

# OCD-ARTESIA

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

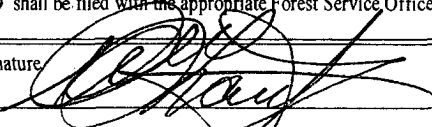
1a. Type of work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER		7. If Unit or CA Agreement, Name and No. <b>35819</b>
1b. Type of Well: <input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		8. Lease Name and Well No. <b>Blue Thunder 5 Federal Com #1</b>
2. Name of Operator <b>COG Operating LLC</b>		9. API Well No. <b>30-015-34991</b>
3a. Address <b>550 W. Texas Ave, Ste. 1300 Midland, TX 79701</b>	3b. Phone No. (include area code) <b>(432) 683-7443</b>	10. Field and Pool, or Exploratory <b>Lusk Morrow' West</b>
4. Location of Well (Report location clearly and in accordance with any State requirements.)* At surface <b>1980' FNL &amp; 660" FEL</b> At proposed prod. zone <b>Same</b>		11. Sec., T. R. M. or Blk. and Survey or Area <b>Section 5, T-19-S, R-31-E</b>
14. Distance in miles and direction from nearest town or post office* <b>10 miles Northwest or Halfway, NM</b>		12. County or Parish <b>Eddy County</b>
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) <b>660'</b>		13. State <b>NM</b>
16. No. of acres in lease <b>320 Acres</b>	17. Spacing Unit dedicated to this well <b>320 Acres</b>	
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth <b>12,500</b>	20. BLM/BIA Bond No. on file <b>NMB 000125</b>
21. Elevations (Show whether DF, KDB, RT, GL, etc.) <b>3587' Gr</b>	22. Approximate date work will start* <b>02/01/2006</b>	23. Estimated duration <b>45 days</b>

### 24. Attachments

**Carlsbad 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:

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

25. Signature 	Name (Printed/Typed) <b>W.E. (Ellis) Gray Jr.</b>	Date <b>12/06/2005</b>
Title <b>Gray Surface Specialties, Agent for COG Operating LLC</b>		
Approved by (Signature) <b>/s/ Joe G. Lara</b>	Name (Printed/Typed) <b>/s/ Joe G. Lara</b>	Date <b>FEB 03 2006</b>
Title <b>ACTING FIELD MANAGER</b>		
Office <b>CARLSBAD FIELD OFFICE</b>		

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)

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

Witness Surface Casing

**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 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	Pool Code 80840	Pool Name Lusk Morrow' WEST
Property Code	Property Name BLUE THUNDER 5 FEDERAL COM	Well Number 1
OGRID No. 229137	Operator Name COG OPERATING, LLC	Elevation 3587'

## Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	5	19-S	31-E		1980	NORTH	660	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

Dedicated Acres 320	Joint or Infill	Consolidation Code	Order No.
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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 39.58 AC	LOT 3 39.60 AC	LOT 2 39.60 AC	LOT 1 39.62 AC
<p>GEODETIC COORDINATES NAD 27 NME</p> <p>Y=615430.6 N X=638041.3 E</p> <p>LAT.=32°41'28.01" N LONG.=103°53'04.69" W</p>			
320 Acres			

**OPERATOR CERTIFICATION**

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

Signature:

Printed Name: W.E. (Ellis) Gray, Jr.

Title: Agent for COG Opr LLC

Date: 12/7/05

**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.

JUNE 30, 2003

Date Surveyed: REV: 11/29/05 JR

Signature & Seal of Professional Surveyor:

05.11.1831

Certificate No. GARY EIDSON 12641  
RONALD J. EIDSON 3239

## 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 069033

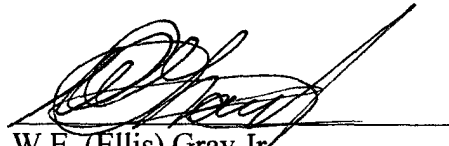
Legal Description of Land: Unit H, Section 5, 19s, 31E  
1980' FNL & 660' FEL  
Eddy County, NM

Formation(s) (if applicable): Morrow

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

BLM Bond File No: NMB 000215

12/7/05  
Date

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

# ATTACHMENT TO FORM 3160-3

COG Operating LLC  
Blue Thunder "5" Federal Com #1  
1980' FNL & 660' FEL  
Sec.5-T19S, R31E  
Eddy County, NM  
12,500 Morrow test

