

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

OCD-ARTESIA

SUBMIT IN TRIPLICATE\*

(Other instructions on reverse side)

ATS-07-282

FORM APPROVED

OMB NO. 1004-0136

Expires: February 28, 1995

RESUBMITTAL

APPLICATION FOR PERMIT TO DRILL OR DEEPEN

1a. TYPE OF WORK

DRILL ☒

DEEPEN ☐

1b. TYPE OF WELL

OIL ☐

GAS ☒

SINGLE ☒

MULTIPLE ☐

WELL WELL

OTHER ZONE

ZONE

2. NAME OF OPERATOR

Cimarex Energy Co. of Colorado

3. ADDRESS AND TELEPHONE NO.

P.O. Box 140907 Irving TX 75014 972-401-3111

4. LOCATION OF WELL

(Report location clearly and in accordance with any State requirements.)

1000' FNL & 1700' FWL

14. DISTANCE IN MILES AND DIRECTION FROM NEAREST TOWN OR POST OFFICE\*

17 miles South of Carlsbad

15. DISTANCE FROM PROPOSED\*

LOCATION TO NEAREST PROPERTY OR LEASE LINE, T.O

(Also to nearest drlg. unit line, if any)

1000'

16. NO. OF ACRES IN LEASE

998.4

17. NO. OF ACRES ASSIGNED

TO THIS WELL

640

18. DISTANCE FROM PROPOSED LOCATION\*

TO NEAREST WELL, DRILLING COMPLETED, OR APPLIED FOR, ON THIS LEASE, FT.

2333'

19. PROPOSED DEPTH

12300'

20. ROTARY OR CABLE TOOLS

Rotary

21. ELEVATIONS (Show whether DF, RT, GR, etc.)

3467' GR

22. APPROX. DATE WORK WILL START\*

04-01-07

23

PROPOSED CASING AND CEMENTING PROGRAM

SIZE OF HOLE	GRADE, SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	QUANTITY OF CEMENT
17-1/2"	13-3/8" H-40	48#	250'	240 sx circ
12-1/4"	9-5/8" J-55	40#	2375'	1000 sx circ
8-3/4"	5-1/2" P-110	17#	12300'	3500 sx TOC 7800' CoA

From the base of the surface pipe through the running of production casing, the well will be equipped with a 10000# psi BOP system. We are requesting a variance for the 13-3/8" surface casing and BOP testing 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. During the running of the surface pipe and the drilling of the intermediate hole, we do not anticipate any pressures greater than 1000# psi, and we are requesting a variance to test the 13-3/8" casing and BOP system to 1000# psi and to use rig pumps instead of an independent service company.

IN ABOVE SPACE, DESCRIBE PROPOSED PROGRAM:

If proposal is to deepen, give data on present productive zone and proposed new productive zone.

If proposal is to drill or deepen directionally, give pertinent data on subsurface locations and measured and true vertical depths. Give blowout preventer program, if any.

SIGNED Zeno Farris TITLE Mgr. Ops. Admin DATE 01-24-07

(This space for Federal or State office use)

PERMIT NO.

APPROVAL DATE

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:

APPROVED BY

TITLE

FIELD MANAGER

DATE

\*See Instructions On Reverse Side

APPROVAL FOR 1 YEAR

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS  
AND SPECIAL STIPULATIONS  
ATTACHED

CARLSBAD CONTROLLED WATER BASIN  
SEE ATTACHED FOR  
CONDITIONS OF APPROVAL

DISTRICT I  
1625 N. FRENCH DR., ROBBIE, NM 86240

State of New Mexico  
Energy, Minerals and Natural Resources Department

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

OIL CONSERVATION DIVISION  
1220 SOUTH ST. FRANCIS DR.  
Santa Fe, New Mexico 87505

Form C-102  
Revised JUNE 10, 2003  
Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

WELL LOCATION AND ACREAGE DEDICATION PLAT

☐ AMENDED REPORT

API Number <b>30.015.35461</b>	Pool Code <b>87280</b>	Pool Name <b>White City; Penn (Gas)</b>
Property Code	Property Name <b>RE-SUBMIT J.M. GATES NCT-1 FEDERAL</b>	Well Number <b>4</b>
OGRID No. <b>162683</b>	Operator Name <b>Cimarex Energy Co. of Colorado</b>	Elevation <b>3467'</b>

