ATS-08-106
EA-08-174

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

Form 3160-3
(April 2004)

DEC 07 2007
OCD-ARTESIA

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

| | |
|---|---|
| 1a. Type of Work: [X] DRILL [ ] REENTER | 5. Lease Serial No: NM-0397622 |
| 1b. Type of Well: [ ] Oil Well [X] Gas Well [ ] Other [X] Single Zone [ ] Multiple Zone | 6 If Indian, Allotee or Tribe Name: |
| 2 Name of Operator: Cimarex Energy Co. of Colorado 162683 | 7. If Unit or CA Agreement, Name and No: Pending |
| 3a Address: PO Box 140907, Irving, TX 75014 | 3b Phone No. (include area code): 972-401-3111 |
| 4. Location of Well (Report location clearly and in accordance with any State requirements.*) At Surface: 660' FNL & 1650' FWL | 8. Lease Name and Well No.: Picketwire 5 Federal Com No. 1 |
| At proposed prod. Zone | 9. API Well No: 30-015- 35959 |
| | 10. Field and Pool, or Exploratory: Empire; Morrow, South Wildcat |
| | 11. Sec , T R M or Blk. and Survey or Area: 5-17S-29E |
| 14 Distance in miles and direction from nearest town or post office*: 18 miles ESE of Lake Arthur | 12. County or Parish: Eddy; 13. State: NM |

| | | |
|---|---|---|
| 15 Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any): 660' | 16 No of acres in lease: 79.44 | 17. Spacing Unit dedicated to this well: N2 ~~145.62~~ 319.88 |
| 18 Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.: NA | 19 Proposed Depth: 10,800' | 20. BLM/BIA Bond No. on File: NM-2575 |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.): 3632' GR | 22. Approximate date work will start*: 12/5/2007 | 23. Estimated duration: 30-35 days |

24. Attachments

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

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

| | | |
|---|---|---|
| 25 Signature: Zeno Farris | Name (Printed/Typed): Zeno Farris | Date: 10.31.07 |
| Title: Manager Operations Administration | | |
| Approved By (Signature): /s/ Don Peterson | Name (Printed/Typed): /S/ DON PETERSON | Date: DEC 5 2007 |
| Title: FOR FIELD MANAGER | Office: CARLSBAD FIELD OFFICE | |

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

APPROVAL FOR TWO YEARS

Title 18 U.S.S Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious, or fraudulent statements or representations as to any matter within its jurisdiction

Roswell Controlled Water Basin

SEE ATTACHED FOR CONDITIONS OF APPROVAL

APPROVAL SUBJECT TO GENERAL REQUIREMENTS AND SPECIAL STIPULATIONS ATTACHED

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 | Pool Name |
|---|---|---|
| | 76400 | Empire; Morrow, South Wildcat |

| Property Code | Property Name | Well Number |
|---|---|---|
| 36881 | PICKETWIRE "5" FEDERAL COM | 1 |

| OGRID No. | Operator Name | Elevation |
|---|---|---|
| 162683 | CIMAREX ENERGY CO. OF COLORADO | 3632' |