## DRILLING PROGRAM

1. Well Plan  
Drill and complete a 12500' MD Morrow Test
2. Ground Elevation above Sea Level: 3587'
3. Proposed drilling depth: 12500'
4. Estimated tops of geological markers:

Rustler anhydrite	600'
Yates	2700'
Queen	3350'
Delaware	4920'
Bone Spring	6500'
Wolfcamp	9850'
Strawn	10850'
Atoka	11150'
Morrow Lime	11350'
Morrow Clastics	11730'

5. Possible mineral bearing formations:

Bone Spring	Oil
Atoka	Gas
Morrow	Gas

6. Casing Program

Hole size	Interval	OD of Casing	Weight	Thread	Collar	Grade
17-1/2"	0' - +/-600'	13-3/8"	48#	8rd	STC	H40
12 1/4"	+/-600' - +/-3500'	8-5/8"	32#	8rd	STC	J-55
7 7/8"	+/-3500' - 12500'	5-1/2"	17#	8rd	LTC	P110

WITNESS

7. Cementing and Setting Depth

13 3/8"	Surface	+/-600'	Set +/- 600' 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
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.

5-1/2"      Production      12500'      Set +/- 12500' of 5-1/2" 17# P110 LTC casing. Cement w/ 600 sx Class "H" plus additives. Est TOC @ +/- 9000'

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 5000 psi casing spool, NU 5000 psi double ram BOP and 5000 psi annular BOP. Test double ram BOP and manifold to 4000# with clear fluid and test annular to 2500 psi using an independent tester

9. Proposed Mud Circulating System

<u>Interval</u>	<u>Mud Wt.</u>	<u>Visc.</u>	<u>FL</u>	<u>Type Mud System</u>
0'- 600'	8.4-9.2	28-35	NC	Fresh water native mud w/ paper for seepage and sweeps. Lime for PH
600'- 3500'	10.0- 10.2	28-29	NC	Brine mud, lime for PH and paper for seepage and sweeps.
3500' – 10800'	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.
10800' – 11150'	9.2 – 9.6	31-32	20	Increase weight with brine additions and reduce fluid loss w/ starch
11150' – 11730'	9.6-9.8	36-42	<15	Reduce Fluid loss w/ starch and XCD Polymer.
11730'- 12500'	9.8.9.9	36-42	<8	Reduce Fluid loss w/ starch and XCD Polymer. Maintain properties to TD. Spot a high vis pill on bottom for logs

10. Anticipated Starting Date:

Drilling operations will commence on February xx, 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 "5" Fed Com #1  
Section 5, T-19-S, R-31-E  
Eddy County, New Mexico**

**LOCATED**

10 miles Northwest of Halfway, New Mexico

**OIL & GAS LEASE**

NMLC 069033

**RECORD LESSEE**

Dwight Allison

**BOND COVERAGE**

\$25,000 statewide bond of COG Operations LLC

**ACRES IN LEASE**

320.00

**GRAZING LEASE**

Wayne Hardin  
799 S. Roosevelt Road 8  
Portales, NM 88130

**POOL**

Lusk; Morrow West (Gas) (80840)

**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 12,500'.

**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 intersection of County Road #222 (Shugart Road) and County Road #249 (Westall Road) go North along County Road #222 for approximately 250'. Turn left (West) and follow caliche road in a westerly direction approximately 0.3 miles to a road intersection. Continue West approximately 0.33 miles to another intersection. Turn right (South) and go approximately 350' to the Blue Thunder 5 Federal Com well pad.

**2. ACCESS ROADS**

- A. Length and Width

The access road will be built and is shown on Exhibit D

- 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 EXISTING 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

