541.74	
0.00							
11230.00	89.322	270.000	6874.85	0.00 S	4551.74 W	4551.74	
0.00							
11240.00	89.322	270.000	6874.97	0.00 S	4561.73 W	4561.73	
0.00							
11242.87	89.322	270.000	6875.00	0.00 N	4564.60 W	4564.60	
0.00							

All data are in feet unless otherwise stated. Directions and coordinates are relative to True 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 270.000° (True).

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 11242.87ft., the Bottom Hole Displacement is 4564.60ft., in the Direction of 270.000° (True).

Hydrogen Sulfide Drilling Operations Plan
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 2
Unit I, Section 13
T16S-R28E, Eddy County, NM

- 1 All Company and Contract personnel admitted on location must be trained by a qualified H₂S safety instructor to the following:
 - A. Characteristics of H₂S
 - B. Physical effects and hazards
 - C. Proper use of safety equipment and life support systems.
 - D. Principle and operation of H₂S detectors, warning system and briefing areas.
 - E. Evacuation procedure, routes and first aid.
 - F. Proper use of 30 minute pressure demand air pack.
- 2 H₂S Detection and Alarm Systems:
 - A. H₂S detectors and audio alarm system to be located at bell nipple, end of flow line (mud pit) and on derrick floor or doghouse.
- 3 Windsock and/or wind streamers:
 - A. Windsock at mudpit area should be high enough to be visible.
 - B. Windsock at briefing area should be high enough to be visible.
- 4 Condition Flags and Signs:
 - A. Warning sign on access road to location.
 - B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H₂S present in dangerous concentration). Only emergency personnel admitted to location.
- 5 Well control equipment:
 - A. See exhibit "E"
- 6 Communication:
 - A. While working under masks chalkboards will be used for communication.
 - B. Hand signals will be used where chalk board is inappropriate.
 - C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.
- 7 Drillstem Testing:

No DSTs or cores are planned at this time.
- 8 Drilling contractor supervisor will be required to be familiar with the effects H₂S has on tubular goods and other mechanical equipment.
- 9 If H₂S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H₂S scavengers if necessary.

H₂S Contingency Plan
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 2
Unit I, Section 13
T16S-R28E, Eddy County, NM

Emergency Procedures

In the event of a release of gas containing H₂S, the first responder(s) must:

- ★ Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- ★ Evacuate any public places encompassed by the 100 ppm ROE.
- ★ Be equipped with H₂S monitors and air packs in order to control the release.
- ★ Use the "buddy system" to ensure no injuries occur during the response.
- ★ Take precautions to avoid personal injury during this operation.
- ★ Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- ★ Have received training in the:
 - ◆ Detection of H₂S, and
 - ◆ Measures for protection against the gas,
 - ◆ Equipment used for protection and emergency response.

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

Characteristics of H₂S and SO₂

Common Name	Chemical Formula	Specific Gravity	Threshold Limit	Hazardous Limit	Lethal Concentration
Hydrogen Sulfide	H ₂ S	1.189 Air=1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	2.21 Air=1	2 ppm	N/A	1000 ppm

Contacting Authorities

Cimarex Energy Co. of Colorado's personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Cimarex Energy Co. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

H₂S Contingency Plan Emergency Contacts
Cimarex Energy Co. of Colorado
 Cave Lake.13 Federal Com No. 2
 Unit I, Section 13
 T16S-R28E, Eddy County, NM

<u>Company Office</u>			
Cimarex Energy Co. of Colorado		800-969-4789	
Co. Office and After-Hours Menu			
<u>Key Personnel</u>			
<u>Name</u>	<u>Title</u>	<u>Office</u>	<u>Mobile</u>
Doug Park	Drilling Manager	972-443-6463	972-333-1407
Dee Smith	Drilling Super	972-443-6491	972-882-1010
Jim Evans	Drilling Super	972-443-6451	972-465-6564
Dorsey Rogers	Field Super		505-200-6105
Roy Shirley	Field Super		432-634-2136
<u>Artesia</u>			
Ambulance		911	
State Police		575-746-2703	
City Police		575-746-2703	
Sheriff's Office		575-746-9888	
Fire Department		575-746-2701	
Local Emergency Planning Committee		575-746-2122	
New Mexico Oil Conservation Division		575-748-1283	
<u>Carlsbad</u>			
Ambulance		911	
State Police		575-885-3137	
City Police		575-885-2111	
Sheriff's Office		575-887-7551	
Fire Department		575-887-3798	
Local Emergency Planning Committee		575-887-6544	
US Bureau of Land Management		575-887-6544	
<u>Santa Fe</u>			
New Mexico Emergency Response Commission (Santa Fe)		505-476-9600	
New Mexico Emergency Response Commission (Santa Fe) 24 Hrs		505-827-9126	
New Mexico State Emergency Operations Center		505-476-9635	
<u>National</u>			
National Emergency Response Center (Washington, D.C.)		800-424-8802	
<u>Medical</u>			
Flight for Life - 4000 24th St.; Lubbock, TX		806-743-9911	
Aerocare - R3, Box 49F; Lubbock, TX		806-747-8923	
Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM		505-842-4433	
SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM		505-842-4949	
<u>Other</u>			
Boots & Coots IWC		800-256-9688	or 281-931-8884
Cudd Pressure Control		432-699-0139	or 432-563-3356
Halliburton		575-746-2757	
B.J. Services		575-746-3569	

