Form 3160-3
(April 2004)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

AUG 2005 RECEIVED OIL CONS. DIV. DIST. 3

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

5. Lease Serial No.
BIA 14-20-604-62

6. If Indian, Allotee or Tribe Name
UTE MOUNTAIN UTE

7. If Unit or CA Agreement, Name and No.
N/A

8. Lease Name and Well No.
UTE INDIANS A 39

9. API Well No.
30-045- 33284

1a. Type of work: ☑ DRILL ☐ REENTER

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

2. Name of Operator
XTO ENERGY INC

3a. Address **2700 FARMINGTON AVE., BLDG. K-1**
FARMINGTON, NM 87401

3b. Phone No. *(include area code)*
(505) 324-1090

10. Field and Pool, or Exploratory
BARKER DOME PARADOX

4. Location of Well *(Report location clearly and in accordance with any State requirements.)*
At surface **1580 FNL & 925 FEL**
At proposed prod. zone **SAME**

Approval of this agreement does not warrant or certify that the operator thereof and other holders of operating rights hold legal or equitable title to those rights in the subject lease which are committed hereto.

11. Sec., T. R. M. or Blk. and Survey or Area
H 27-32N-14W NMPM

14. Distance in miles and direction from nearest town or post office
6 AIR MILES NORTHWEST OF LaPLATA

12. County or Parish
SAN JUAN

13. State
NM

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) **925'**

16. No. of acres in lease
600.59

17. Spacing Unit dedicated to this well
SEC. 27 640

18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. **2,769' (XTO's A-36)**

19. Proposed Depth
9,000'

20. BLM/BIA Bond No. on file
BIA NATIONWIDE 104312789

21. Elevations (Show whether DF, KDB, RT, GL, etc.)
6,086' GL

22. Approximate date work will start*
03/01/2005

23. Estimated duration
2 MONTHS

Venting / Flaring approved for 30 days per NTL-4A

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: BL Wood
Name *(Printed/Typed)*: **BRIAN WOOD**
Date: **01/16/2005**

Title: **CONSULTANT**
PHONE: **(505) 466-8120** FAX: **(505) 466-9682**

APPROVED FOR A PERIOD NOT TO EXCEED 1 YEAR.

Approved by *(Signature)*: /s/ Brian W. Davis
Name *(Printed/Typed)*: Acting Field Office Manager
Date: AUG 17 2005

Title

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.

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)

SEE ATTACHED CONDITIONS OF APPROVAL

NMOCD

RECEIVED
JAN 20 2005
Bureau of Land Management
Durango, Colorado

HOLD C104 FOR NSL and change in status to Ute Indians A #36

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

DISTRICT II
1301 W. Grand Ave., Artesia, N.M. 88210

DISTRICT III
1000 Rio Brazos Rd., Aztec, N.M. 87410

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

State of New Mexico
Energy, Minerals & Natural Resources Department

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

Form C-102
Revised June 10, 2003

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

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

[1] API Number	[2] Pool Code	[3] Pool Name
.	71560	BARKER DOME PARADOX

[4] Property Code	[5] Property Name	[6] Well Number
2-2645	UTE INDIANS A	39

[7] OGRID No.	[8] Operator Name	[9] Elevation
167067	XTO ENERGY INC.	6086'

[10] Surface Location

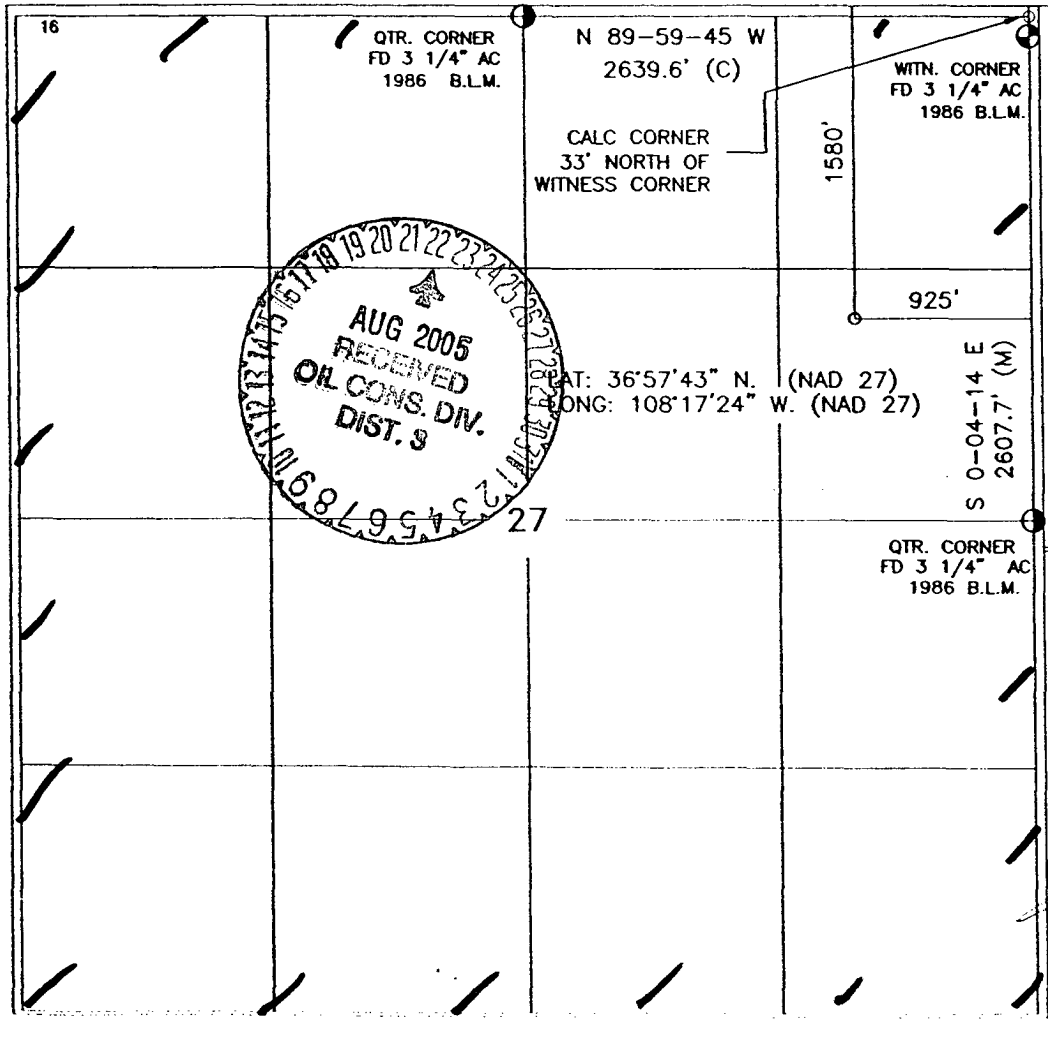
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
H	27	32-N	14-W		1580	NORTH	925	EAST	SAN JUAN