### Surface Location

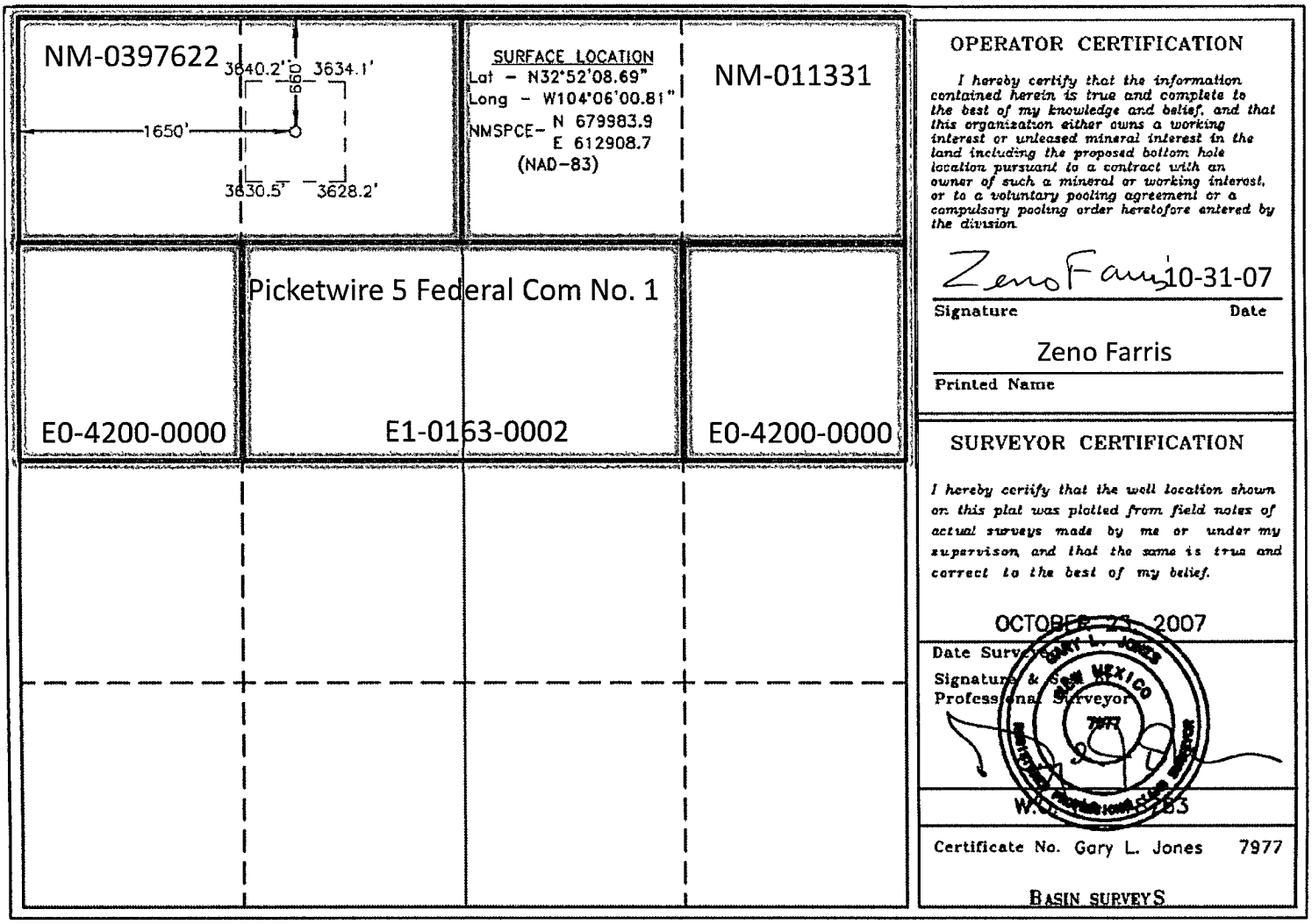
| UL or lot No. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---|---|---|---|---|---|---|---|---|---|
| C | 5 | 17 S | 29 E | | 660 | NORTH | 1650 | WEST | EDDY |

### 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 | Joint or Infill | Consolidation Code | Order No. |
|---|---|---|---|
| 319.36 | | 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