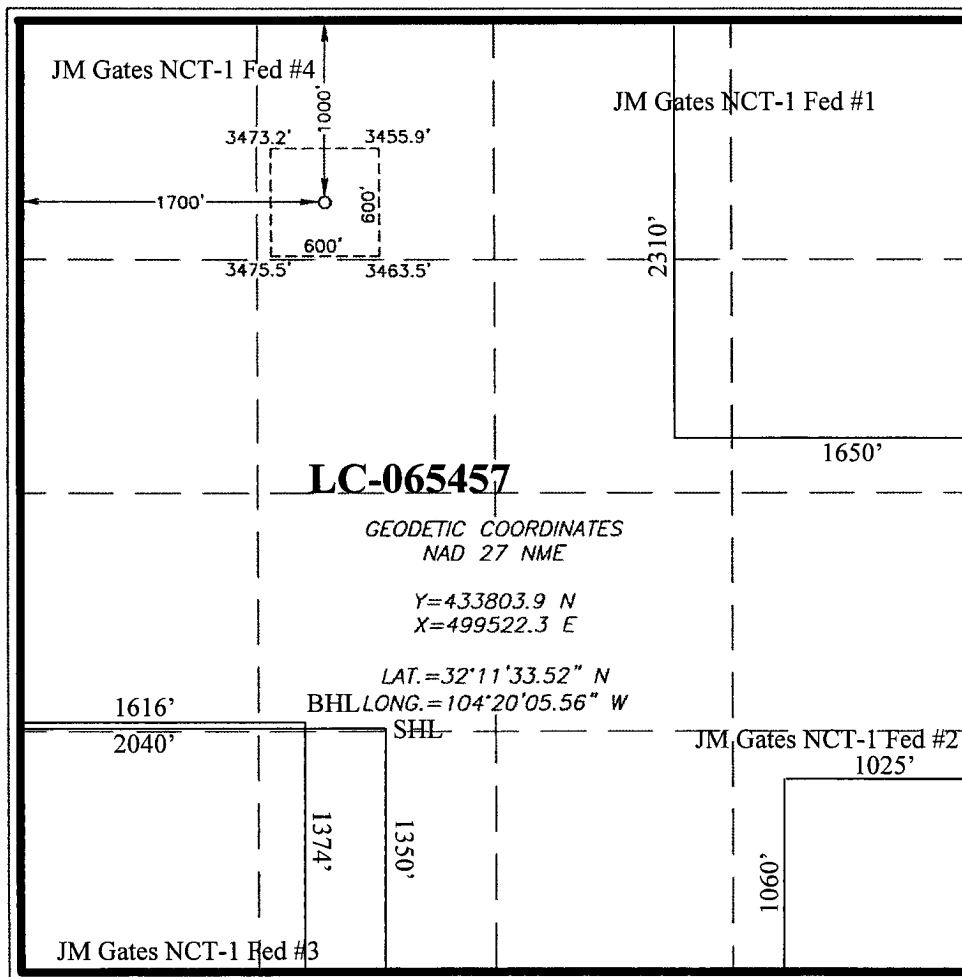
Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
C	30	24-S	26-E		1000	NORTH	1700	WEST	EDDY

Bottom Hole Location If Different From Surface

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
Dedicated Acres <b>640</b>	Joint or Infill <b>Y</b>	Consolidation Code	Order No.						

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



OPERATOR CERTIFICATION

I hereby certify the the information  
contained herein is true and complete to the  
best of my knowledge and belief.

*Zeno Farris*  
Signature  
Zeno Farris  
Printed Name  
Mgr Operations Admin  
Title  
01-24-07  
Date

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.

FEBRUARY 18, 2005  
Date Surveyed  
Signature & Seal of  
Professional Surveyor  
GARY E. EDSON  
05.11.0269  
Certificate No. 12641

## Application to Drill

Cimarex Energy Co. of Colorado  
JM Gates NCT-1 Federal No. 4 **RESUBMITTAL**  
Unit C Section 30  
T24S R26E 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: 1000' FNL & 1700' FWL

2 Elevation above sea level: GR 3467'

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: 12300'

6 Estimated tops of geological markers:

Base Salt	1304	Cisco-Canyon	9868
Delaware	1591	Strawn	10175
Bone Spring	5228	Atoka	10440
1st Bone Spring Ss	6212	Morrow	11011
2nd Bone Spring Ss	6640	Middle Morrow	11370
3rd Bone Spring Ss	8022	Lower Morrow	11660
Wolfcamp	8333		

7 Possible mineral bearing formation:

Morrow	Gas
Cisco-Canyon	Gas
Wolfcamp	Gas

8 Casing program:

Hole Size	Interval	Casing OD	Weight	Thread	Collar	Grade
17-1/2"	0-250'	13-3/8"	48#	8-R	ST&C	H-40
12-1/4"	0-2735'	9-5/8"	40#	8-R	LT&C	J-55
8-3/4"	0-12300'	5-1/2"	17#	8-R	LT&C	P-110