[11] 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

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
640			

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



[17] OPERATOR CERTIFICATION

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

Signature

BRIAN WOOD
Printed Name

CONSULTANT
Title

JAN. 16, 2005
Date

[18] 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.

April 2004
Date of Survey

Signature and Seal of Professional Surveyor

JOHN A. VUKONICH
NEW MEXICO
14831
REGISTERED PROFESSIONAL SURVEYOR
14831

Certificate Number

Submit 3 Copies To Appropriate District Office
District I
1625 N. French Dr., Hobbs, NM 88240
District II
1301 W. Grand Ave., 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

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

Form C-103
May 27, 2004

WELL API NO. 30-045-

5. Indicate Type of Lease STATE ☐ FEE ☐

6. State Oil & Gas Lease No. BIA 14-20-604-79

SUNDRY NOTICES AND REPORTS ON WELLS
(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT" (FORM C-101) FOR SUCH PROPOSALS.)

7. Lease Name or Unit Agreement Name: UTE TRIBAL D

1. Type of Well: Oil Well ☐ Gas Well ☒ Other

8. Well Number 12

2. Name of Operator XTO ENERGY INC.

9. OGRID Number 167067

3. Address of Operator 2700 FARMINGTON AVE., BLDG. K-1, FARMINGTON, NM 87401

10. Pool name or Wildcat: UTE DOME PARADOX

4. Well Location
Unit Letter H : 1580 feet from the NORTH line and 925 feet from the EAST line
Section 27 Township 32N Range 14W NMPM County SAN JUAN

11. Elevation *(Show whether DR, RKB, RT, GR, etc.)* 6,086' GL

Pit or Below-grade Tank Application ☒ or Closure ☐

Pit type Reserve Depth to Groundwater ~100' Distance from nearest fresh water well >1000' Distance from nearest surface water >200 <1000' ~400'

Pit Liner Thickness: 12 mil Below-Grade Tank: Volume _____ bbls; Construction Material _____

12. Check Appropriate Box to Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐	CHANGE PLANS ☐	COMMENCE DRILLING OPNS. ☐	P AND A ☐
PULL OR ALTER CASING ☐	MULTIPLE COMPL ☐	CASING/CEMENT JOB ☐	
OTHER: RESERVE PIT ☒		OTHER: ☐	

13. Describe proposed or completed operations. (Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work). SEE RULE 1103. For Multiple Completions: Attach wellbore diagram of proposed completion or recompletion.

I hereby certify that the information above is true and complete to the best of my knowledge and belief. **I further certify that any pit or below-grade tank has been/will be constructed & closed according to NMOCD guidelines ☒, a general permit ☐ or an (attached) alternative OCD-approved plan ☐.**

SIGNATURE [signature] TITLE CONSULTANT DATE 1-16-05

BRIAN WOOD
Type or print name E-mail address: brian@permitswest.com Telephone No. (505) 466-8120

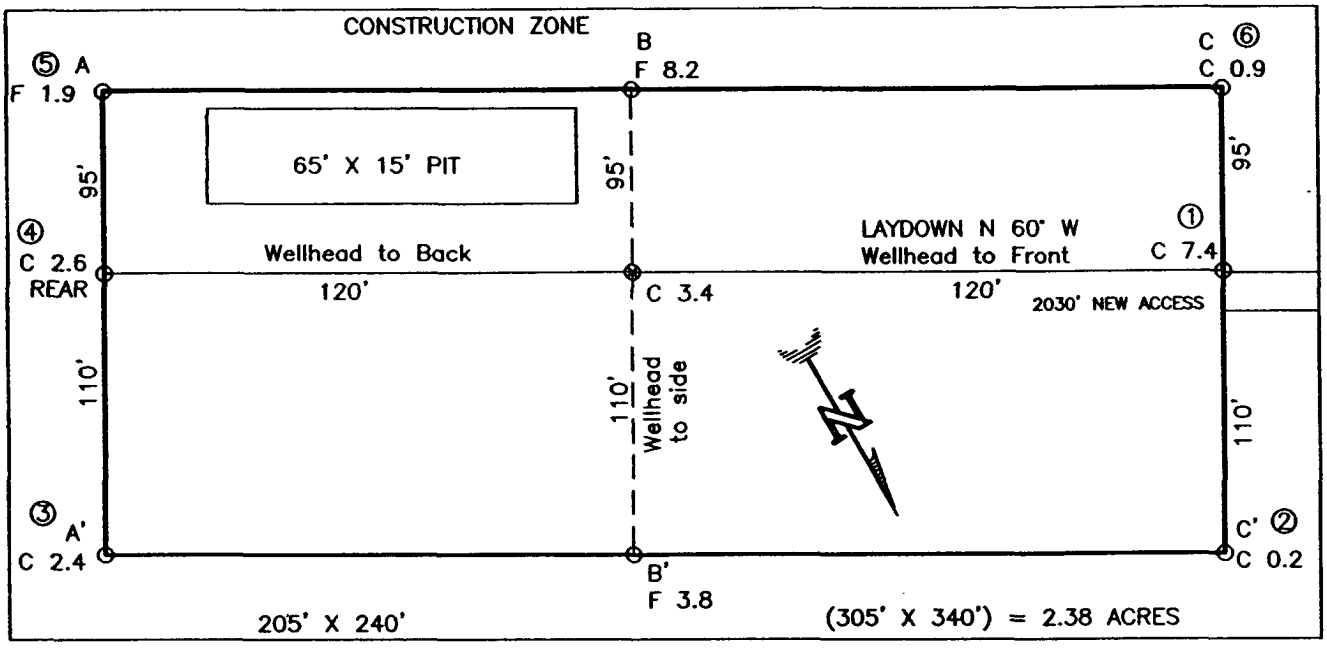
For State Use Only

APPROVED BY: [signature] TITLE DEPUTY OIL & GAS INSPECTOR, DIST. #3 DATE AUG 22 2005

Conditions of Approval (if any):