### OPERATOR CERTIFICATION

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

Zeno Farris 10-31-07
Signature Date

Zeno Farris
Printed Name

### SURVEYOR CERTIFICATION

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

OCTOBER 25, 2007
Date Surveyed

Signature & Seal of Professional Surveyor

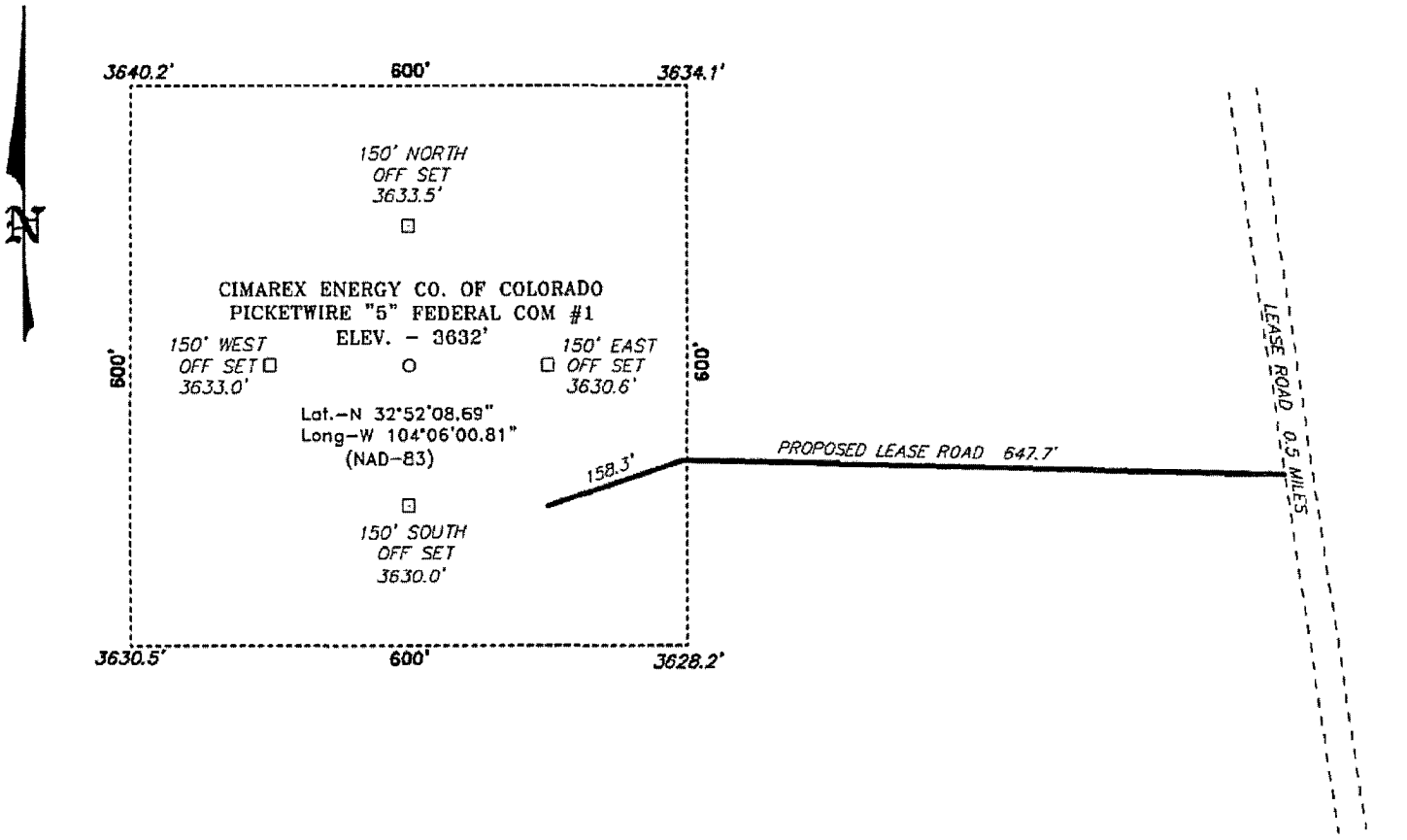
GARY L. JONES NEW MEXICO 7977 REGISTERED PROFESSIONAL SURVEYOR

W.O. 07-11-0783

Certificate No. Gary L. Jones 7977

BASIN SURVEYS

# SECTION 5, TOWNSHIP 17 SOUTH, RANGE 29 EAST, N.M.P.M.,
EDDY COUNTY, NEW MEXICO.




200 0 200 400 FEET

SCALE: 1" = 200'

Directions to Location:

FROM JUNCTION OF US HWY 82 AND BARNIVAL DRAW ROAD, GO NORTH ON BARNIVAL DRAW FOR 3.2 MILES TO LOCO ROAD, ON LOCO TO WESTLERLY 1.3 MILES TO LEASE ROAD, ON LEASE ROAD GO NORTH 0.5 MILES TO PROPOSED LEASE ROAD.

**CIMAREX ENERGY CO. OF COLORADO**

REF: PICKETWIRE "5" FEDERAL COM #1 / WELL PAD TOPO

THE PICKETWIRE "5" FEDERAL #1 LOCATED 660' FROM THE NORTH LINE AND 1650' FROM THE WEST LINE OF SECTION 5, TOWNSHIP 17 SOUTH, RANGE 29 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

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

| | | | |
|---|---|---|---|
| W.O. Number: 18753 | Drawn By: J. SMALL | | |
| Date: 10-26-2007 | Disk: JMS 18753W | Survey Date: 10-23-2007 | Sheet 1 of 1 Sheets |

**Application to Drill**
**Cimarex Energy Co. of Colorado**
**Picketwire 5 Federal Com No. 1**
Unit C Section 5
T17S R29E 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: 660' FNL & 1650' FWL

2 Elevation above sea level: 3632' GR

3 Geologic name of surface formation: Quaternery Alluvium Deposits

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

5 Proposed drilling depth: 10,800'

6 Estimated tops of geological markers:

| | | | |
|---|---|---|---|
| Grayburg | 2,050' | Strawn SS | 9,660' |
| San Andres | 2,500' | Atoka Clastics | 10,000' |
| Abo | 5,950' | Morrow Clastics | 10,350' |
| Wolfcamp | 7,190' | Miss Unc. | 10,525' |

7 Possible mineral bearing formation:

| | |
|---|---|
| Morrow | Gas |
| Strawn | Gas |
| Abo | Oil |

8 Proposed Mud Circulating System:

| Depth | Mud Wt | Visc | Fluid Loss | Type Mud |
|---|---|---|---|---|
| 0' to 350' | 8.4 - 8.6 | 28-29 | May lose circ | Fresh water spud mud |
| 350' to 2,650' | 10.0 | 28-29 | May lose circ | Brine Water |
| 2,650' to 10,800' | 8.4 - 9.4 | 29-32 | NC | Fresh water and brine, use hi-vis sweeps to keep hole clean |

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

**Application to Drill**
**Cimarex Energy Co. of Colorado**
**Picketwire 5 Federal Com No. 1**
Unit C Section 5
T17S R29E Eddy County, NM