## Application to Drill

Cimarex Energy Co. of Colorado  
JM Gates NCT-1 Federal No. 4 RESUBMITTAL  
Unit C Section 30  
T24S R26E Eddy County, NM

### 9 Cementing & Setting Depth:

13-3/8"	Surface	Set 250' of 13-3/8" H-40 48 # ST&C casing. Cement with 240 Sx. Of Class "C" cement + additives, circulate cement to surface.
9-5/8"	Intermediate	Set 2735' of 9-5/8" J-55 40# LT&C casing. Cement with 1000 Sx. Of Class POZ/C Cement + additives. Circulate cement to surface.
5-1/2"	Intermediate 2	Set 12300' of 5-1/2" P-110 17# LTC LT&C casing. Cement with 3500 Sx. Super H + additives. TOC 7800'. <span style="float: right;">COA</span>

### 10 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 9 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.

### 11 Proposed Mud Circulating System:

Depth	Mud Wt	Viscosity	Fluid Loss	Type Mud
0 - 250'	8.4 - 8.6	30 - 32	May lose circ.	Fresh water spud mud. Add paper to control seepage and high viscosity sweeps to clean hole.
250' - 2735'	9.7 - 9.9	28 - 29	May lose circ.	Brine water. Add paper as needed to control seepage and add lime to control pH (9-10). Use high viscosity sweeps to clean hole.
2735' - 8300'	8.4 - 9.9	28 - 29	NC	Brine water. Paper for seepage. Lime for PH (9 - 9.5)
8300' - 10000'	8.45 - 8.9	28 - 29	NC	Cut brine. Caustic for pH control.
10000' - 12300'	8.9 - 9.7	29 - 45	NC	Cut Brine. Caustic for pH control.

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.

## Application to Drill

Cimarex Energy Co. of Colorado  
JM Gates NCT-1 Federal No. 4 RESUBMITTAL  
Unit C Section 30  
T24S R26E Eddy County, NM

12 Testing, Logging and Coring Program:

- A. Mud logging program: Two-man unit from 2735' 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. 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 Anticipated Starting Date and Duration of Operations:

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. The Morrow pay will be perforated and stimulated. The well will be tested and potentialized as a gas well.

# Hydrogen Sulfide Drilling Operations Plan

Cimarex Energy Co. of Colorado  
JM Gates NCT-1 Federal No. 4 RESUBMITTAL  
Unit C Section 30  
T24S R26E 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.

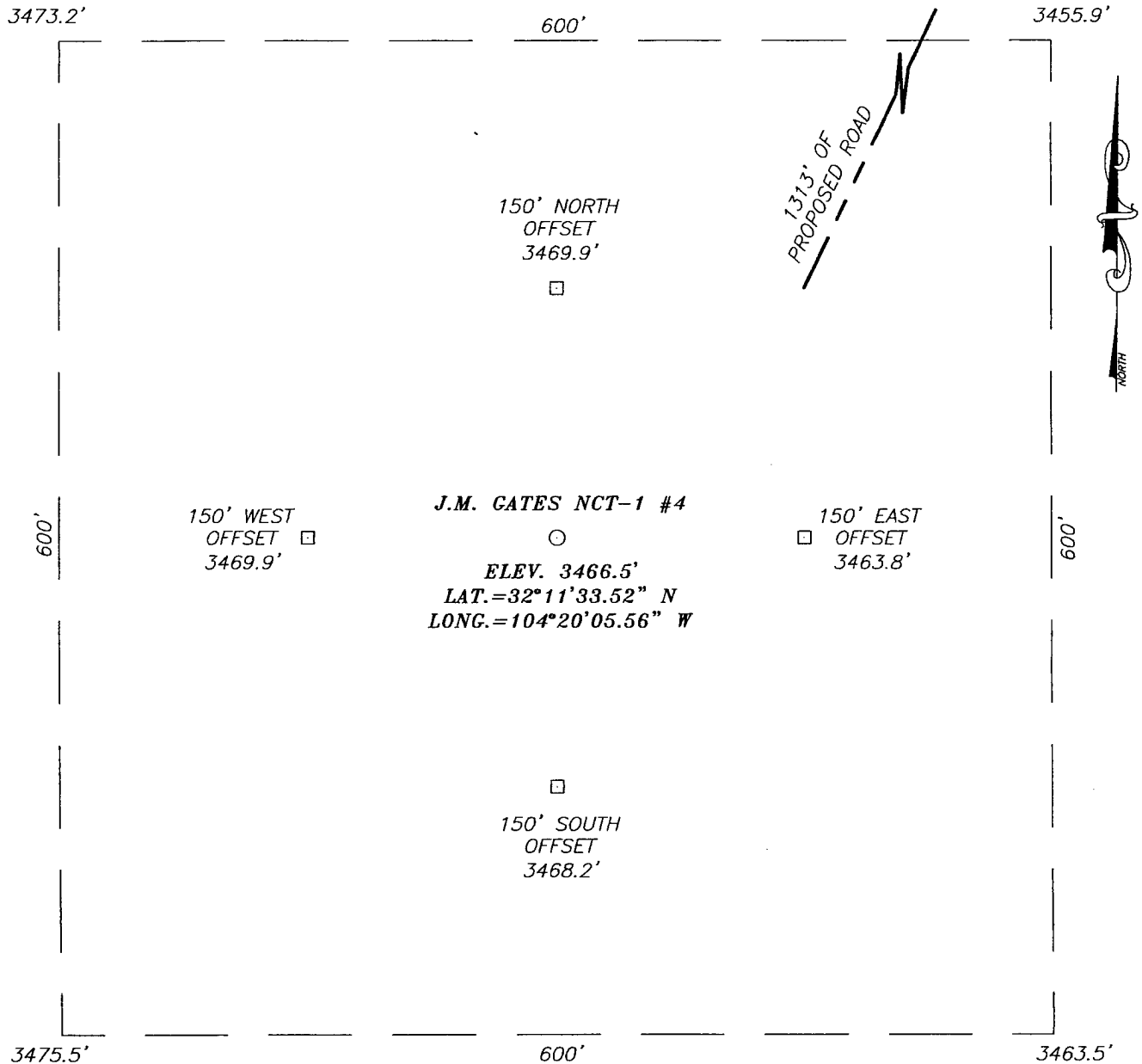
7 Drillstem Testing not anticipated.