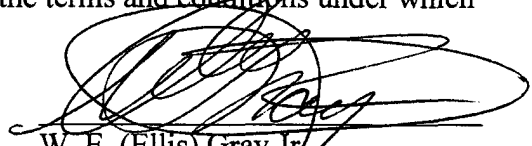
**11. OPERATOR'S REPRESENTATIVE**

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

**12. CERTIFICATION**

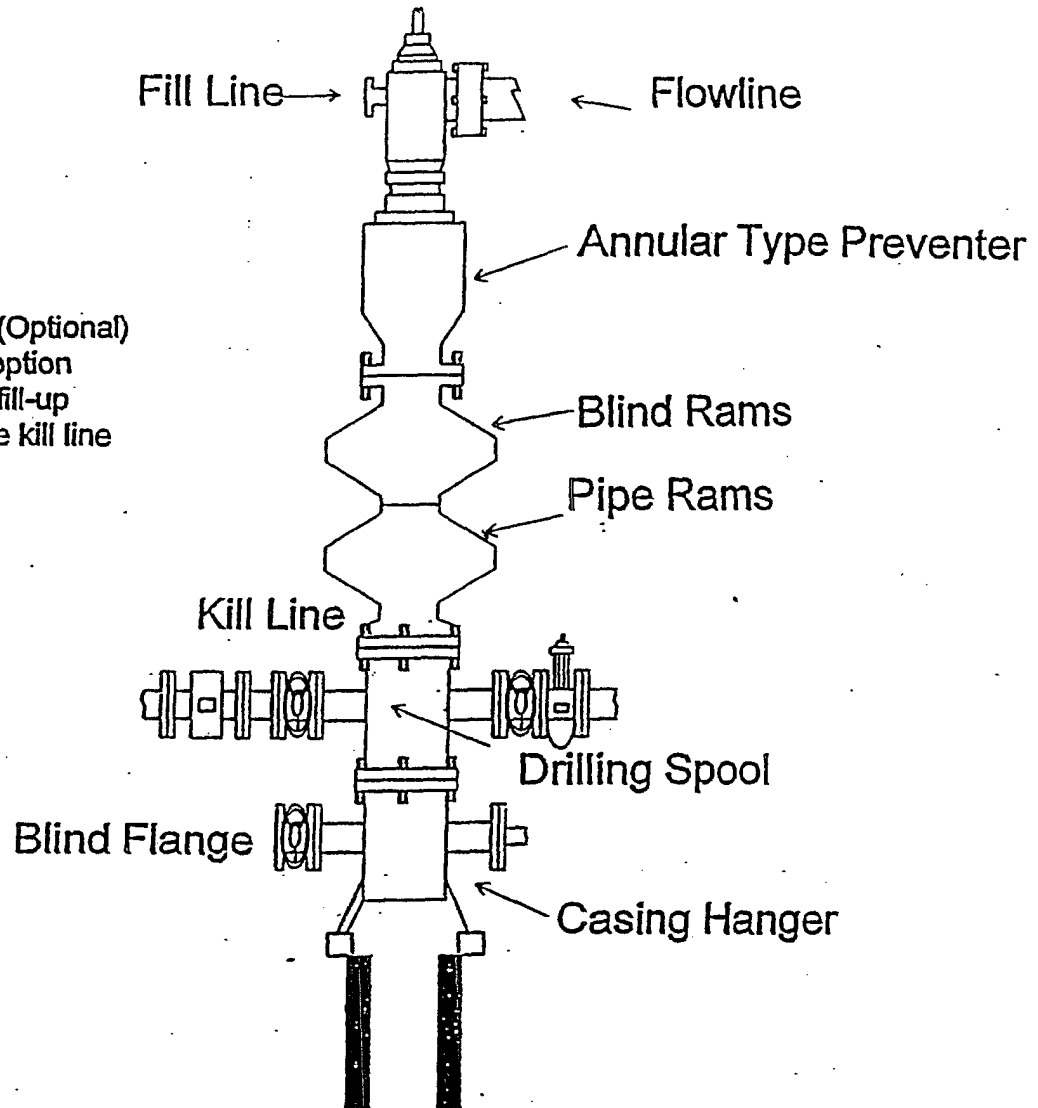
I hereby certify that I, or persons under my direct supervision, have inspected the proposed drill site and access route; that I am familiar with the conditions which presently exist; that the statements made in this plan are, to the best of my knowledge, true and correct; and, that the work associated 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.