9 Casing & Cementing Program:

| Hole Size | Depth | | | Casing OD | | Weight | Thread | Collar | Grade |
|---|---|---|---|---|---|---|---|---|---|
| 17-1/2 | 0 | to | 350' | New | 13-3/8 | 48# | 8-R | STC | H-40 |
| 11 | 0 | to | 2,650' | New | 8-5/8 | 24# | 8-R | STC | J-55 |
| 7-7/8 | 0 | to | 10,800' | New | 5-1/2 | 17# | 8-R | LTC | P-110 |

10 Cementing & Setting Depth:

13-3/8 **Surface** Set 350' of 13-3/8 48# H-40 STC
Lead: 115 sx Light Premium plus + 0.125# Poly-E-Flake + 1% CaCl (wt 14.2, yld 1.64)
Tail: 225 sk Premium Plus + 2% CaCl (wt 14.8, yld 1.35)
TOC Surface

8-5/8 **Intermediate** Set 2,650' of 8-5/8 24# J-55 STC
Lead: 371 sx Interfill C + 0.25# Flocele (wt 11.9, yld 2.45)
Tail: 201 sx Premium Plus + 1% CaCl2 (wt 14.8, yld 1.33)
TOC Surface

5-1/2 **Production** Set 10,800' of 5-1/2 17# P-110 LTC
Lead: 650 sx Interfill H + 0.25% HR-7 + 5# Gilsonite + 0.25# Flocele (wt 11.9, yld 2.47)
Tail: 370 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 13.0, yld 1.67)

**TOC 1300'**

Fresh water will be protected by setting 13-3/8 casing at 350' and cementing to Surface
Hydrocarbon zones will be protected by setting 8-5/8 casing at 2,650' and cementing to Surface
and by setting 5-1/2 casing at 10,800' and cementing to 1300'

Cimarex uses the following minimum safety factors:

| Burst | Collapse | Tension |
|---|---|---|
| 1.125 | 1.0 | 1.80 |

11 Pressure control Equipment:

Exhibit "E". A 13 3/8" 5000 PSI working pressure B.O.P. consisting of one set of blind rams and one set of pipe rams and a 5000 # annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head below 6000'. A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

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

12 Testing, Logging and Coring Program:

A. Mud logging program: 2 man unit from 2650' to TD
B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR
C. DSTs are planned in the Morrow (10300'-10450') and in the Strawn (9650'-9770').

13 Potential Hazards:

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

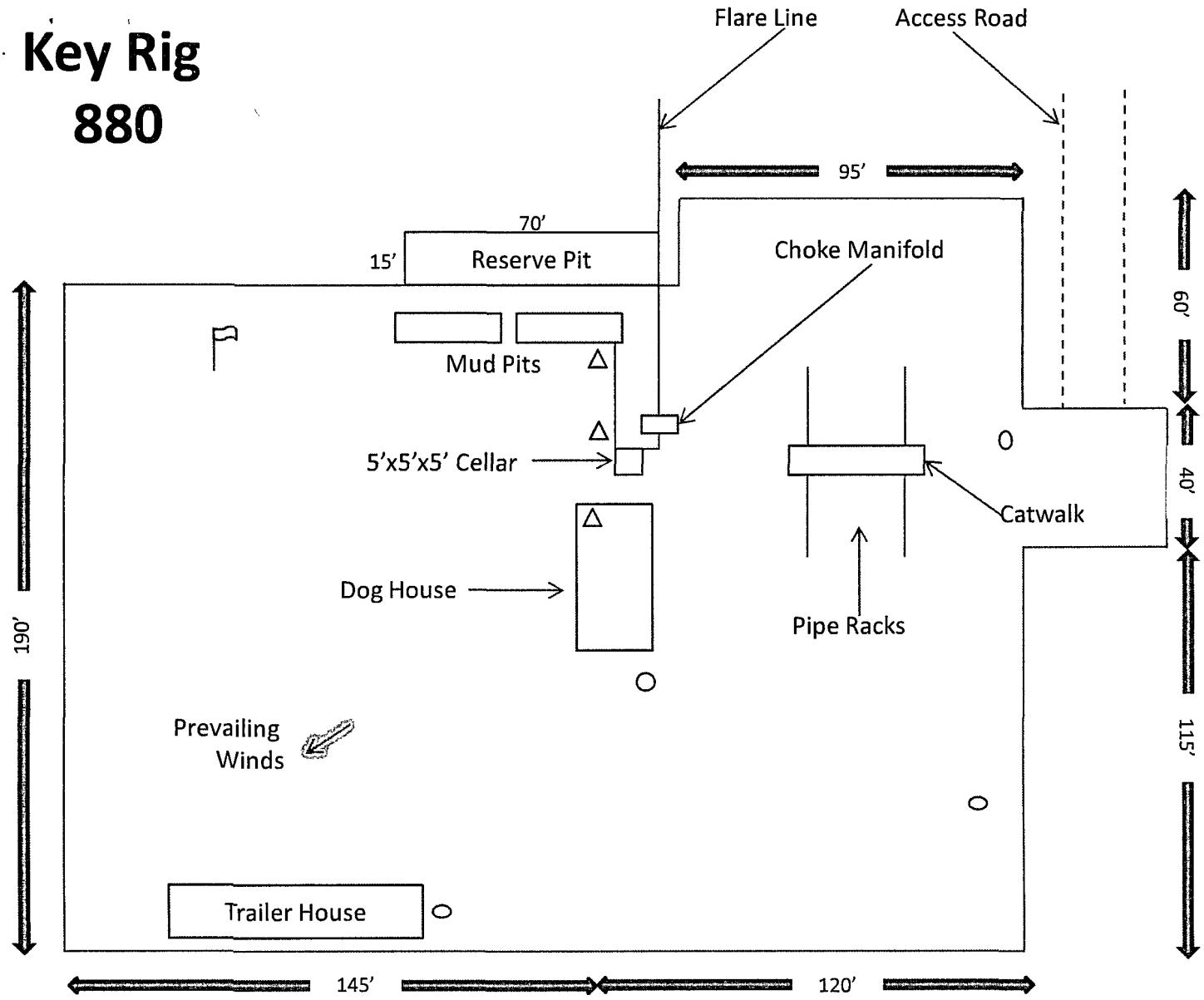
Estimated BHP **4000 psi** Estimated BHT **175**

