

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

F-06-08

Form 3160-3  
(April 2004)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

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

5. Lease Serial No.  
**NM/C 105217**

6. If Indian, Allottee or Tribe Name

1a. Type of work: ☒ DRILL ☐ REENTER

1b. Type of Well: ☒ Oil Well ☐ Gas Well ☐ Other ☐ Single Zone ☐ Multiple Zone

2. Name of Operator  
**COG Operating LLC**

3a. Address **550 W. Texas Ave. Ste. 1300  
Midland, TX 79701**

3b. Phone No. (include area code)  
**(432) 683-7443**

4. Location of Well (Report location clearly and in accordance with any State requirements.)

At surface **450' FSL & 760' FWL**

At proposed prod. zone **Same**

14. Distance in miles and direction from nearest town or post office\*  
**Approximately 50 miles Southwest of Hobbs, NM**

15. Distance from proposed\*  
location to nearest  
property or lease line, ft.  
(Also to nearest drig. unit line, if any) **450'**

16. No. of acres in lease  
**320**

17. Spacing Unit dedicated to this well  
**40**

18. Distance from proposed location\*  
to nearest well, drilling, completed,  
applied for, on this lease, ft.

19. Proposed Depth  
**10,500'**

20. BLM/BIA Bond No. on file  
**NMB 000125**

21. Elevations (Show whether DF, KDB, RT, GL, etc.)  
**3557' Gr**

22. Approximate date work will start\*  
**05/15/2006**

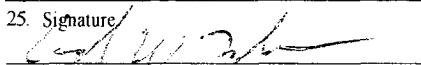
23. Estimated duration  
**45 days**

24. Attachments

**Captain Controlled Water Basin**

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  
  
Title  
**Operations Engineer-New Mexico**

Name (Printed/Typed)  
**Erick Nelson**

Date  
**3-2-06**

Approved by (Signature)  
**/s/ Tony J. Herrell**  
Title  
**FIELD MANAGER**

Name (Printed/Typed)  
**/s/ Tony J. Herrell**  
Office  
**CARLSBAD FIELD OFFICE**

Date  
**APR 12 2006**

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 1 YEAR**

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

\*(Instructions on page 2)

DECLARED WATER BASIN  
CEMENT BEHIND THE **13 3/8"**  
CASING MUST BE **CIRCULATED**

**WITNESS**

**APPROVAL SUBJECT TO  
GENERAL REQUIREMENTS AND  
SPECIAL STIPULATIONS  
ATTACHED**

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

DISTRICT II  
811 South First, Artesia, NM 88210

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

DISTRICT IV  
2040 South Pacheco, Santa Fe, NM 87505

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-102  
Revised March 17, 1999

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

OIL CONSERVATION DIVISION

2040 South Pacheco  
Santa Fe, New Mexico 87505

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code <b>96085</b>	Pool Name <b>Wildcat; Wolfcamp</b>
Property Code <b>34747</b>	Property Name <b>BLUE THUNDER "4" FEDERAL</b>	Well Number <b>2</b>
OGRID No. <b>229137</b>	Operator Name <b>COG OPERATING L.L.C.</b>	Elevation <b>3557'</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
<b>M</b>	<b>4</b>	<b>19 S</b>	<b>31 E</b>		<b>450</b>	<b>SOUTH</b>	<b>760</b>	<b>WEST</b>	<b>EDDY</b>

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>40</b>	Joint or Infill	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

LOT 4 - 39.62 AC.	LOT 3 - 39.63 AC.	LOT 2 - 39.63 AC.	LOT 1 - 39.64 AC.
<p>LAT-N32°41'00.5" LONG-W103°52'49.8"</p> <p><b>40 AC</b></p> <p>3552.3' 450' 3562.1'</p> <p>760' 3550.8' 3558.7'</p>			
<p>OPERATOR CERTIFICATION</p> <p>I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.</p> <p><b>Erick Nelson</b> Signature Printed Name Opr. Engineer - NM Title 3/2/06 Date</p> <p>SURVEYOR CERTIFICATION</p> <p>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.</p> <p>FEBRUARY 15, 2006</p> <p>Date Surveyed</p> <p>Signature &amp; Seal of Professional Surveyor</p> <p>W.O. No. 6246</p> <p>Certificate No. Gary L. Jones 7977</p> <p>BASIN SURVEYS</p>			

## STATEMENT ACCEPTING RESPONSIBILITY FOR OPERATIONS

COG Operating LLC  
550 W. Texas Ave, Suite 1300  
Midland, Texas 79701

The undersigned accepts all applicable terms, conditions, stipulations and restrictions covering operations conducted on the leased land or portion thereof, as described below:

Lease No: NMLC 105217 *gmk*

Legal Description of Land: Unit M, Section 4, T-19-S, R-31-E  
450' FSL & 760' FWL  
Eddy County, NM