1/31/06  
Date

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

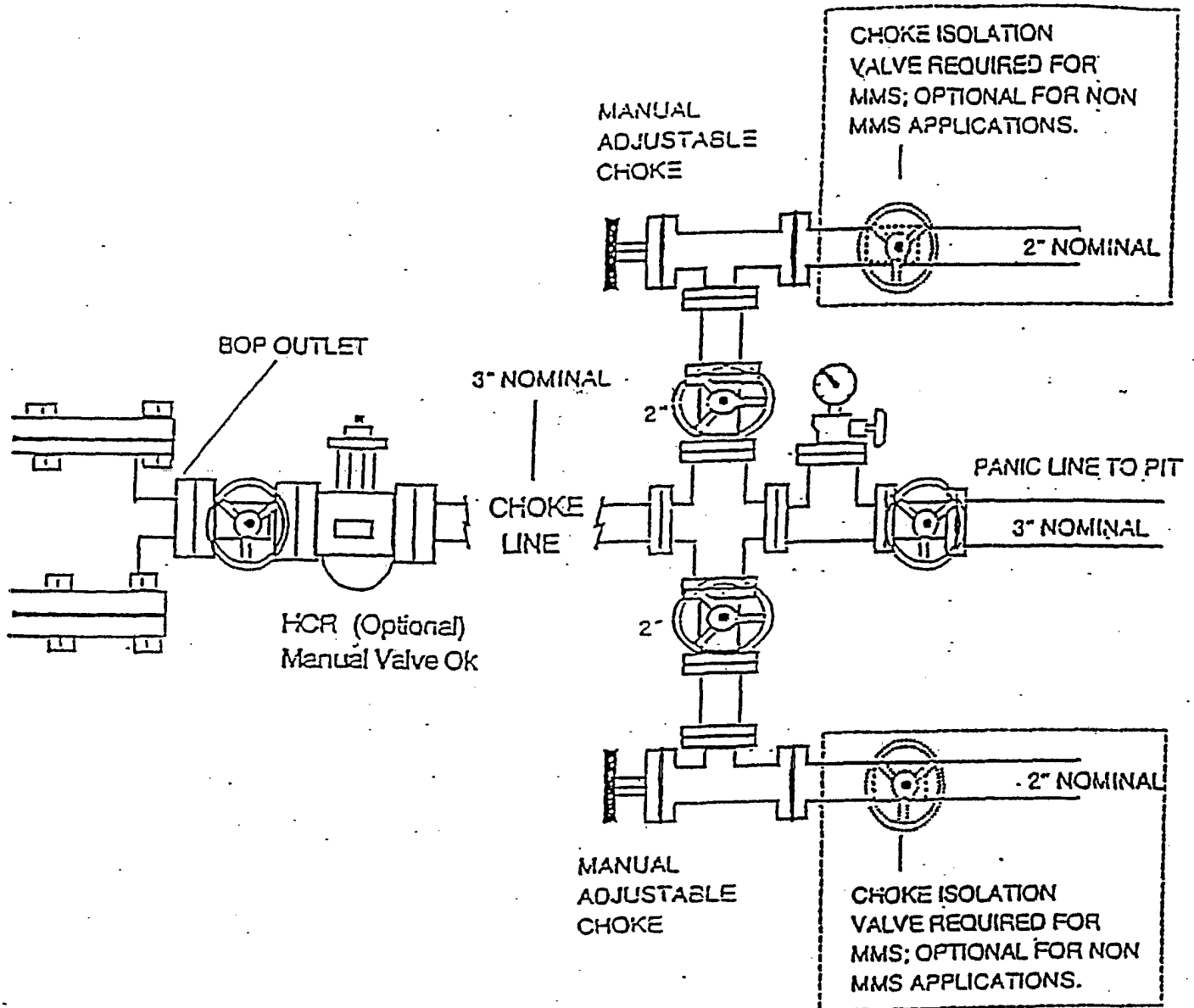
# BOPE SCHEMATIC

Rotating Head (Optional)  
Drilling Nipple option  
must include a fill-up  
line. Do not use kill line  
for fill up.



1500 Series

# CHOKE MANIFOLD 5M SERVICE



HYDROGEN SULFIDE DRILLING OPERATIONS PLANS  
COG OPERATING LLC  
BLUE THUNDER "5" FED COM #1  
EDDY COUNTY, NEW MEXICO

1. HYDROGEN SULFIDE DRILLING, OPERATIONS PLANS
  - A. All regularly assigned personnel, contracted or employed by COG Operating LLC, will receive training from a qualified instructor in the following areas prior to commencing drilling potential hydrogen sulfide bearing formations in this well:
    1. The hazards and characteristics of hydrogen sulfide (H<sub>2</sub>S)
    2. The proper use and maintenance of personal protective equipment and life support systems.
    3. The proper use of H<sub>2</sub>S detectors, alarms, warning systems, briefing areas, evacuation procedures and prevailing winds.
    4. The proper techniques for first aid and rescue procedures.
  - B. In addition,. Supervisory personnel will be trained in the following areas:
    1. The effects of H<sub>2</sub>S on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
    2. Corrective action and shut-in procedures when drilling or reworking a well and blowout prevention and well control procedures.
    3. The contents and requirements of the H<sub>2</sub>S Drilling Operations Plan.
  - C. There will be an initial training session just prior to encountering a known or probable H<sub>2</sub>S zone (within 3 days or 500 feet) and weekly H<sub>2</sub>S and well control drills for all personnel in each crew. The initial training session shall include a review of the site specific H<sub>2</sub>S Drilling Operations Plan. This plan shall be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