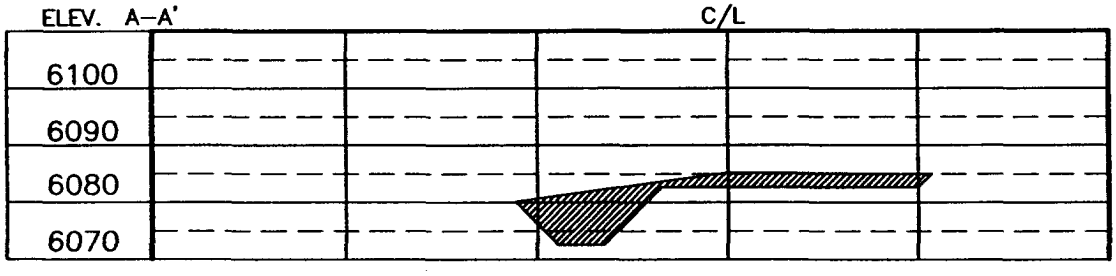
XTO ENERGY INC.
UTE INDIANS A No. 39, 1580 FNL 925 FEL
SECTION 27, T32N, R14W, N.M.P.M., SAN JUAN COUNTY, N. M.
GROUND ELEVATION: 6086', DATE: APRIL 26, 2004

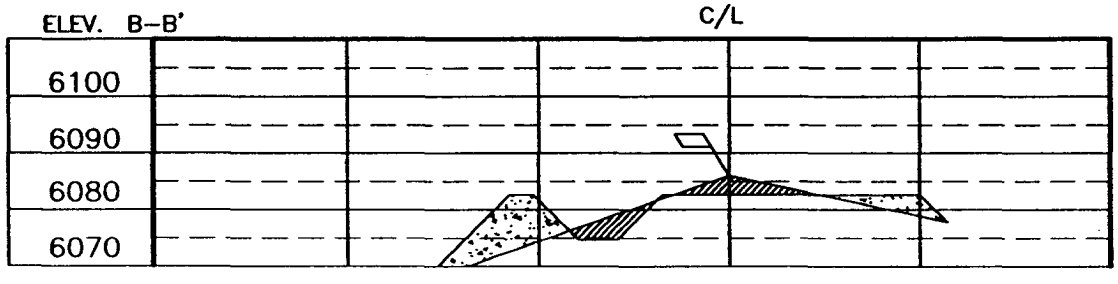
LAT. = 36°57'43" N.
LONG. = 108°17'24" W
NAD 27

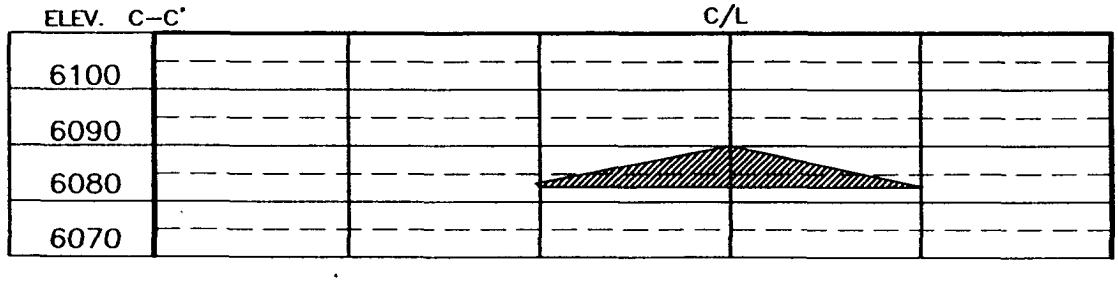


RESERVE PIT DIKE: TO BE 8' ABOVE DEEP SIDE (OVERFLOW – 3' WIDE AND 1' ABOVE SHALLOW SIDE).
BLOW PIT: OVERFLOW PIPE HALFWAY BETWEEN TOP AND BOTTOM AND TO EXTEND OVER PLASTIC LINER AND INTO BLOW PIT.

NOTE: DAGGETT ENTERPRISES, INC. IS NOT LIABLE FOR UNDERGROUND UTILITIES OR PIPELINES. NEW MEXICO ONE CALL TO BE NOTIFIED 48 HOURS PRIOR TO EXCAVATION OR CONSTRUCTION.