Surface Use Plan
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 2
Unit I, Section 13
T16S-R28E, Eddy County, NM

- 1 Existing Roads: Area maps, Exhibit "B" is a reproduction of Eddy Co. General Highway Map. Exhibit "C" is a reproduction of a USGS Topographic Map, showing existing roads and proposed roads. All existing roads will be maintained in a condition equal to or better than current conditions. Any new roads will be constructed to BLM specifications.
 - A. Exhibit "A" shows the proposed well site as staked.
 - B. From junction of US Hwy 82 and Barnival Draw Rd, go North on Barnival Draw Rd for 6.8 miles to lease road. On lease road, go Northwest 2.4 miles to lease road. On lease road, go South 1.0 miles to proposed location.
- 2 Planned Access Roads: 235' of access road is proposed, 147' of which will be on-lease. State ROW will be acquired.
- 3 Location of Existing Wells in a One-Mile Radius - Exhibit A
 - A. Water wells - None known
 - B. Disposal wells - None known
 - C. Drilling wells - None known
 - D. Producing wells - As shown on Exhibit "A"
 - E. Abandoned wells - As shown on Exhibit "A"
- 4 If on completion this well is a producer, Cimarex Energy Co. of Colorado will furnish maps and/or plats showing on site facilities or off site facilities if needed. This will be accompanied by a Sundry Notice.
- 5 Location and Type of Water Supply:

Water will be purchased locally from a commercial source and trucked over the access roads or piped in flexible lines laid on top of the ground.
- 6 Source of Construction Material:

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

Surface Use Plan
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 2
Unit I, Section 13
T16S-R28E, Eddy County, NM

7 Methods of Handling Waste Material:

- A. Drill cuttings will be separated by a series of solids removal equipment and stored in steel containment pits and then hauled to a state-approved disposal facility.
- B. All trash, junk and other waste material will be contained in trash cages or bins to prevent scattering. When the job is completed all contents will be removed and disposed of in an approved sanitary land fill.
- C. Salts remaining after completion of well will be picked up by supplier including broken sacks.
- D. Sewage from living quarters will drain into holding tanks and be cleaned out periodically. A Porta-John will be provided for the rig crews. This equipment will be properly maintained during the drilling operations and removed upon completion of the well.
- E. Drilling fluids will be contained in steel pits in a closed circulating system. Fluids will be cleaned and reused. Water produced during testing will be contained in the steel pits and disposed of at a state approved disposal facility. Any oil or condensate produced will be stored in test tanks until sold and hauled from the site.

8 Ancillary Facilities:

- A. No camps or airstrips to be constructed.

9 Well Site Layout:

- A. Exhibit "D" shows location and rig layout.
- C. Mud pits in the closed circulating system will be steel pits and the cuttings will be stored in steel containment pits.
- D. Cuttings will be stored in steel pits until they are hauled to a state-approved disposal facility.
- E. If the well is a producer, 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 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.

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 recontoured 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.

Surface Use Plan
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 2
Unit I, Section 13
T16S-R28E, Eddy County, NM

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 1½ miles of this location.