## **Hydrogen Sulfide Drilling Operations Plan**

Cimarex Energy Co. of Colorado  
JM Gates NCT-1 Federal No. 4 RESUBMITTAL  
Unit C Section 30  
T24S R26E Eddy County, NM

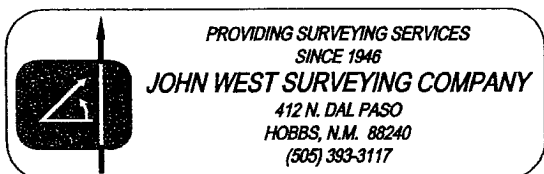
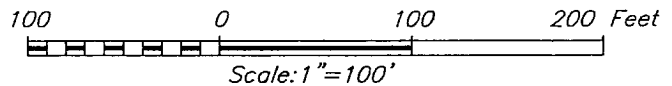
- 8 Drilling contractor supervisor will be required to be familiar with the effects H<sub>2</sub>S has on tubular goods and other mechanical equipment.
- 9 If H<sub>2</sub>S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H<sub>2</sub>S scavengers if necessary.

**SECTION 30, TOWNSHIP 24 SOUTH, RANGE 26 EAST, N.M.P.M.,**  
EDDY COUNTY, NEW MEXICO



**DIRECTIONS TO LOCATION**

FROM THE INTERSECTION OF NATIONAL PARKS HWY.  
(U.S. HWY. #62/180) AND MEANS ROAD. GO SE  
APPROX. 500' ALONG MEANS RD. TURN RIGHT (GO  
THROUGH GATE) 1500'. TURN RIGHT AND GO  
APPROX. 400' ACROSS THE NORTH EDGE OF  
CHEVRON U.S.A. ESTILL AD FED. #1 WELL PAD  
ONTO AN AT&T FIBER OPTIC CABLE ROAD. GO  
APPROX. 0.6 MILES SOUTH ALONG AT&T ROAD.  
THIS LOCATION IS APPROX. 573' SE IN PASTURE.