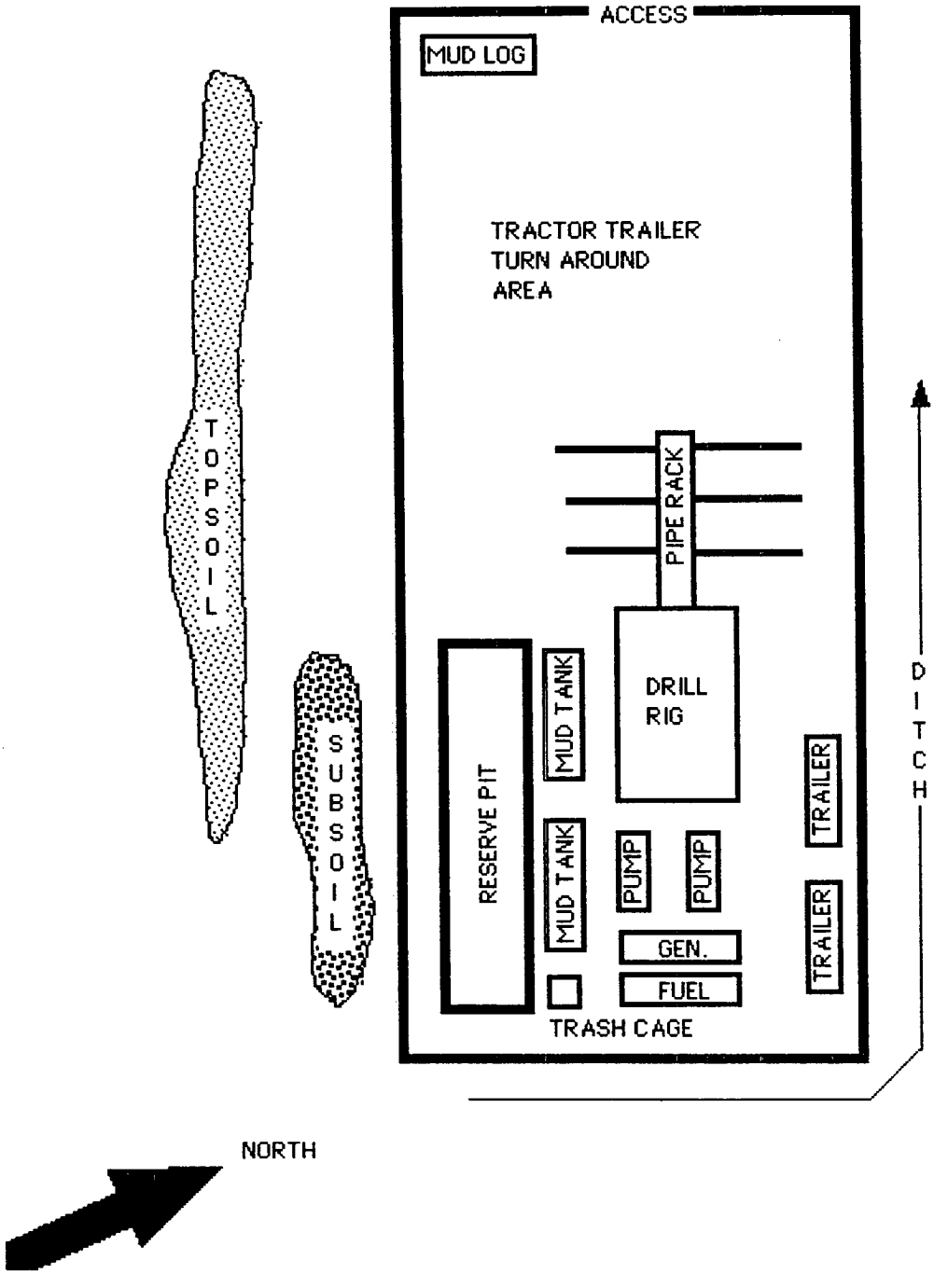


NOTE: CONTRACTOR SHOULD CALL ONE-CALL FOR LOCATION OF ANY MARKED OR UNMARKED BURIED PIPELINES OR CABLES ON WELL PAD AND OR ACCESS ROAD AT LEAST TWO (2) WORKING DAYS PRIOR TO CONSTRUCTION.

Daggett Enterprises, Inc.
Surveying and Oil Field Services
P. O. Box 15068 • Farmington, NM 87401
Phone (505) 326-1772 • Fax (505) 326-6019
NEW MEXICO L.S. No. 14831

REVISION | DATE | REVISED BY:
DRAWN BY: B.J.L.
JOB #: CR252
SCALE: CR252GF8
DATE: 10/07/04

XTO Energy Inc.
Ute Indians A 39
1580' FNL & 925' FEL
Sec. 27, T. 32 N., R. 14 W.
San Juan County, New Mexico



XTO Energy Inc.
Ute Indians A 39
1580' FNL & 925' FEL
Sec. 27, T. 32 N., R. 14 W.
San Juan County, New Mexico

Drilling Program

1. ESTIMATED FORMATION TOPS

Formation Name	GL Depth	KB Depth	Elevation
Menefee Shale	0'	12'	+6,086'
Gallup Sandstone	1,570'	1,582'	+4,516'
Greenhorn Limestone	2,246'	2,258'	+3,840'
Graneros Shale	2,307'	2,319'	+3,779'
Dakota Sandstone	2,365'	2,377'	+3,721'
Burro Canyon Sandstone	2,589'	2,601'	+3,497'
Morrison	2,636'	2,648'	+3,450'
Bluff Sandstone	3,156'	3,168'	+2,930'
Summerville	3,516'	3,528'	+2,570'
Todilto Limestone	3,647'	3,659'	+2,439'
Entrada Sandstone	3,661'	3,673'	+2,425'
Carmel	3,778'	3,790'	+2,308'
Wingate Sandstone	3,847'	3,859'	+2,239'
Chinle Shale	4,126'	4,138'	+1,960'
Shinarump Conglomerate	4,771'	4,783'	+1,315'
Moenkopi	4,903'	4,915'	+1,183'
Cutler Group	5,156'	5,168'	+930'
Hermosa Group	6,673'	6,685'	-587'
Paradox	7,658'	7,670'	-1,572'
Ismay	7,861'	7,873'	-1,775'
Desert Creek	8,062'	8,078'	-1,976'
Akah	8,180'	8,192'	-2,094'
Barker Creek	8,362'	8,374'	-2,276'
Alkali Gulch	8,597'	8,609'	-2,511'
Total Depth	9,000'	9,012'	-2,914'

2. NOTABLE ZONES

Gas & Oil Zones	Water Zones	Uranium Zone
Dakota (not a goal)	Entrada	Chinle
Ismay		
Desert Creek		
Akah		
Barker Creek		

3. PRESSURE CONTROL

The drilling contract has not yet been awarded, thus the exact BOP model to be used is not yet known. (A typical 2,000 psi model is on PAGE 3.) An 8-5/8" x 11" 2,000 pound double ram BOP system with a choke manifold and mud cross will be tested to ≈250 psi and then to ≈1,000 psi. Upper and lower Kelly cocks with valve handle and subs to fit all drill string connections which are in use will be available on the rig floor.