Operator Certification Statement
Cimarex Energy Co. of Colorado
Cave Lake 13 Federal Com No. 2
Unit I, 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
Zeno Farris
DATE: March 31, 2008
TITLE: Manager Operations Administration

PECOS DISTRICT CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy Co. of Colorado
LEASE NO.:	NM95630
WELL NAME & NO.:	Cave Lake 13 Federal Com No. 2
SURFACE HOLE FOOTAGE:	1980' FSL & 330' FEL (State)
BOTTOM HOLE FOOTAGE:	1980' FSL & 330' FWL (Federal)
LOCATION:	Section 13, T. 16 S., R 28 E., NMPM
COUNTY:	Eddy County, New Mexico

TABLE OF CONTENTS

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

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Hydrology
 - Cave/Karst
- ☒ **Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☒ **Road Section Diagram**
- ☒ **Drilling**
- ☐ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
 - Electric Lines
- ☒ **Interim Reclamation**
- ☐ **Final Abandonment/Reclamation**

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural and/or paleontological resource discovered by the operator or by any person working on the operator's behalf shall immediately report such findings to the Authorized Officer. The operator is fully accountable for the actions of their contractors and subcontractors. The operator shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery shall be made by the Authorized Officer to determine the appropriate actions that shall be required to prevent the loss of significant cultural or scientific values of the discovery. The operator shall be held responsible for the cost of the proper mitigation measures that the Authorized Officer assesses after consultation with the operator on the evaluation and decisions of the discovery. Any unauthorized collection or disturbance of cultural or paleontological resources may result in a shutdown order by the Authorized Officer.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Mitigation Measures: The mitigation measures include the Pecos District Conditions of Approval, the standard stipulations for High Cave/Karst Occurrence, and the standard stipulations for permanent resource roads.

All of these locations are located in a High Cave/Karst area and there seems to be some minor drainage of water through all of these locations. There needs to be a berm placed around the entire location of each one of these wells. This will help to prevent any contamination to the soils below the proposed well pads.

Cave Lake 13 Federal Com. # 2: Closed Loop V-Door North

EA#: NM-520-08-710

Lease #: NM-109643, NM-119269, NM-95630, NM-97128

Cimarex Energy Co. of Colorado

**Drumstick 7 Federal Com. # 2, Cave Lake 13 Fed. Com. # 2, # 3, # 4, and
Cave Lake 24 Fed. Com. # 4**

Conditions of Approval Cave and Karst

** Depending on location, additional Drilling, Casing, and Cementing procedures may be required to protect critical karst groundwater recharge areas.

Cave/Karst Surface Mitigation

The following stipulations will be applied to minimize impacts during construction, drilling and production.

Berming:

Tank batteries will be bermed to contain 1 ½ times the content of the largest tank.

Bermed areas will be lined with a 4 oz. felt liner to prevent tears or punctures and a permanent 60 mil plastic liner.

Leak Detection System:

A method of detecting leaks is required. The method could incorporate gauges to measure loss, siting valves and lines so they can be visually inspected, or installing electronic sensors to alarm when a leak is present. Leak detection plan will be submitted to BLM for approval.

Cave/Karst Subsurface Mitigation

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

Lost Circulation:

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

Regardless of the type of drilling machinery used, if a void of four feet or more and circulation losses greater than 70 percent occur simultaneously while drilling in any cave-bearing zone, the BLM will be notified immediately by the operator. The BLM will assess the situation and work with the operator on corrective actions to resolve the problem.

No Blasting:

No blasting will be utilized for pad construction. The pad will be constructed and leveled by adding the necessary fill and caliche.

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.

VI. CONSTRUCTION

A. NOTIFICATION

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (505) 234-5972 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall stockpile the topsoil of the well pad. The topsoil shall not be used to backfill the reserve pit and will be used for interim and final reclamation.

C. Closed Loop System

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

If the operator elects to surface the access road and/or well pad, mineral materials extracted during construction of the reserve pit may be used for surfacing the well pad and access road and other facilities on the lease.

Payment shall be made to the BLM prior to removal of any additional federal mineral materials from any site other than the reserve pit. Call the Carlsbad Field Office at (505) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation.

The well pad shall be constructed in a manner which creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. ON LEASE ACCESS ROADS

Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed thirty (30) feet.

Surfacing

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning

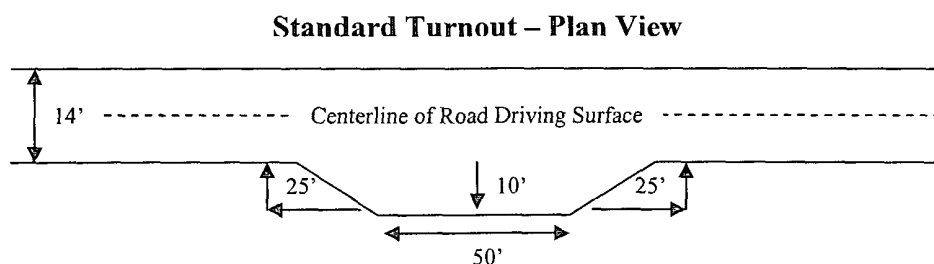
Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