Formation(s) (if applicable): Wolfcamp

Bond Coverage: \$25,000 statewide bond of COG Operating LLC

BLM Bond File No: NMB 000215

3-2-06  
Date

*Erick Nelson*  
Erick Nelson  
Operations Engineer - New Mexico  
COG Operating LLC

# ATTACHMENT TO FORM 3160-3

COG Operating LLC  
Blue Thunder "4" Federal #2  
450' FSL & 760' FWL  
Sec.4,T-19-S, R-31-E  
Eddy County, NM  
10,500' Wolfcamp Test

## DRILLING PROGRAM

1. Well Plan  
Drill and complete a 10500' MD Wolfcamp Test

2. Ground Elevation above Sea Level: 3557'

3. Proposed drilling depth: 10500'

4. Estimated tops of geological markers:

Yates	2700'
Queen	3350'
Delaware	4980'
Bone Spring	6500'
Wolfcamp	9900'

5. Possible mineral bearing formations:

Bone Spring	Oil
Wolfcamp	Oil

6. Casing Program

Hole size	Interval	OD of Casing	Weight	Thread	Collar	Grade
17-1/2"	0' - +/- 550'	13-3/8"	48#	8rd	STC	H40
12 1/4"	+/- 550' - +/- 3500'	8-5/8"	32#	8rd	STC	J-55
7 7/8"	+/- 3500' - 10500'	5-1/2"	17#	8rd	LTC	P110

7. Cementing and Setting Depth

13 3/8"	Surface	+/- 550'	Set +/- 550' of 13 3/8" 48# H40 STC casing. Cement w/ 200 sx 35:65 Poz: "C" cement + additives followed by 200 sx Class "C" + 2% CaCl2 Circulate cement.
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8 5/8"	Intermediate	+/- 3500'	Set +/- 3500' of 8 5/8" 32# J-55 STC casing. Cement w/ 800 sx 50:50 Poz: "C" light cement + additives followed by 200 sx Class "C" cement. Circulate cement.
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5-1/2"	Production	+/- 10500'	Set +/- 10500' of 5-1/2" 17# N80 LTC casing. Cement w/ 500 sx Class "H" plus additives. Est TOC @ +/- 6500'.
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8. Pressure Control Equipment: After setting 13-3/8" casing and installing 3000 psi casing head, NU 13-5/8" 3000 psi annular BOP. Test annular BOP, casing, and manifold with clear fluid to 1350 psi with rig pump.

After setting 8-5/8" casing and installing 3000 psi casing spool, NU 3000 psi double ram BOP and 2500 psi annular BOP. Test double ram BOP and manifold to 3000# with clear fluid and test annular to 1500 psi using an independent tester.

9. Proposed Mud Circulating System

Interval	Mud Wt.	Visc.	FL	Type Mud System
0' - <del>550'</del> 665'	8.4-9.2	28-35	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH.
665' - 3500'	10.0- 10.2	28-29	NC	Brine mud, lime for PH and paper for seepage and sweeps.
3500' - 9900'	8.4 - 9.2	NC	NC	Drill section with fresh water/cut brine circulating the reserve utilizing periodic sweeps of paper as needed for seepage control and solids removal.
9900' - 10500'	9.2 - 9.3	34-36	20	Increase weight with brine additions, increase viscosity w/salt gel and reduce fluid loss w/ starch.

10. Anticipated Starting Date:

Drilling operations will commence on May 15, 2006 with drilling and completion operation lasting Approximately 45 days.

**SURFACE USE AND OPERATIONS PLAN FOR  
DRILLING, COMPLETION, AND PRODUCING**

**COG Operating LLC  
Blue Thunder "4" Federal #2  
450' FSL & 760' FWL  
Section 4, T-19-S, R-31-E  
Eddy County, New Mexico  
10,500' Wolfcamp Test**

**LOCATED**

Approximately 50 miles Southwest of Hobbs, New Mexico

**OIL & GAS LEASE  
NMLC 105217**

**RECORD LESSEE  
Wayne R. Hardin**

**BOND COVERAGE  
\$25,000 statewide bond of COG Operations LLC**

**ACRES IN LEASE  
320.00**

**GRAZING LEASE  
Wayne R. Hardin  
799 S. Roosevelt Road 8  
Portales, NM 88130**

**POOL  
Wildcat; Wolfcamp**

**EXHIBITS**

- A. Area Road Map
- B. Drilling Rig Layout
- C. Vicinity Oil & Gas Map
- D. Topographic & Location Verification Map
- E. Well Location & Acreage Dedication Map

This well will be drilled to a depth of approximately 10,500'.