Tests will be run when:

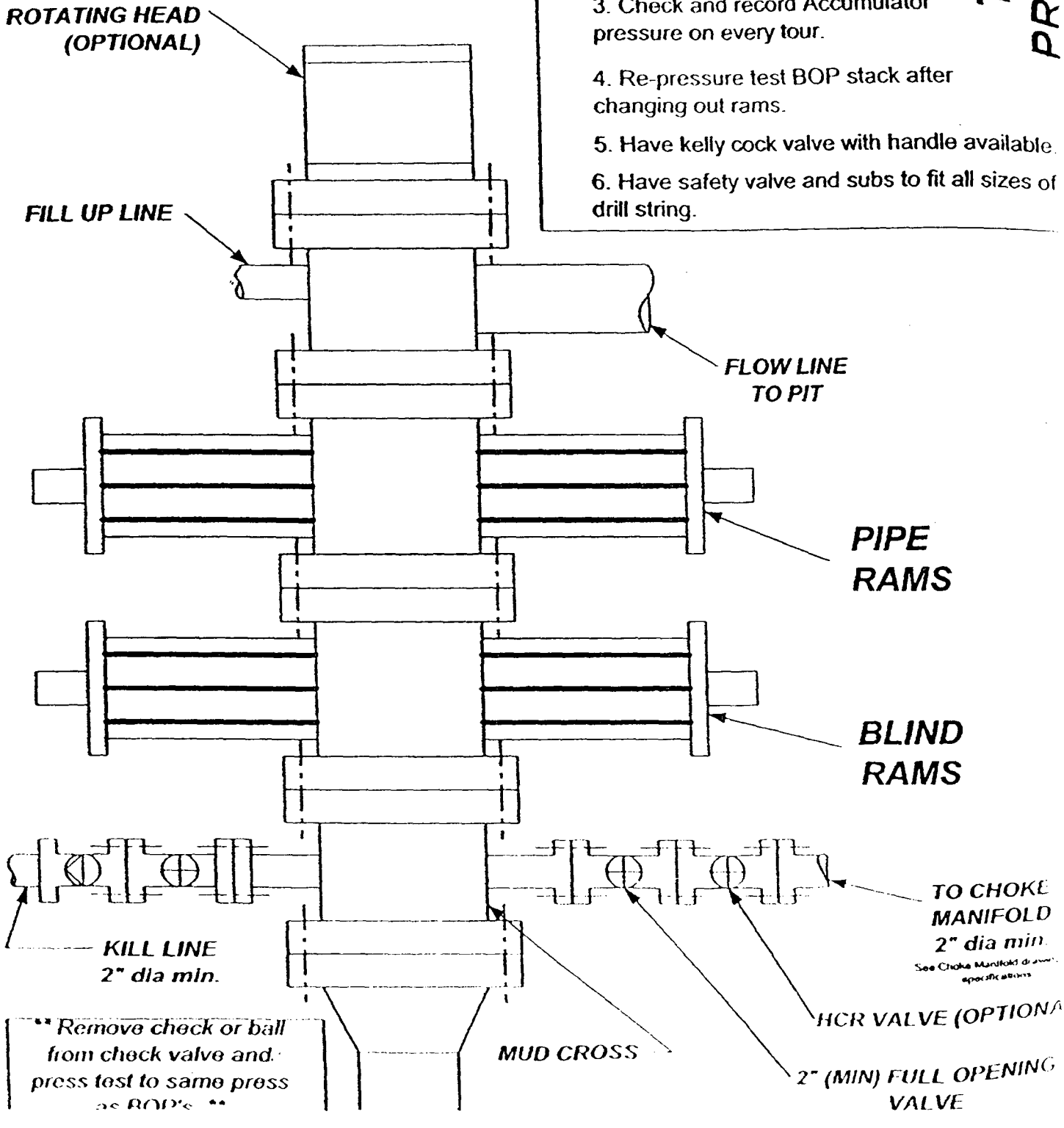
1) installed
2) anytime a pressure seal is broken (test only affected equipment)
3) at least every 30 days
4) blind & pipe rams will be activated each trip, but no more than daily

BOP systems will be consistent with API RP 53. Blowout preventers will be installed and tested before drilling surface casing plug and will remain in use until the well is completed or abandoned. Preventers will be inspected and operated daily to ensure good mechanical working order and this inspection recorded on the daily drilling report. Preventers and casing will be pressure tested before drilling casing cement plugs. Maximum expected bottom hole pressure is ≈3,600 psi. BOP and mud system will control pressure.

BOP SCEMATIC FOR DRILLING OPERATIONS CLASS 1 (2M) NORMAL PRESSURE

TESTING PROCEDURE

1. Test BOP after installation:
   Pressure test BOP to 200-300 psig (low pressure) for 5 min.
   Test BOP to Working Press or to 70% internal yield of surf csg (10 min).
2. Test operation of (both) rams on every trip.
3. Check and record Accumulator pressure on every tour.
4. Re-pressure test BOP stack after changing out rams.
5. Have kelly cock valve with handle available.
6. Have safety valve and subs to fit all sizes of drill string.



4. CASING & CEMENT

Hole Size	O. D.	Weight (lb/ft)	Grade	Age	Setting Depth
17-1/2"	13-3/8"	54.5	J-55	New	225'
12-1/4"	8-5/8"	24	J-55	New	850'
7-7/8"	5-1/2"	17	K-55	New	8,400'
7-7/8"	5-1/2"	17	N-80	New	9,000'

Surface casing will be cemented to the surface with ≈315 cubic feet (≈250 sacks) Class B Neat + 1/4 pound per sack cello-flake + 2% $CaCl_2$. Yield = 1.27 cubic feet per sack. Weight = 15.2 pounds per gallon. Excess = 100%.

Intermediate casing will be cemented to the surface with >100% excess. Lead with 260 sacks Type III (Class C) with 8% gel + 2% $CaCl_2$ +1/4 pound per sack cello flake mixed at 12.5 pounds per gallon and 2.19 cubic feet per sack. Tail with 100 sacks Type III (Class C) with 2% $CaCl_2$ +1/4 pound per sack cello flake mixed at 14.5 pounds per gallon and 1.41 cubic feet per sack. Top with 150 sacks Type III with 2% $CaCl_2$ +1/4 pound per sack cello flake mixed at 14.5 pounds per gallon and 1.41 cubic feet per sack.