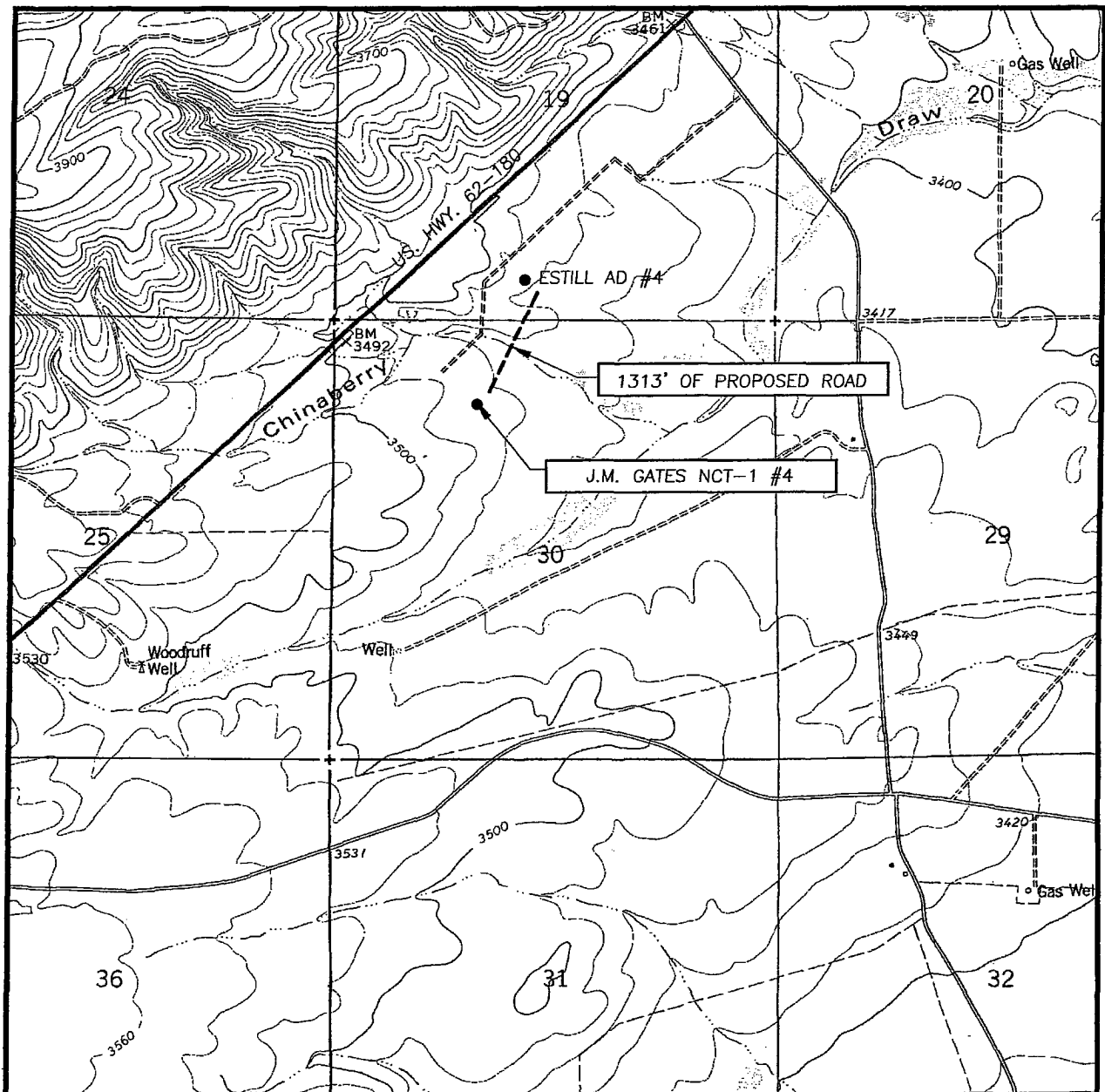
**GRUY PETROLEUM MANAGEMENT COMPANY**

J.M. GATES NCT-1 #4 WELL  
LOCATED 1000 FEET FROM THE NORTH LINE  
AND 1700 FEET FROM THE WEST LINE OF SECTION 30,  
TOWNSHIP 24 SOUTH, RANGE 26 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.

Survey Date: 02/18/05		Sheet 1 of 1 Sheets	
W.O. Number: 05.11.0269		Dr By: D. LOVE	Rev 1:N/A
Date: 02/21/05	Disk: CD#4	05110269	Scale: 1"=100'



# LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL:  
BLACK RIVER VILLAGE, N.M. - 20'

SEC. 30 TWP. 24-S RGE. 26-E

SURVEY N.M.P.M.

COUNTY EDDY

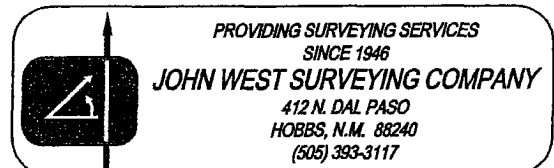
DESCRIPTION 1000' FNL & 1700' FWL

ELEVATION 3467'

OPERATOR GRUY PETROLEUM  
MANAGEMENT COMPANY

LEASE J.M. GATES NCT-1

U.S.G.S. TOPOGRAPHIC MAP  
BLACK RIVER VILLAGE, N.M.