**1. EXISTING ROADS**

- A. Exhibit A is a portion of a section map showing the location of the proposed well as staked.
- B. Exhibit C is a plat showing existing roads in the vicinity of the proposed well site.
- C. Directions to well location:  
From the Junction of State Highway 31 and U.S. Highway 82, Go South on Highway 31 for 8.2 miles to a Lease Road; Thence South on Lease Road for Approximately 0.5 mile; Thence West for Approximately 0.4 mile; Thence South to the Blue Thunder "4" Federal #1 and proposed well pad.

**2. ACCESS ROADS**

**A. Length and Width**

The access road is the existing lease road to Blue Thunder '4' Federal #1.

**B. Surface Material**

Existing

**C. Maximum Grad**

Less than five percent

**D. Turnouts**

None necessary

**E. Drainage Design**

Existing

**F. Culverts**

None necessary

- G. Gates and Cattle Guards  
None needed

3. **LOCATION OF EXISITING WELLS**

Existing wells in the immediate area are shown in Exhibit C.

4. **LOCATION OF EXISTING AND/OR PROPOSED FACILITIES**

Necessary production facilities for this well will be located on the well pad.

5. **LOCATION AND TYPE OF WATER SUPPLY**

It is not contemplated that a water well will be drilled. Water necessary for drilling will be purchased and hauled to the site over existing roads shown on Exhibit D.

6. **METHODS OF HANDLING WASTE DISPOSAL**

- A. Drilling fluids will be allowed to evaporate in the drilling pits until the pits are dry.
- B. Water produced during tests will be disposed of in the drilling pits.
- C. Oil produced during tests will be stored in test tanks.
- D. Trash will be contained in a trash trailer and removed from well site.
- E. All trash and debris will be removed from the well site within 30 days after finishing drilling and/or completion operations.

7. **ANCILLARY FACILITIES**

None required.

8. **WELL SITE LAYOUT**

Exhibit B shows the relative location and dimensions of the well pad, mud pits, reserve pit, and trash pit, and the location of major rig components.



9. **PLANS FOR RESTORATION OF THE SURFACE**

- A. After completion of drilling and/or completion operations, all equipment and other material not needed for operations will be removed. The well site will be cleaned of all trash and junk to leave the site in an as aesthetically pleasing condition as possible.
- B. After abandonment, all equipment, trash, and junk will be removed and the site will be clean.

10. **OTHER INFORMATION**

A. **Topography**

The land surface at the well site is rolling native grass with a regional slope being to the east.

B. **Soil**

Topsoil at the well site is sandy soil.

C. **Flora and Fauna**

The location is in an area sparsely covered with mesquite and range grasses.

D. **Ponds and Streams**

There are no rivers, lakes, ponds, or streams in the area.

E. **Residences and Other Structures**

There are no residences within a mile of the proposed well site.

F. **Archaeological, Historical, and Cultural sites**

None observed on this area.

G. **Land Use**

Grazing

**H. Surface Ownership**

Bureau of Land Management

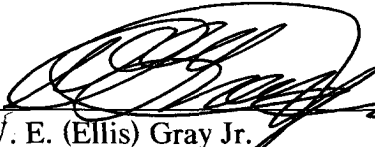
**11. OPERATOR'S REPRESENTATIVE**

W.E (Ellis) Gray Jr.  
3106 N. Big Spring St, Ste. 100  
Midland, Texas 79705  
Office: (432) 685-9158