**HYDROGEN SULFIDE DRILLING OPERATIONS PLANS**  
**PAGE 2**

**2. H2S SAFETY EQUIPMENT AND SYSTEMS**

**Note:** All H2S safety equipment and systems will be installed, tested and operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone containing or reasonably expected to contain H2S.

**A. Well Control Equipment:**

1. Flare line with continuous pilot.
2. Choke manifold with a minimum of one remote choke
3. Blind rams and pipe rams to accommodate all sizes with properly sized losing unit.
4. Auxiliary equipment to include: annular preventer, mud-gas separator, rotating head and flare gun with flares as needed.

**B. Protective Equipment for Essential Personnel:**

Mark II Surviveair 30-minute units located in the dog house and at briefing areas, as indicated on well site diagram.

**C. H2S Detection and Monitoring Equipment:**

1. Two portable H2S monitors positioned and location for best coverage and response. These units have warning lights and audible sirens when H2S levels of 20 ppm are reached.
2. One portable SO2 monitor positioned near flare line.

**D. Visual Warning systems:**

1. Wind direction indicators as shown on well site diagram.
2. Caution/Danger signs shall be posted on roads providing direct access to location. Signs will be painted a high visibility yellow black lettering of sufficient size to be readable at a reasonable distance from the immediate location. Bilingual signs will be used when appropriate. See example attached.

## HYDROGEN SULFIDE DRILLING OPERATIONS PLANS

PAGE 3

### E. Mud Program

1. The Mud Program has been designed to minimize the volume of H<sub>2</sub>S circulated to the surface. Proper mud weights, safe drilling practices and the use of H<sub>2</sub>S scavengers will minimize hazards when penetrating H<sub>2</sub>S bearing zones.
2. A mud-gas separator will be utilized as needed.

### F. Metallurgy

All drill strings, casing, tubing, wellhead, blowout preventers, drilling spool, kill lines, choke manifold and line and valves shall be suitable for H<sub>2</sub>S service.

### G. Communication

1. Cellular telephone communications in company vehicles and mud logging trailer.
2. Land line (telephone) communications at area office.

### H. Well Testing

Drill stem testing will be performed with a minimum number of personnel in the immediate vicinity, which are necessary to safely and adequately conduct the test. The drill stem testing in an H<sub>2</sub>S environment will be conducted during the daylight hours.

**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**



Prevaling Wind Directions: Summer - South/Southwest  
Winter - North/Northwest

## CONDITIONS OF APPROVAL - DRILLING

Operator's Name: COG Operating LLC  
Well Name & No. Blue Thunder 5 Federal Com #1  
Location: 1980' FNL, 660' FEL, Section 5, T. 19 S., R. 31 E., Eddy County, New Mexico  
Lease: LC-069033

### 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. Well spud
  - B. Cementing casing: 13-3/8 inch 8-5/8 inch 5-1/2 inch
  - C. BOP tests
2. A Hydrogen Sulfide (H<sub>2</sub>S) Drilling Operation Contingency Plan shall be activated prior to drilling into the Yates formation. A copy of the plan shall be posted at the drilling site.
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.

### II. CASING:

1. The 13-3/8 inch surface casing shall be set at approximately 600 feet or 25 feet into the top of the Rustler Anhydrite 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.
2. The minimum required fill of cement behind the 8-5/8 inch intermediate casing is to be circulated to the surface.
3. The minimum required fill of cement behind the 5-1/2 inch production casing is to reach at least 500 feet above the top of the uppermost hydrocarbon productive interval.

### 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) below the 13-3/8 inch

surface casing shall be 2000 psi.

2. Minimum working pressure of the blowout preventer and related equipment (BOPE) below the 8-5/8 inch intermediate casing shall be 5000 psi.
3. The appropriate BLM office shall be notified in sufficient time for a representative to witness the tests.
  - 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.

#### **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:

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

1/12/2006  
acs

1/11/2006  
acs