PROVIDING SURVEYING SERVICES  
SINCE 1946

**JOHN WEST SURVEYING COMPANY**

412 N. DAL PASO  
HOBBS, N.M. 88240  
(505) 393-3117

Exhibit C

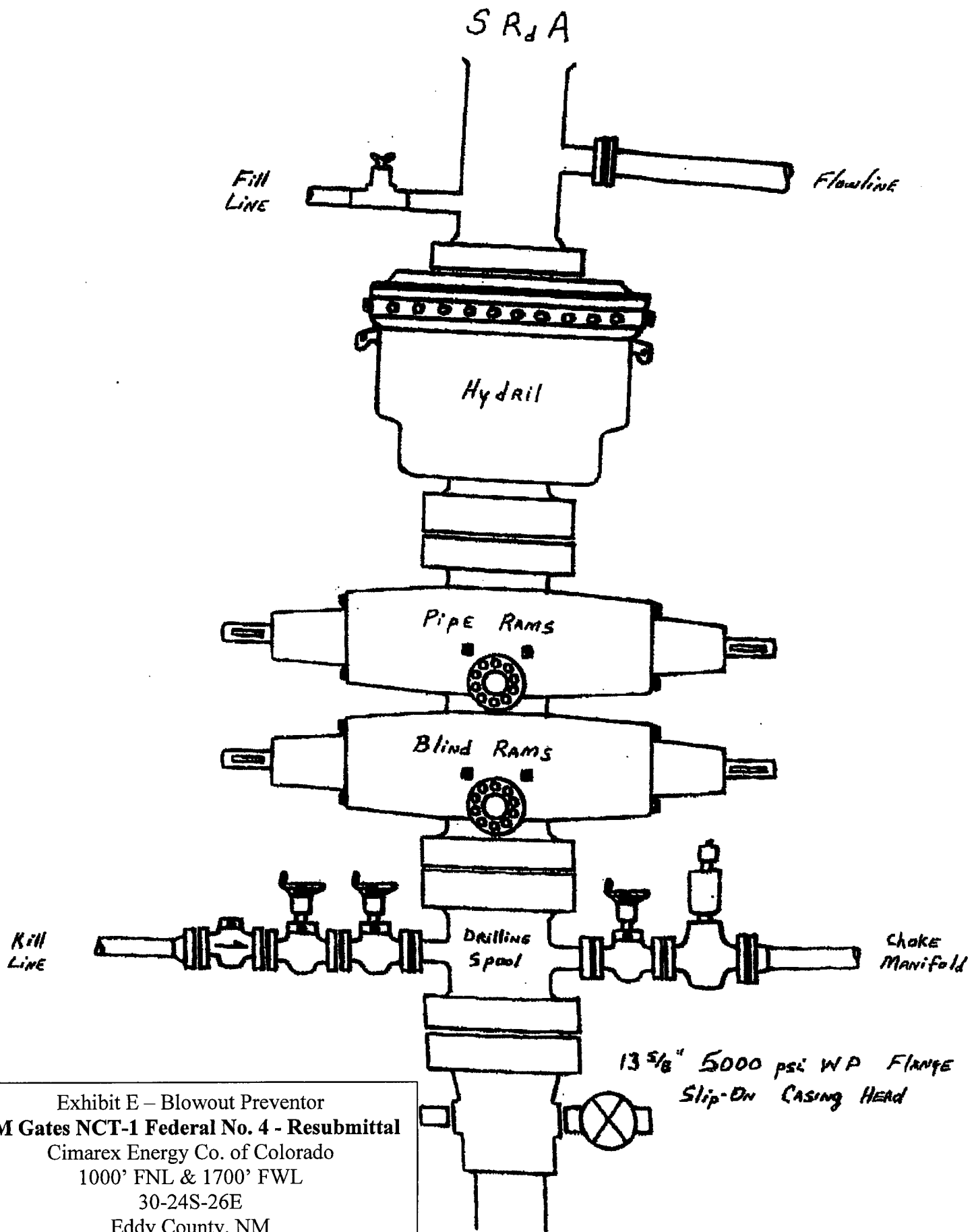


Exhibit E – Blowout Preventor  
**JM Gates NCT-1 Federal No. 4 - Resubmittal**  
 Cimarex Energy Co. of Colorado  
 1000' FNL & 1700' FWL  
 30-24S-26E  
 Eddy County, NM