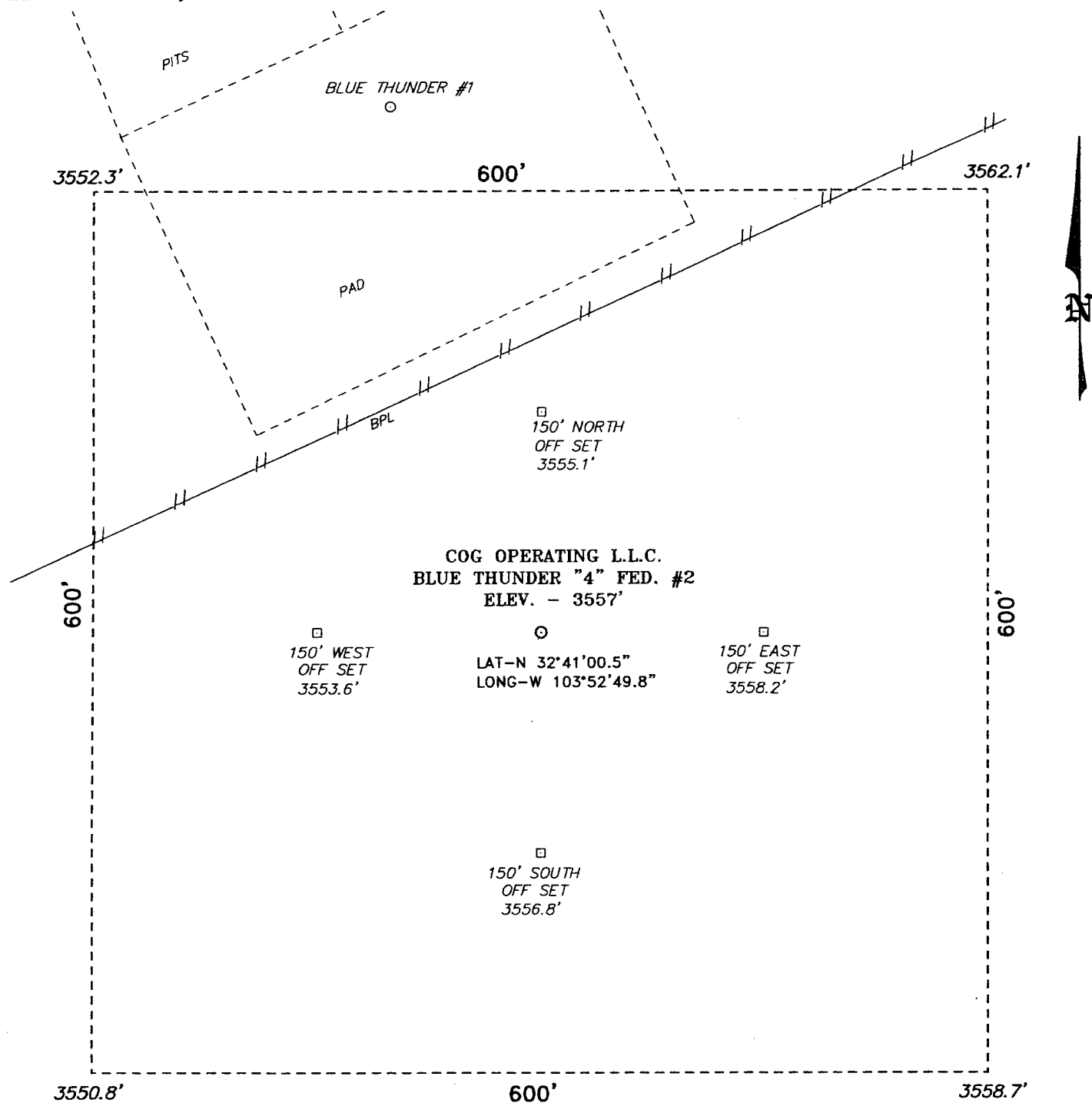
**12. CERTIFICATION**

I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and, that the work associated with the operations proposed herein will be preformed by the COG Producing Company and its contractors and subcontractors in conformity with this plan and the terms and conditions under which it is approved.

3/1/06  
Date

  
W. E. (Ellis) Gray Jr.  
Gray Surface Specialties  
Agent for COG Operating LLC

SECTION 4, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M.,  
EDDY COUNTY, NEW MEXICO.



DIRECTIONS TO LOCATION:

FROM THE JUNCTION OF STATE HWY 31 AND US HWY 82, GO SOUTH ON HWY 31 FOR 8.2 MILES TO A LEASE ROAD; THENCE SOUTH ON LEASE ROAD FOR APPROX. 0.5 MILE; THENCE WEST FOR APPROX. 0.4 MILE; THENCE SOUTH TO THE BLUE THUNDER #1 AND PROPOSED WELL PAD.