Production casing hole will be cemented to surface with >100% excess. Set DV @ ≈3,500'. Cement first stage with ≈1,250 cubic feet (≈786 sacks) Class H with 6% gel + 1/4 pound per sack cello flake +0.3% CD-32 + 0.5% FL-52 + 0.1% R-3 + 2% Phenoseal mixed at 14.1 pounds per gallon and 1.59 cubic feet per sack. Cement second stage with ≈2,050 cubic feet (≈676 sacks) Type III with 85 gel + 1/4 pound per sack cello flake + 2% Phenoseal mixed at 11.4 pounds per gallon and 3.03 cubic feet per sack. Follow with ≈350 cubic feet (≈227 sacks) Type III with 1/4 pound per sack cello flake + 0.2% FL-52 + 5% A-10 + 0.3% CD-32 + 2% Phenoseal mixed at 14.2 pounds per gallon and 1.54 cubic feet per sack.

5. MUD PROGRAM

RANGE	MUD TYPE	WEIGHT	VISCOSITY	WATER LOSS
0' - 850'	Fresh water/gel/line	8.6-8.8	28-32	NC
850' - 8,000'	Fresh water/polymer/LCM	8.4-8.8	28-32	NC
8,000' - TD	LSND	8.8-9.0	42-60	8-10 cc

6. CORES, TESTS, & LOGS

No cores or drill stem tests are planned. Array Induction/SFL/GR/SP logs and Neutron/Lithodensity/Pe/GR/Cal logs will be run from TD to ≈850. FMI log will be run from TD to ≈7,500'

7. DOWN HOLE CONDITIONS

No abnormal pressures or temperatures are expected. Maximum bottom hole pressure will be ≈3,070 psi. Hydrogen sulfide is expected to be encountered at ≈8,000'. A contingency plan is attached.

8. OTHER INFORMATION

The anticipated spud date is upon approval. It is expected it will take about five weeks to drill and three weeks to complete the well.

H2S Contingency Plan

(Emergency Response and Public Protection Plan)

UTE INDIANS A, Well # 39

XTO ENERGY INC.

PREPARED BY:
Al Lara

Office: 970-564-1103
Cell: 970-560-1349

H2S Contingency Plan

Company Name: XTO Energy, INC.
Address: 2700 Farmington Avenue Farmington, NM 87401
Phone: (505) 324-1090

Well Name: Ute Indians A, Well # 39
TD: 8800'
Location: Sec.27, 32-N,14-W, San Juan County, New Mexico
Field Name: Barker Dome
Surface Casing: 850'
H2S Formation and Depth: 8000'

OPERATIONS ENGINEER
Jeff Patton
Office: 505-324-1090

FIELD FOREMAN
Dennis Elrod
Office 505-324-1090
Cell: 505-486-4604

RIG CONTRACTOR
Aztec Well Service
505-334-6194

CONTRACT SAFETY COMPANY
Jacobs Engineering

XTO SAFETY CONTACT
Al Lara
Office: 970-564-1103
Cell: 970-560-2109
Home: 970-882-3500

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APPENDIX F **HYDROGEN SULFIDE MSDS**
APPENDIX G **EMPLOYEE SIGNOFF SHEET**

1.00 PURPOSE

This Emergency Response Plan and Public Protection Plan (Plan) is specific to the Ute Indians A, #39 well location operated by XTO Energy, Inc. (XTO). This document is designed to provide for the safety and welfare of XTO and contract personnel, the community, the environment, and property.

This Plan establishes evacuation procedures, assigns response duties to specific individuals, provides for notification of outside agencies, and provides details of actions to alert and protect the public. This Plan will be activated immediately upon the detection of the release of a potentially hazardous volume of hydrogen sulfide (H_2S).

2.00 GENERAL INFORMATION ON AND PHYSIOLOGICAL RESPONSES TO HYDROGEN SULFIDE (H_2S) AND SULFUR DIOXIDE (SO_2)

2.10 HYDROGEN SULFIDE (H_2S)

Hydrogen sulfide is a flammable, highly toxic, colorless gas that is heavier than air, with the odor of rotten eggs. It can be detected by smell at a concentration in air of only 0.002 parts per million (ppm). Above concentrations of 100 ppm, it will deaden the sense of smell in a few minutes, and at a concentration of 700 ppm, a single breath can be fatal. If ignited, it burns with a blue flame. In still air it tends to accumulate in low places in dangerous concentrations. However, if it is warmer than the surrounding air, it may tend

to rise. The upper flammability limit of H_2S in air is 44% and the lower flammability in air is 4%.

Breathing low concentrations of H_2S can cause headaches. Higher concentrations (0.01 percent by volume) cause irritation of the eyes, nose, throat, and lungs. Eyes become red and swollen, accompanied by sharp pain in more severe cases. Still higher concentrations (0.05 percent by volume) cause dizziness, unconsciousness, and failure of respiration.

The Threshold Limit Value (TLV) is 10 ppm (0.001%) in air. This is the limit for eight hours of continuous exposure as recommended by the American Conference of Governmental Industrial Hygienists. The health and safety reference values of various concentrations of H_2S are listed in the toxicity chart below. A Manufacturers Safety Data Sheet (MSDS) for hydrogen sulfide is included in Appendix D.

2.20 SULFUR DIOXIDE (SO_2)

Sulfur dioxide is formed with the burning of hydrogen sulfide gas. Sulfur dioxide is a pungent, irritating, suffocating, colorless gas. This gas is normally heavier than air and concentrations above 400 ppm are considered dangerous for even brief exposures.

Under special circumstances hydrogen sulfide gas may be ignited in order to dissipate a gas cloud and reduce the impact on a local area. Often these burning temperatures are enough to raise and mix the SO_2 with air in a ratio well below toxic levels. However, great care and proper monitoring should be used when this is attempted.

Due to the irritating effect of SO_2 at low concentrations of less than 5 ppm, there is usually no doubt as to it's presence in an area, which provides better warning characteristics than H_2S.

2.30 TOXICITY CHART

NAME	SPECIFIC GRAVITY[1]	TLV[2] (ppm)	HAZARDOUS LIMIT[3]	LETHAL CONCENTRATION[4]
Hydrogen Sulfide	1.18	10	100 ppm/1 hr.	700 ppm
Sulfur Dioxide	2.21	2	50 ppm/1 hr.	400 ppm

Notes:
(1) Specific gravity of air = 1.00.
(2) TLV - Threshold Limit Value.
(3) Hazardous Limit - concentration that may cause death with short term exposure.
(4) Lethal concentration - Concentration that may cause death with only a few breaths.