14 Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved.
Drilling expected to take 30-35 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.
**Morrow** pay will be perforated and stimulated.
The proposed well will be tested and potentialed as **a gas well**

# Key Rig 880




Wind Direction Indicators (wind sock or streamers)

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

○ Briefing Areas

○ Remote BOP Closing Unit

See COA

Exhibit D – Rig Diagram
**Picketwire 5 Federal Com No. 1**
Cimarex Energy Co. of Colorado
660' FNL & 1650' FWL
5-17S-29E
Eddy County, NM

SR & A

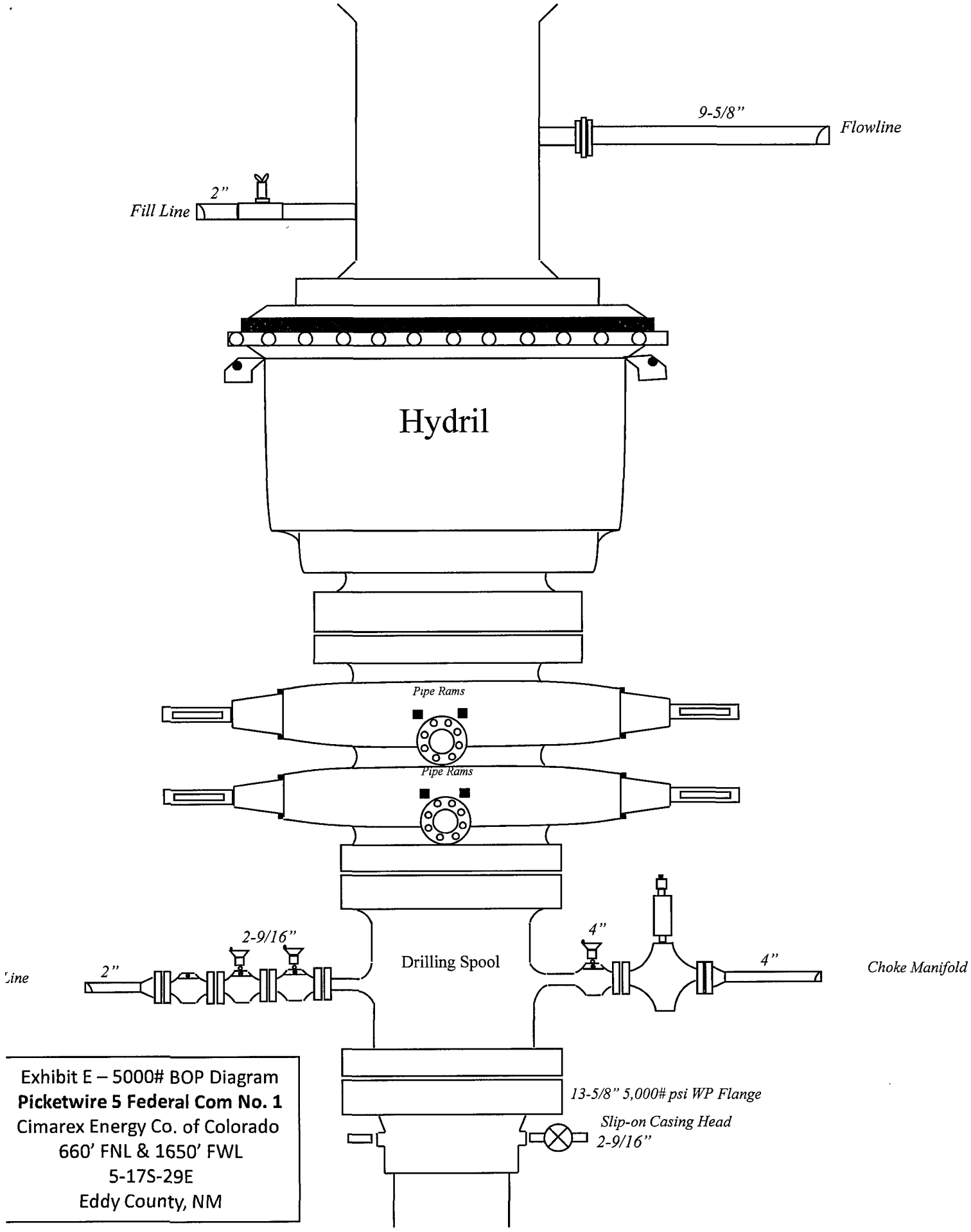



Exhibit E – 5000# BOP Diagram
**Picketwire 5 Federal Com No. 1**
Cimarex Energy Co. of Colorado
660' FNL & 1650' FWL
5-17S-29E
Eddy County, NM

DRILLING OPERATIONS
CHOKE MANIFOLD
5M SERVICE

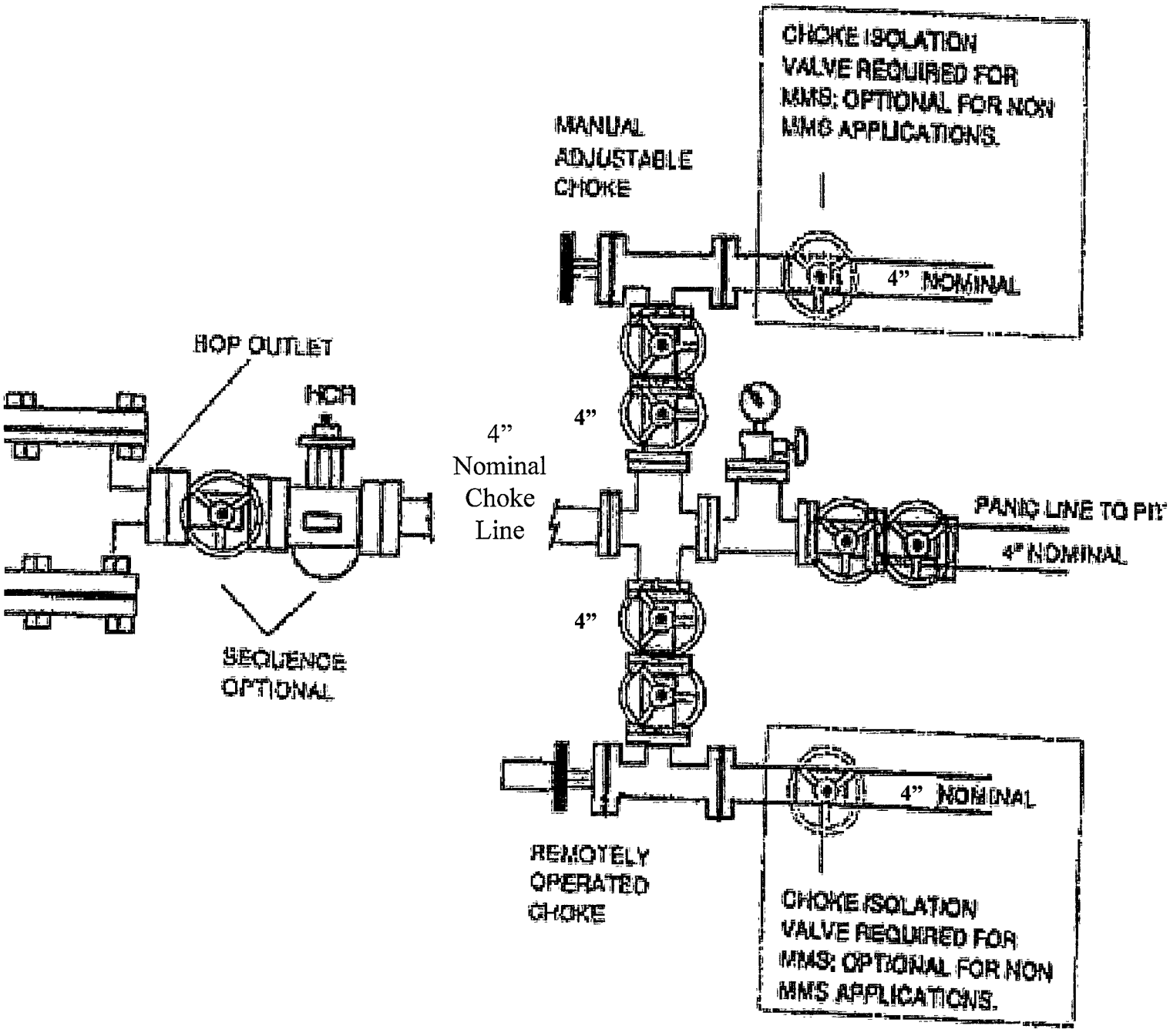



Exhibit E-1 – Choke Manifold Diagram
**Picketwire 5 Federal Com No. 1**
Cimarex Energy Co. of Colorado
660' FNL & 1650' FWL
5-17S-29E
Eddy County, NM