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

W.O. Number: 6246

Drawn By: K. GOAD

Date: 02-20-2006 Disk: KJG CD#4 - 6246A.DWG

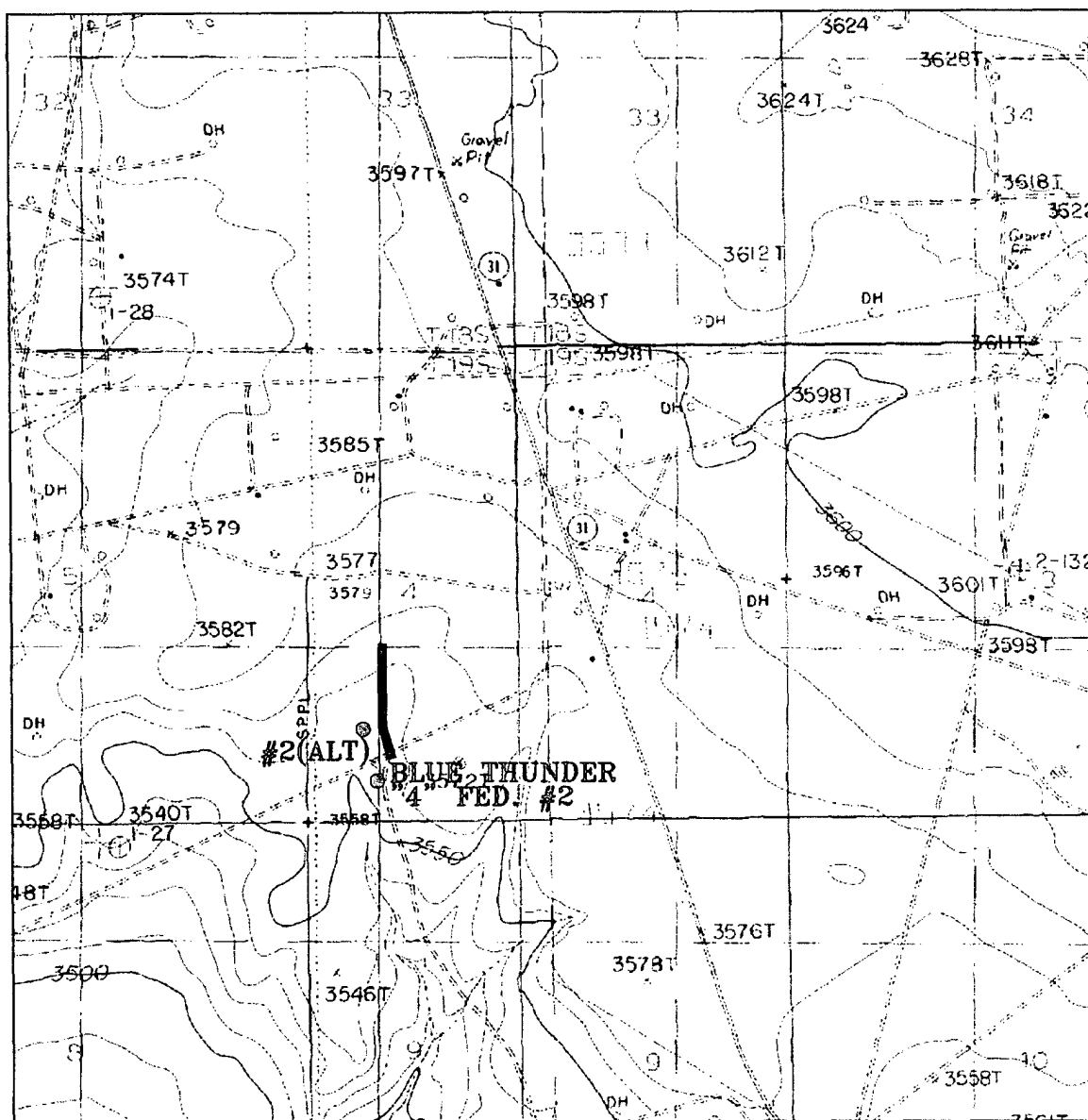
**COG OPERATING L.L.C.**

REF: BLUE THUNDER "4" FED. No. 2 / Well Pad Topo

THE BLUE THUNDER "4" FED. No. 2 LOCATED 450' FROM THE SOUTH LINE AND 760' FROM THE WEST LINE OF SECTION 4, TOWNSHIP 19 SOUTH, RANGE 31 EAST, N.M.P.M., EDDY COUNTY, NEW MEXICO.

Survey Date: 02-15-2006

Sheet 1 of 1 Sheets



PROPOSED ELECTRIC LINE TO THE BLUE THUNDER "4" FED. #2  
 Located at 450' FSL and 760' FWL  
 Section 4, Township 19 South, Range 31 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