3.00 TREATMENT PROCEDURES FOR H_2S AND SO_2 EXPOSURE

A. Remove the patient to fresh air. Personnel should **always** use fresh air breathing equipment when entering an area to retrieve a person who has been overcome with H_2S.

B. Call a physician and get patient under his care as soon as possible.

C. If breathing has ceased, begin artificial respiration immediately. Give cardiopulmonary resuscitation (CPR) only if there is no pulse and no breathing. Continue revival efforts until physician arrives or, if patient is mobile and it is determined that he should go to the hospital, continue oxygen inhalation under the physician's direction.

D. Administer oxygen to help eliminate toxic substances from blood stream.

E. Keep the patient at rest and protect from chilling.

4.00 INDIVIDUAL RESPONSIBILITIES

It is the responsibility of ***all personnel*** on the location to familiarize themselves with the procedures outlined in this contingency plan.

A. All Personnel

1. Responsible for their assigned safety equipment.
2. Responsible for familiarizing themselves with the location of all safety equipment.
3. Responsible for reporting any indications of H2S to those in the area and to a supervisor.

B. Operations Supervisor

1. Responsible for thoroughly understanding and seeing that all aspects of this contingency plan are enforced.
2. Responsible for implementing all phases of this contingency plan.
3. Responsible for keeping a minimum of personnel on the location during expected hazardous operations.
4. Responsible for coordinating all well site operations and communications in the event that an emergency condition develops.
5. Responsible for ensuring that all visitors receive and H2S safety orientation. A visitors log will be maintained as well as a list of all personnel on location after drilling has progressed to the suspected H2S formation.

4.10 LOCATION LAYOUT

The location of at least two pre-determined safe areas to assemble at in the event of an emergency. These locations should be located 180 degrees to one another, and in the direction of the prevailing winds.

A. H2S rig monitor with at least three heads. One located at the bell nipple, one located at the shale shaker, and a third one on the rig floor.

The location and type of all air masks. Self-contained breathing apparatus for use by rig personnel for this well will be kept in the following location(s):

Type: 1-30 min rescue unit	Location: Safety Contractors Trailer
Type: 1-30 minute rescue unit	Location: All Trailers
Type: 2-30 min rescue unit	Location: Briefing Area #1
Type: 2-30 min rescue unit	Location: Briefing Area #2
Type: 5-Hoseline work unit	Location: Safety Trailer
Type: 3-5 min escape unit	Location: Rig Floor
Type: 1-5 min escape unit	Location: Tubing board (derrick)

If a cascade system is utilized, indicate the location(s);

Type: 10 cylinder cascade Location: Safety Trailer with 10 cylinder cascade is to be located by rig at base of catwalk.

The location of windsocks or streamers. The wind direction indicators for this well will be located at:

Type: Windsock	Location: Briefing Area #1
Type: Windsock	Location: Briefing Area #2
Type: Windsock	Location: On floor & pits

The location of any other safety equipment used, such as flare guns or bug blowers.

Type: Flare gun Location: Safety Trailer

The location of all telephones and/or means of communications are as follows:

Type: Cell phone Location: Drilling Superintendent
Tool Pusher

Warning Signs:
"No Smoking" signs should be strategically located around the rig and rig location. The following locations are appropriate:
Rig Floor
Dog House
Substructure
Lower landing of all stairs to rig floor
Mud pits
Shale shaker

"Poison Gas" signs should also be strategically located around the rig and rig location. The following locations are appropriate:
All entrances leading to location.
Lower landing of all stairs leading to rig floor.
All areas around substructure, including mud pits and shale shaker.

Various points along the perimeter of the radius of exposure.

NOTE: *All warnings should be black and yellow in color and of readable size at a distance.*

4.20 OPERATING PROCEDURES

The following operating procedures will be utilized for drilling in areas with H2S.

A. Plan of operation for handling gas kicks and other problems. Any gas kick will be controlled by using approved well control techniques. Upon evidence that ambient H2S concentrations have reached 10 ppm, all non-essential personnel will be evacuated to pre-determined safe areas. Personnel remaining on the rig floor will continue to control the well until the situation indicates the area is safe to re-enter.

Special Operations:
Drill Stem Tests: All drill stem tests must be closed chamber and conducted during daylight hours only.
Coring: After a core has been cut, circulate bottoms up and monitor for H2S. If hole conditions (and/or detectors) indicate potentially hazardous conditions, put breathing equipment on (10) ten stands before core barrel reaches surface. Breathing equipment will be worn by all personnel while core barrel is pulled, broken out and opened, and until a safe atmosphere is indicated.

All equipment with potential for H2S shall be suitable for H2S service, i.e. Drill String, Casing, Well Head, Blowout Preventor equipment and trim, Rotating Head, Kill Lines, Choke Manifold and Lines.
A remote controlled choke will be installed prior to all H2S drilling.
Mud system pH will be maintained at or above 10.0 with sufficient materials on location to maintain the required pH.
A flare pit will be located a minimum of 150' from wellhead and 30' from the reserve pit.

4.30 OPERATING CONDITIONS

Operating conditions are defined in three categories. A description of each of these conditions and the required action to take are given below.

A. Condition I – Normal Operating Conditions, Potential Danger

Characterized by: Normal Drilling Operations in zones which contain or may contain H2S.

Warning Flag:	Yellow
Alarm:	None
Probable Occurrence:	No detectable gas present at surface

General Action:
Know location of safety equipment.
Check safety equipment for proper function. Keep it available.
Be alert for a condition change.
Follow instructions of supervisor.

B. Condition II – Potential To Moderate Danger to Life

Characterized by: H2S gas present. Concentration less than 10 ppm.

Warning Flag: Orange

Alarm: Flashing light at 10 ppm H2S. Intermittent blasts on horn at 10 ppm H2S.

Probable Occurrence:
As drill gas.
As trip gas when circulating bottoms up.
When a core barrel is pulled.
When a well kick is circulated out.
Surface pressure, well flow or lost operations.
Equipment failure during testing operations.

General Action:
Follow instructions of supervisor.
Put on breathing equipment if directed, or if conditions warrant it.
Stay in "SAFE BRIEFING AREA" if instructed and not working to correct the problem.
The Drilling Superintendent will initiate action to reduce the H2S concentration to zero.