**Hydrogen Sulfide Drilling Operations Plan**
**Cimarex Energy Co. of Colorado**
**Picketwire 5 Federal Com No. 1**
Unit C Section 5
T17S R29E 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
   DSTs are planned in the Morrow (10300'-10450') and in the Strawn (9650'-9770').

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

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

**Surface Use Plan**
**Cimarex Energy Co. of Colorado**
**Picketwire 5 Federal Com No. 1**
Unit C Section 5
T17S R29E Eddy County, NM

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

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

B. From junction of US Hwy 82 and Barnival Draw Road, go North on Barnival Draw for 3.2 miles to Loco Road. On Loco drive Westward 1.3 miles to lease road. On lease road, go North 0.5 miles to proposed lease road.

2 Planned Access Roads: 806' of lease road will be constructed on lease.

3 Location od Existing Wells in a One-Mile Radius - Exhibit A

A. Water wells - None known

B. Disposal wells - None known

C. Drilling wells - None known

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

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

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

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

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

7 Methods of Handling Waste Material
A. Drill cuttings will be disopsed of in the reserve pit.
B. All trash, junk and other waste material will be contained in trash cages or bins to prevent scattering. When the job is completed all contents will be removed and disposed of in an approved sanitary land fill.
C. Salts remaining after completion of well will be picked up by supplier including broken sacks.
D. Sewage from living quarters will drain into holding tanks and be cleaned out periodically. A Porta-John will be provided for the rig crews. This equipment will be properly maintained during the drilling operations and removed upon completion of the well.
E. Remaining drilling fluids will be allowed to dry in the reserve pit until the pit is dry enough for breaking out. In the event that drillings fluids do not dry out in a reasonable time they will be hauled off by transports and be disposed of at a State approved disposal facility. Water produced during drilling will be put in reserve pit. Any oil or condensate produced will be stored in test tanks until sold and hauled from the site.

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

9 Well Site Layout

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

10 Plans for Restoration of Surface

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

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

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

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

11 Other Information

A. Topography consists of a sloping plane with loose tan sands. Vegetation is mainly yucca, mesquite and shin oak.

B. The wellsite is on surface owned by Department of the Interior, Bureau of Land Management. The land is used mainly for farming, cattle ranching, recreational use, and oil and gas production.

C. An Archaeological survey has been conducted on the location and proposed roads, and this report has been filed with the Bureau of Land Management in the Carlsbad BLM office (**NMCRIS # 108054**).

D. There are no know dwellings within 1 1/2 miles of this location.

**Operator Certification Statement**
**Cimarex Energy Co. of Colorado**
**Picketwire 5 Federal Com No. 1**
Unit C Section 5
T17S R29E Eddy County, NM