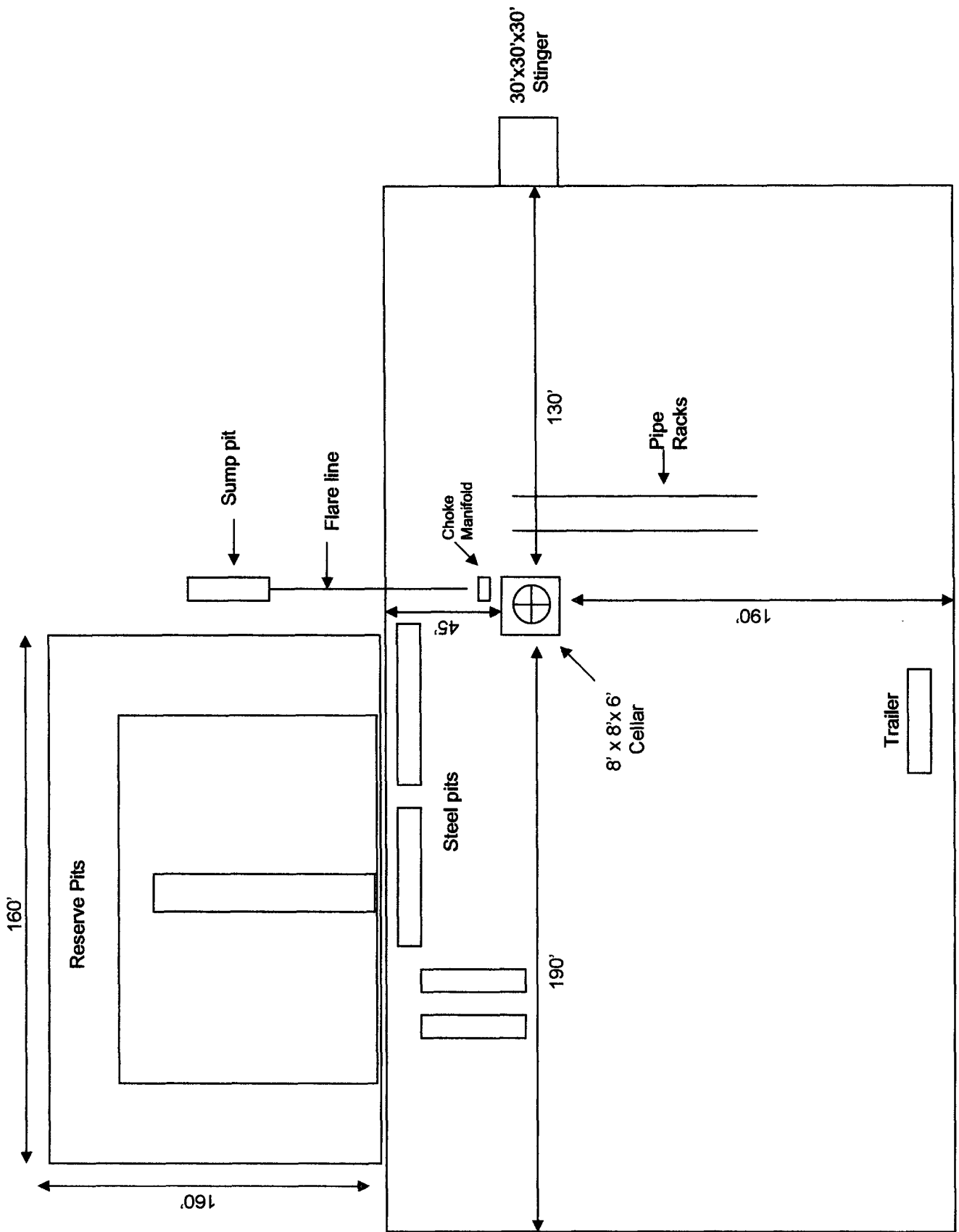
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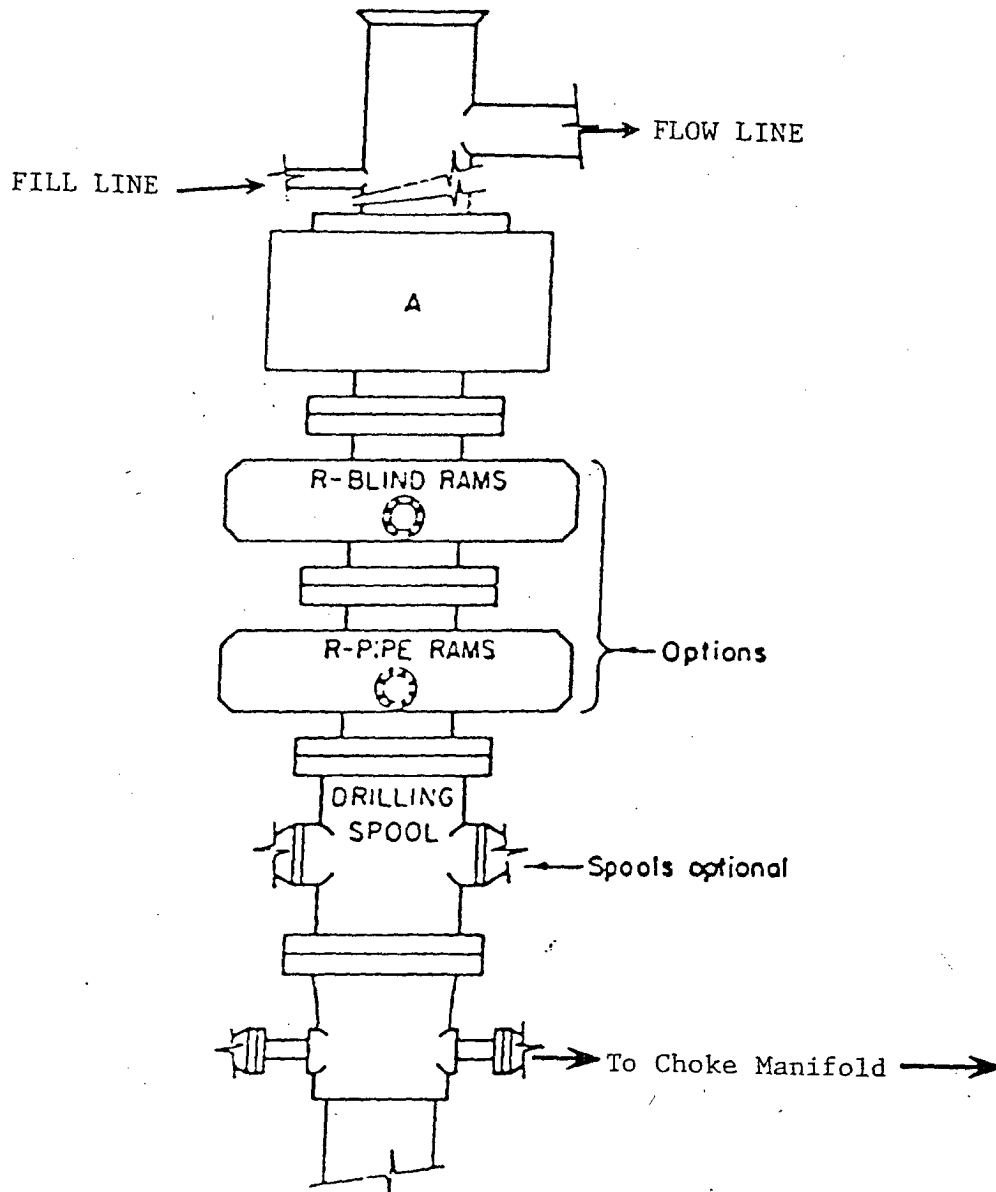
Survey Date: 02-15-2006