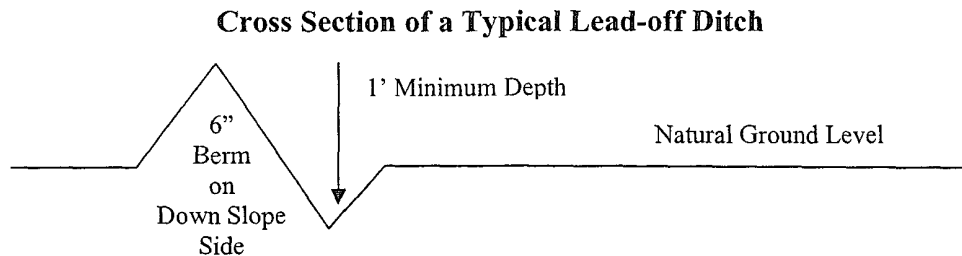
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall be constructed on all blind curves. Turnouts shall conform to the following diagram:



Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outsloping and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

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

Culvert Installations

Appropriately sized culvert(s) shall be installed at the deep waterway channel flow crossing.

Cattleguards

An appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s).

Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for

the condition of the existing cattleguard(s) that are in place and are utilized during lease operations.

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

Fence Requirement

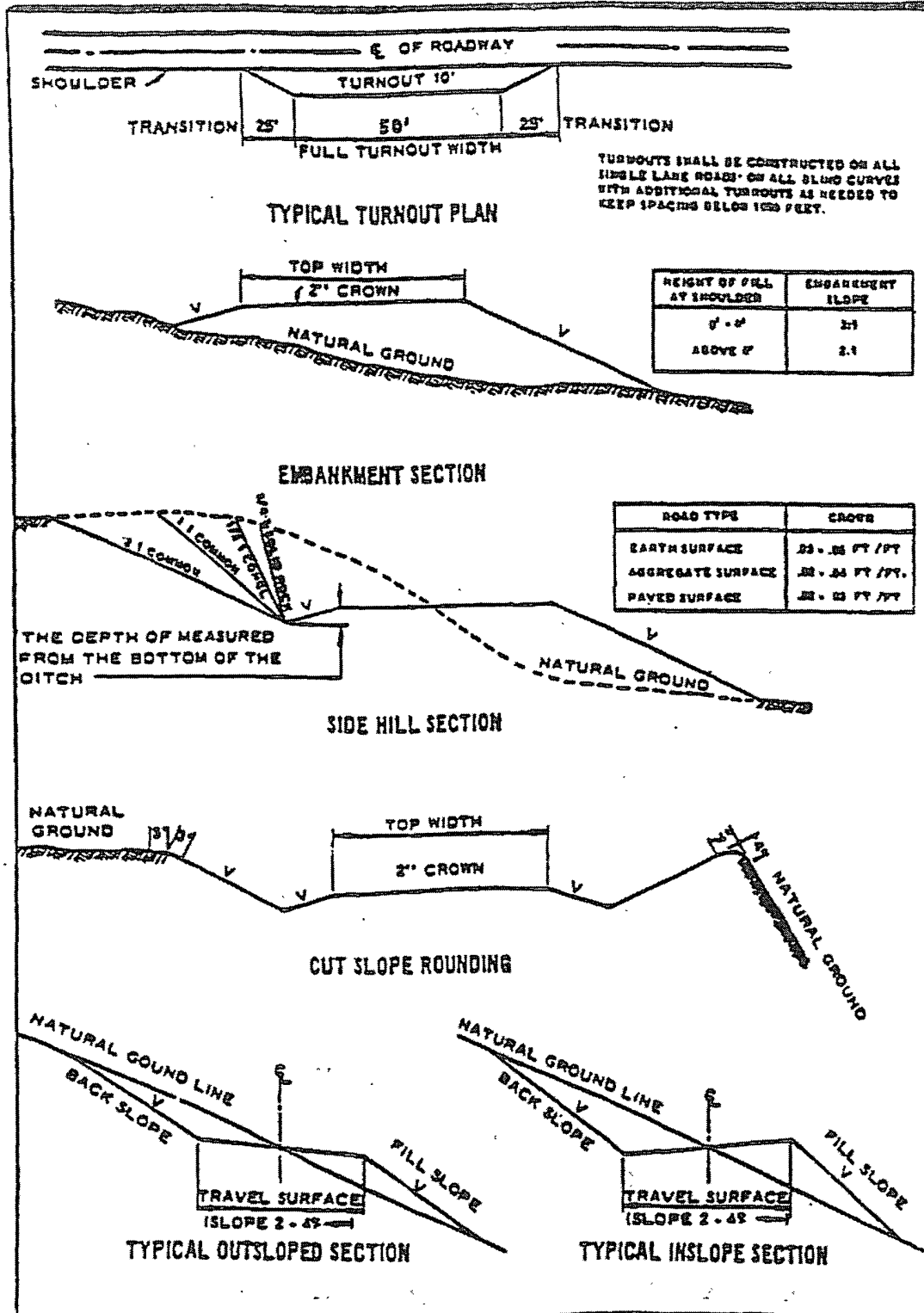
Where entry is required across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting.