C. Condition III - Moderate to Extreme Danger to Life

Characterized by: H2S present in concentrations at or above 10 ppm. Critical well operations or well control problems. In the extreme, loss of well control.

Warning Flag: Red

Alarm: Flashing light and continuous blast on horn at 10 ppm H2S.

Probable Occurrence:
As drill gas.
As trip gas when circulating bottoms up.
When a core barrel is pulled.
When a well kick is circulated out.
Surface pressure, well flow or lost return problems.
Equipment failure during testing operations.

General Action:

C. In the event a potentially hazardous volume of H2S is released into the atmosphere, the following steps must be taken to alert the public:

1. Remove all rig personnel from the danger area and assembly at a pre-determined safe area, preferable upwind from the well site.
2. Alert the drilling office, public safety personnel, regulatory agencies, and the general public of the existence and location of an H2S release. See List of Emergency Telephone Numbers.
3. Assign personnel to block any public road (and access road to location) at the boundary of the area of exposure. Any unauthorized people within the area should be informed that an emergency exists and be ordered to leave immediately.
4. Request assistance from public safety personnel to control traffic and/or evacuate people from the threatened area.

6.0 TRAINING PROGRAM

All personnel associated with the drilling operations will receive training to ensure efficient and correct action in all situations. This training will be in the general areas of: (A.) Personnel Safety (B.) Rig Operations (C.) Well Control Procedures.

A. **Personnel Safety Training** All Personnel shall have received H2S training in the following areas:

1. Hazards and characteristics of H2S.
2. Effect on mental components of the system.
3. Safety precautions.
4. Operation of safety equipment and life support systems.
5. Corrective action and shutdown procedures.

B. **Rig Operations** All rig personnel shall have received training in the following areas.

1. Well control procedures.
2. Layout and operations of the well control equipment.

NOTE: *Proficiency will be developed through BOP drills which will be documented by the Drilling Superintendent*

C. **Service Company Personnel** All service personnel shall have been trained by their employers in the hazards and characteristics of H2S and the operation of safety equipment and life support systems.

Visitors All first time visitors to the location will be required to attend a safety orientation. The Drilling Superintendent shall be responsible for this orientation and he shall see that every visitor is logged correctly.

Put on breathing equipment. Move to "SAFE BRIEFING AREA" and remain there if not working to correct or control problem.
Follow instructions of Drilling Superintendent or other supervisor.
The Drilling Superintendent will initiate emergency action as provided in the contingency plan and as appropriate to the actual conditions. If testing operations are in progress, the well will be shut in.
The Drilling Superintendent will conduct any necessary operations with an absolute minimum of personnel. All persons in the immediate area will wear a breathing apparatus. All other personnel will restrict their movements to those directed by the Superintendent.
If gas containing hydrogen sulfide (H2S) is ignited, the burning hydrogen sulfide will be converted to sulfur dioxide which is poisonous.

5.00 HYDROGEN SULFIDE EMERGENCY PROCEDURES

The procedures listed below apply to drilling and testing operations.

A. If at any time during Condition I, the mud logger, mud engineer, or any other person detects H2S, he will notify the Drilling Superintendent. All personnel should keep alert to the Drilling Superintendent's orders. He will:

1. Immediately begin to ascertain the cause or the source of the H2S and take steps to reduce the H2S concentration to zero. This should include having the mud engineer run a sulfide and pH determination on the flowline mud if water-base mud is in use. If an oil-base mud is in use, the mud engineer should check the lime content of the mud.
2. Order non-essential personnel out of the potential danger area.
3. Order all personnel to check their safety equipment to see that it is working properly and in the proper location. Persons without breathing equipment will not be allowed to work in a hazard area.
4. Notify the Contract Supervisor of condition and action taken.
5. Continue gas monitoring activities and continue with caution.
6. Display the orange warning flag.

B. If the H2S concentration exceed 10 PPM the following steps will be taken:

1. Put on breathing equipment.
2. Display red flag.
3. Driller – prepare to shut the well in.
    a. Pick up pipe to get Kelly out of BOP's.
    b. Close BOP's if necessary.
4. If testing operations are in progress, the well will be shut-in.
5. Help anyone who may be affected by gas.
6. Evacuate quickly to the "SAFE BRIEFING AREA" if instructed or conditions warrant.

Public The public within the area of exposure shall be given an advance briefing by the Drilling Superintendent. This briefing must include the following elements:

Hazards and characteristics of hydrogen sulfide. It is an extremely dangerous gas. It is normally detectable by it's "rotten egg" odor, but odor is not a reliable means of detections because the sense of smell may be dulled or lost due to intake of the gas. It is colorless, transparent and flammable. It is heavier than air and may accumulate in low places.

The necessity of an emergency action plan. Due to the danger of persons exposed to hydrogen sulfide and the need for expeditious action should an emergency occur, this action plan will be put into effect if and when a leak occurs.

The location of hydrogen sulfide within the area of exposure at the drilling location.

The manner in which the public will be notified of an emergency.

Steps to be taken in case of an emergency.

Abandon danger area.

Notify necessary agencies and request assistance for controlling traffic and evacuating people.

7.00 PROTECTION OF THE GENERAL PUBLIC

7.10 NOTIFICATION OF POTENTIAL DANGER

- Warning signs will be prominently displayed at the well site and at all access points.

7.20 EMERGENCY EVACUATION AND ISOLATION OF DANGER AREA

In the event toxic gases are released in such quantities as to be a possible hazard to the public the following steps (in addition to the procedure outlined in Section 5.0) will be taken by the person in charge:

- Choose a command post site in a safe area.

- Alert by telephone the Incident Commander or the Safety Manager and notify the person of the situation and your choice of a command posts.

- Notify local Law Enforcement Officials of the need to restrict entry to the area and the **location of your command post.** Request their assistance in restricting entry into the danger area by placing roadblocks or barriers in safe areas.

Note-Alternate command posts and roadblocks may be required, the Incident Commander may make changes in the locations listed above. Care should be taken to notify all responders of the changes.

- If evacuation cannot be accomplished in a timely manner and the H_2S release is posing an immediate threat to human life, the Incident Commander may chose to ignite the gas. Because of the increased risks igniting the gas can pose for response personnel, only the Incident Commander can give this order.