Operator's Representative

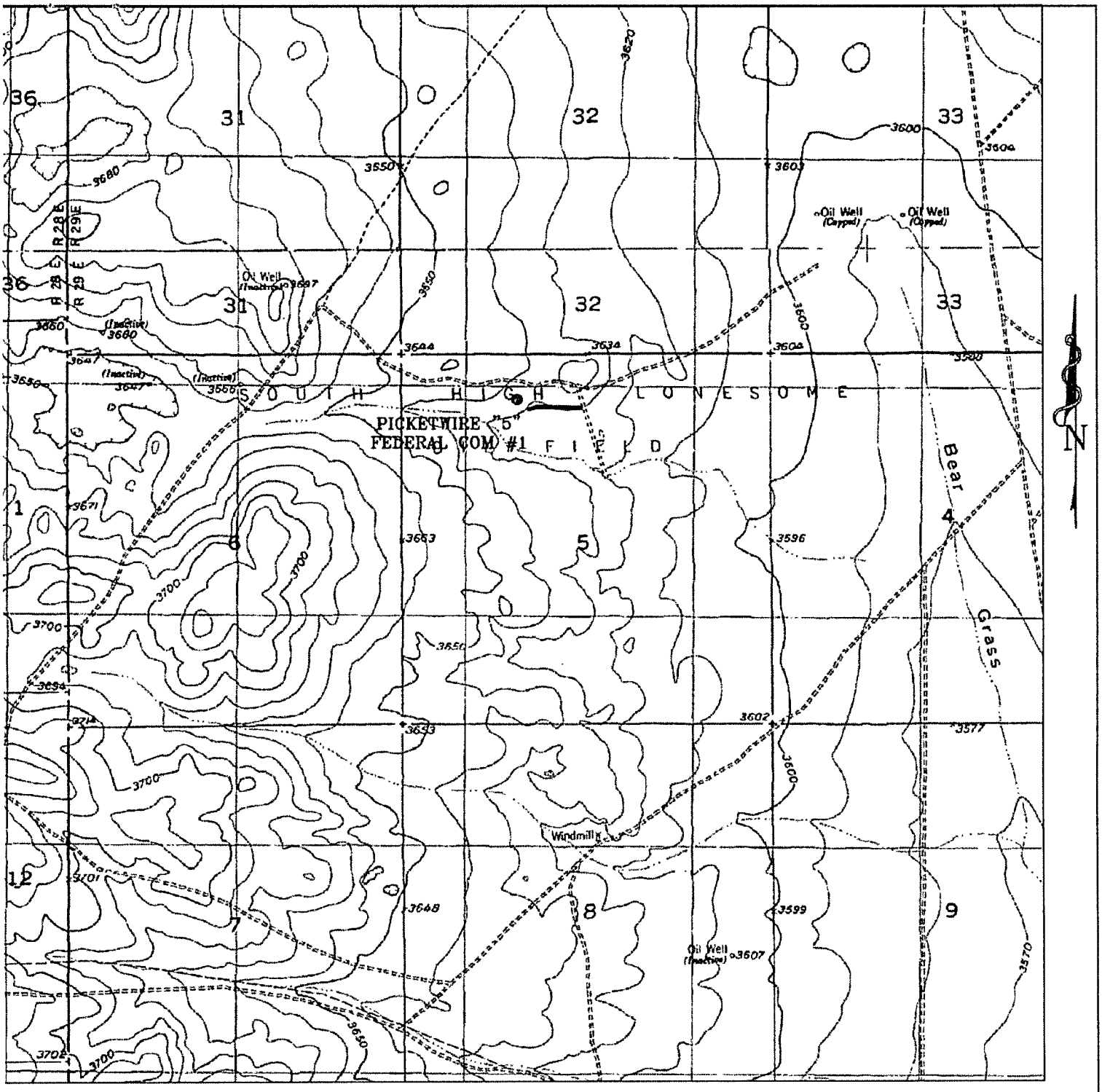
Cimarex Energy Co. of Colorado
P.O. Box 140907
Irving, TX 75014
Office Phone: (972) 443-6489
Zeno Farris

**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: October 31, 2007

TITLE: Manager Operations Administration




PICKETWIRE "5" FEDERAL COM #1
Located 660' FNL and 1650' FWL
Section 5, Township 17 South, Range 29 East,
N.M.P.M., Eddy County, New Mexico.

basin surveys
focused on excellence in the oilfield
P.O. Box 1786
1120 N. West County Rd.
Hobbs, New Mexico 88241
(505) 393-7316 - Office
(505) 392-3074 - Fax
basinsurveys.com

| | |
|---|---|
| W.O. Number: | JMS 18753T |
| Survey Date: | 10-23-2007 |
| Scale: | 1" = 2000' |
| Date: | 10-26-2007 |

CIMAREX ENERGY CO. OF COLORADO

Exhibit C

**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.

**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 then 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.

**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.

**Record Keeping:**

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

# VII. DRILLING

## A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified a minimum of 2 hours in advance for a representative to witness:

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

☒ **Eddy County**
Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220, (575) 361-2822

1. A Hydrogen Sulfide (H2S) Drilling Plan should be activated 500 feet prior to drilling into the **Yates** formation. **Hydrogen Sulfide has been measured 1600-10000 ppm in gas streams and 20-4000 ppm in STVs.**

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

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

## B. CASING

1. The **13-3/8** inch surface casing shall be set **a minimum of 25 feet into the Rustler Anhydrite and above the salt at approximately 350** feet and cemented to the surface.

   a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with a surface log readout will be used or a cement bond log shall be run to verify the top of the cement.

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

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

d. If cement falls back, remedial action will be done prior to drilling out that string.

**Possible lost circulation in the Grayburg and San Andres formations.**
**Possible water flows in the Salado and Artesia Groups.**
**Possible high pressure in the Wolfcamp and the Pennsylvanian section may be over pressured.**

2. The minimum required fill of cement behind the **8-5/8** inch intermediate casing is:

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

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

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

   ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification.

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

## C. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. The appropriate BLM office shall be notified a minimum of 2 hours in advance for a representative to witness the tests.

   a. The tests shall be done by an independent service company.

   b. The results of the test shall be reported to the appropriate BLM office.

   c. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

d. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug.

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

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

## D. DRILLING MUD

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

## E. DRILL STEM TEST

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

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

**WWI 112607**