The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fence(s).

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

Figure 1 - Cross Sections and Plans For Typical Road Sections



VII. DRILLING

A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 4 hours in advance for a representative to witness:

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

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

1. **Hydrogen Sulfide has been reported as a hazard. It is recommended that monitoring equipment be onsite for potential Hydrogen Sulfide and an H₂S drilling plan is attached. If Hydrogen Sulfide is encountered, please report measurements and formations to the BLM.**
2. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
3. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

B. CASING

Changes to the approved APD casing and cement program require submitting a sundry and receiving approval prior to work.

Centralizers required on surface casing per Onshore Order 2.III.B.1.f.

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

Wait on cement (WOC) time for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compression strength, whichever is greater. (This is to include the lead cement).

WOC for water basin or potash applies to entire wellbore.

High cave/karst.

Possible lost circulation in the Grayburg and San Andres formations.

Possible high pressure gas bursts from the Wolfcamp formation – applicable to pilot hole.

1. The **13-3/8 inch** surface casing shall be set at **approximately 340 feet within the Tansill formation** 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 cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8 inch** intermediate casing is:

☒ Cement to surface. If cement does not circulate see B.1.a-d above.

Formation below the 9-5/8" shoe to be tested according to Onshore Order 2.III.B.1.i.

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

3. The minimum required fill of cement behind the **7 inch** production casing is:
 - ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

Formation below the kick off point to be tested according to Onshore Order 2.III.B.1.i.

Tag cement at bottom of pilot hole and report on subsequent report.

NOTE: Pilot hole will require proper plug when well is plugged.

4. The minimum required fill of cement behind the 4-1/2 inch production casing is:

☒ Not required as operator is using Peak Iso-Pak liner. **Seal on Peak Systems Iso-Pack liner is to be tested per Onshore Oil and Gas Order 2.III.B.1.b. Please call BLM for witness of seal test.**

5. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
 - a. The tests shall be done by an independent service company.
 - b. The results of the test shall be reported to the appropriate BLM office.
 - c. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
 - d. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.
 - e. A variance to test only the surface casing to the reduced pressure of 1000 psi with the rig pumps is approved. **The BOP will be tested to 3000 psi by an independent service company.**

D. DRILL STEM TEST

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

WWI 052608

VIII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Containment Structures

The containment structure shall be constructed to hold the capacity of the entire contents of the largest tank, plus 24 hour production, unless more stringent protective requirements are deemed necessary by the Authorized Officer.

Painting Requirement

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color
Shale Green, Munsell Soil Color Chart # 5Y 4/2

B. PIPELINES

C. ELECTRIC LINES

IX. INTERIM RECLAMATION & RESERVE PIT CLOSURE

A. INTERIM RECLAMATION

If the well is a producer, interim reclamation shall be conducted on the well site in accordance with the orders of the Authorized Officer. The operator shall submit a Sundry Notices and Reports on Wells (Notice of Intent), Form 3160-5, prior to conducting interim reclamation.

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

At the time the well pad is to be reclaimed, operators should work with BLM surface management specialists to devise the best strategies to reduce the size of the location. Any reductions should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

Seed Mixture 4, for Gypsum Sites

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

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

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

<u>Species</u>	<u>lb/acre</u>
Alkali Sacaton (<i>Sporobolus airoides</i>)	1.0
DWS $\subseteq$ Four-wing saltbush (<i>Atriplex canescens</i>)	5.0

$\subseteq$ DWS: DeWinged Seed

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed
(Insert Seed Mixture Here)

X. FINAL ABANDONMENT & REHABILITATION REQUIREMENTS

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

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