DRILLING OPERATIONS  
CHOKE MANIFOLD  
5M SERVICE

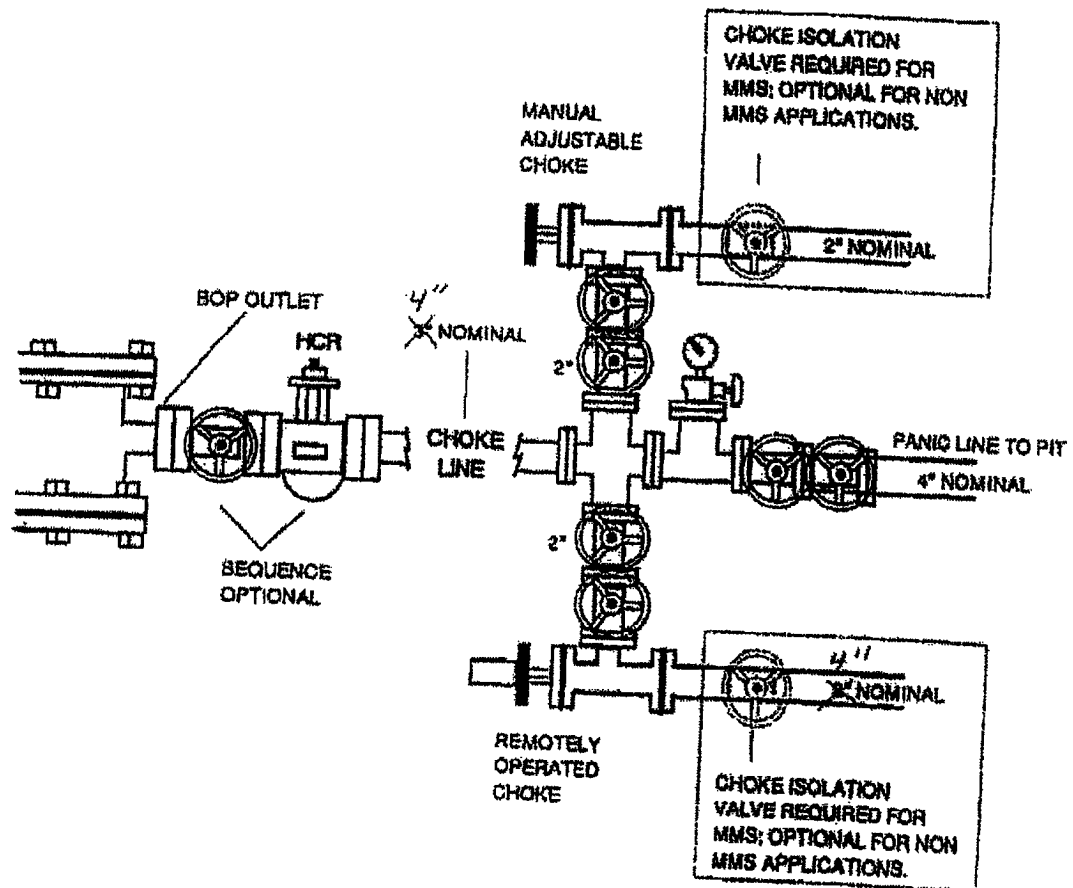


Exhibit E1 – Choke Manifold Diagram  
JM Gates NCT-1 Federal No. 4 - Resubmittal  
Cimarex Energy Co. of Colorado  
1000' FNL & 1700' FWL  
30-24S-26E  
Eddy County, NM

# **Conditions of Approval Cave and Karst**

EA#: NM-080-07-0447

Lease #: LC-065457

**Cimarex Energy Company of Colorado  
J.M. Gates NCT-1 Fed. #4**

## **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.

### **Closed Mud System with Buried Cuttings Pit:**

All fluids will be in steel tanks and hauled off. A cuttings pit will be utilized for this location. The cuttings pit will be lined with 4 oz. felt and a layer of 20 mil. plastic. Upon completion of the well all excess fluids will be vacuumed off the cuttings pit and allowed to dry. The pit liner will then be folded over the cuttings, covered with a 20 mil plastic cover and then covered with at least three feet of top soil.

## **Cave/Karst Subsurface Mitigation**

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

### **Rotary Drilling with Fresh Water:**

Rotary drilling techniques in cave or karst areas will include the use of fresh water as a circulating medium in zones where caves or karst features are expected. See geologist report for depth.

### **Fluorescent Dyes:**

Nontoxic fluorescent dyes will be added when the hole is spudded and be circulated to the bottom of the karst layers. These dyes will track the fluids if lost circulation occurs. Arrangements need to be made to have BLM witness the two dyes being injected prior to spudding the hole.