Scale: 1" = 2000'

Date: 02-20-2006

**C.O.G.**  
**OPERATING**  
**L.L.C.**





### ARRANGEMENT SRRA

900 Series  
3000 PSI WP

**HYDROGEN SULFIDE DRILLING OPERATIONS PLANS**  
**COG OPERATING LLC**  
**Blue Thunder "4" Federal #2**  
**450' FSL & 760' FWL**  
**Sec. 4, T-19-S, R-31-E**  
**Eddy, New Mexico**  
**10,500' Wolfcamp Test**

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 blooie line (mud pit) and on derrick floor or doghouse.
3. Windsock and/or wind streamers
  - A. Windsock at mud pit area should be high enough to be visible.
  - B. Windsock at briefing area should be high enough to be visible.
  - C. There should be a windsock at entrance to location.
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, normal safe condition. Yellow flag indicated potential pressure and danger. Red flag, danger, H2S present in dangerous concentration. Only emergency personnel admitted to location.

Hydrogen Sulfide Drilling Operations Plans  
Page 2

5. Communication

- A. While working under masks chalkboards will be used for communication.
- B. Hand signals will be used where chalk boards 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.

6. Drill Stem Testing

- A. Exhausts will be watered.
- B. Flare line will be equipped with an electric igniter or a propane pilot light in case gas reaches the surface.
- C. If the location is near a dwelling a closed DST will be performed.