#### **Florescent Dye (Acid Yellow 73):**

Sixteen ounces of Yellow Green (Acid Yellow 73) Florescene dye will be added to the drilling fluid during the drilling of the first 250 feet of the well.

**Florescent Dye Orange (Eosin Y):**

Sixteen ounces of Orange (Eosin Y) Florescene dye will be added to the drilling fluid during the drilling of the first 250 feet of the well.

**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.

**Cementing:**

All casing strings will be cemented to the surface.

**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 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.

**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.

**Pressure Tests:**

Annual pressure tests will be performed by the Operator on all casing annuli. If the test results indicated a casing failure, remedial actions approved by the BLM will be undertaken to correct the problem.

**Differential Shut-off Systems:**

A leak detection system and differential shut off systems will be installed for pipelines and tanks used in production or drilling.

**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.

## CONDITIONS OF APPROVAL - DRILLING

Well Name & No. 4-J M Gates NCT-1 Federal  
Operator's Name: Cimarex Energy Co. of Colorado  
Location: 1000FNL, 1700FWL, Section 30, T-24-S, R-26-E  
Lease: LC-065457

### I. DRILLING OPERATIONS REQUIREMENTS:

1. The Bureau of Land Management (BLM) is to be notified at the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (505) 361-2822 - for wells in Eddy County in sufficient time for a representative to witness:
  - A. Spudding
  - B. Cementing casing: 13-3/8 inch 9-5/8 inch 5-1/2 inch
  - C. BOP tests
2. **Although no H<sub>2</sub>S has been reported in the area, it is always a potential hazard.**
3. 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.
4. Submit a Sundry Notice (Form 3160-5, one original and five copies) for each casing string, describing the casing and cementing operations. Include pertinent information such as; spud date, hole size, casing ( size, weight, grade and thread type), cement (type, quantity and top), water zones and problems or hazards encountered. The Sundry shall be submitted within 15 days of completion of each casing string. The reports may be combined into the same Sundry if they fall within the same 15 day time frame.
5. The API No. assigned to the well by NMOCD shall be included on the subsequent report of setting the first casing string.
6. A Communitization Agreement covering the acreage dedicated to this well must be filed for approval with the BLM. The effective date of the agreement shall be prior to any sales.
7. Gamma-Ray/Neutron logs shall be run from the base of the Salado Formation to the surface; cable speed not to exceed 30 feet per minute.

### II. CASING:

1. The 13-3/8 inch surface casing shall be set at 250 feet, below usable water and cement circulated to the surface. If cement does not circulate to the surface the appropriate BLM office shall be notified and a temperature survey or cement bond log shall be run to verify the top of the cement. Remedial cementing shall be completed prior to drilling out that string.

**Possible lost circulation in the Delaware, Capitan Reef, and Bone Spring formations.  
High cave/karst area.**

2. The minimum required fill of cement behind the 9-5/8 inch intermediate casing is circulate cement to the surface.
3. The minimum required fill of cement behind the 5-1/2 inch production casing is cement shall circulate to surface due to cave/karst.

### **III. PRESSURE CONTROL:**

1. All BOP systems and related equipment shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2. The BOP and related equipment shall be installed and operational before drilling below the 13-3/8 inch casing shoe and shall be tested as described in Onshore Order No. 2. Any equipment failing to test satisfactorily shall be repaired or replaced.
2. Minimum working pressure of the blowout preventer and related equipment (BOPE) required for drilling the surface and intermediate casing shall be 2M psi. Minimum working pressure of the blowout preventer and related equipment (BOPE) required for drilling below the 9-5/8 inch casing shall be 5M psi.
3. The appropriate BLM office shall be notified in sufficient time for a representative to witness the tests.
  - A variance to test the BOP, BOPE, and 13-3/8" surface casing to the reduced pressure of 1000 psi with the rig pumps is approved. **Full pressure test required prior to drilling out of 9-5/8" casing.**
  - The tests shall be done by an independent service company.
  - The results of the test shall be reported to the appropriate BLM office.
  - Testing fluid must be water or an appropriate clear liquid suitable for sub-freezing temperatures. Use of drilling mud for testing is not permitted since it can mask small leaks.
  - Testing must be done in a safe workman-like manner. Hard line connections shall be required.
  - BOPE must be tested prior to drilling into the Wolfcamp Formation by an independent service company.

### **IV. 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. Monitoring equipment shall consist of the following:

1. Recording pit level indicator to indicate volume gains and losses.
2. Mud measuring device for accurately determining the mud volumes necessary to fill the hole during trips.
3. Flow-sensor on the flow line to warn of abnormal mud returns from the well.

**Engineer on call phone: 505-706-2779**

**WWI 020907**