**WARNING**

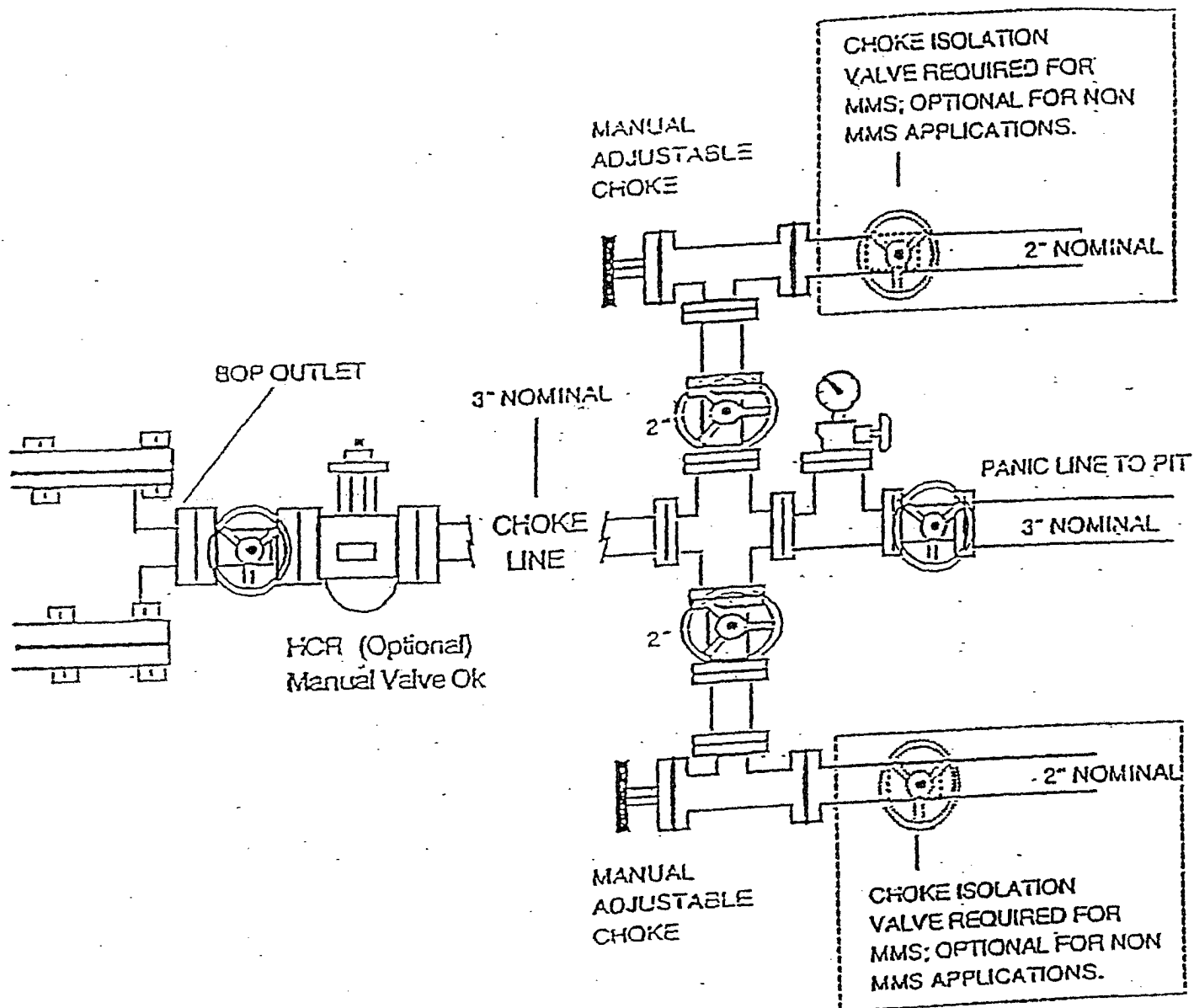
**YOU ARE ENTERING A H2S AREA  
AUTHORIZED PERSONNEL ONLY**

1. BEARDS OR CONTACT LENSES NOT ALLOWED
2. HARD HATS REQUIRED
3. SMOKING IN DESIGNATED AREAS ONLY
4. BE WIND CONSCIOUS AT ALL TIMES
5. CHECK WITH COG SUPERINTENDENT AT MAIN OFFICE

**COG OPERATING LLC**

**432-683-7443**

# CHOKE MANIFOLD 5M SERVICE



## CONDITIONS OF APPROVAL - DRILLING

Operator's Name: COG Operating LLC Well No. 2 – Blue Thunder 4 Federal

Location: 450' FSL & 760' FWL sec. 4, T. 19 S., R. 31 E.

Lease: NM-105217

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### I. DRILLING OPERATIONS REQUIREMENTS:

1. The Bureau of Land Management (BLM) is to be notified at (505) 234-5972 in sufficient time for a representative to witness:

A. Spudding

B. Cementing casing: 13-3/8 inch 8-5/8 inch 5-1/2 inch

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. Include the API No. assigned to well by NMOCD on the subsequent report of setting the first casing string.

4. A Hydrogen Sulfide Contingency Plan should be activated prior to drilling in the Queen formation. A copy of the plan shall be posted at the drilling site.

### II. CASING:

1. 13-3/8 inch surface casing must be set at approximately 665 feet (approximately 25 feet in the Rustler Anhydrite above the top of the Salt), below usable water and circulate cement to the surface. If cement does not circulate to the surface, the BLM Carlsbad Field Office shall be notified at (505) 234-5972 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.

2. Minimum required fill of cement behind the 8-5/8 inch intermediate casing is sufficient to circulate to the surface.

3. Minimum required fill of cement behind the 5-1/2 inch production casing is sufficient to tie back 500 feet above the uppermost perforation in the pay zone.

### III. PRESSURE CONTROL:

1. Before drilling below the 13-3/8 inch surface casing, the blowout preventer assembly shall consist of a minimum of One Annular Preventer or Two Ram-Type Preventers and a Kelly Cock/Stabbing Valve. Before drilling below the 8-5/8 inch intermediate casing, the blowout preventer assembly shall consist of a minimum of One Annular Preventer, Two Ram-Type Preventers, and a Kelly Cock/Stabbing Valve.

2. Before drilling below the 13-3/8 inch surface casing, minimum working pressure of the blowout preventer and related equipment (BOPE) shall be 2000 psi. Before drilling below the 8-5/8 inch intermediate casing, minimum working pressure of the blowout preventer and related equipment (BOPE) shall be 3000 psi.

3. The BOPE shall be installed before drilling below the 8-5/8 inch surface casing and shall be tested as described in Onshore Order No. 2. Any equipment failing to test satisfactorily shall be repaired or replaced.

A. The results of the test will be reported to the BLM Carlsbad Field Office at 620 East Greene Street, Carlsbad, New Mexico 88220-6292.

B. 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.

C. Testing must be done in a safe workman like manner. Hard line connections shall be required.

D. A variance to test the BOPE to a reduced pressure of 1350 psi using the rig pumps before drilling below the 13-3/8 inch surface casing is approved.