

District I  
1625 N. French Dr., Hobbs, NM 88240  
District II  
1301 W. Grand Avenue, Artesia, NM 88210  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505

State of New Mexico  
Energy Minerals and Natural Resources

Form C-101  
Revised June 10, 2003

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

RECEIVED

DEC 29 2003

OCD-ARTESIA

Submit to appropriate District Office  
State Lease - 6 Copies  
Fee Lease - 5 Copies

☒ AMENDED REPORT

**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

<sup>1</sup> Operator Name and Address Preston Exploration, LLC P. O. Box 7520 The Woodlands, TX 77387		<sup>2</sup> OGRID Number 212226
		<sup>3</sup> API Number 30 - 015 - 33153
<sup>3</sup> Property Code	<sup>5</sup> Property Name Cemetery 2 State	<sup>6</sup> Well No. 1

<sup>7</sup> Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	2	20S	25E		1650	North	1750	East	Eddy

<sup>8</sup> Proposed Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from t	County
<sup>9</sup> Proposed Pool 1 Cemetery, Morrow						

NOTIFY OCD SPUD & TIME  
TO WITNESS 9 5/8" CASING

<sup>11</sup> Work Type Code N	<sup>12</sup> Well Type Code G	<sup>13</sup> Cable/Rotary R	<sup>14</sup> Lease Type Code S	<sup>15</sup> Ground Level Elevation 3433
<sup>16</sup> Multiple No	<sup>17</sup> Proposed Depth 10,100'	<sup>18</sup> Formation Morrow	<sup>19</sup> Contractor Unknown	<sup>20</sup> Spud Date January 10, 2003

<sup>21</sup> Proposed Casing and Cement Program

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17-1/2	13-3/8	48	350	250	Surface
12-1/4	9-5/8	36	1,400	450	Surface
8-1/2	5-1/2	17	10,100	400	5,000'

<sup>22</sup> Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

Drill, Case and complete well in the Morrow formation.

- BOP's include: 1) Hydrill double Ram 13-5/8" x 3000 psi  
2) Double Ram 13-5/8" x 3000 psi  
3) Choke Manifold 4" x 3000 psi  
4) Five Station accumulator closing unit with remote control

H<sub>2</sub>S Contingency plan prepared by Safety International attached.

Mud program summary prepared by Newpark Drilling Fluids, LLC attached.

<sup>23</sup> I hereby certify that the information given above is true and complete to the best of my knowledge and belief.

Signature: *Sandra Nobles*

Printed name: Sandra Nobles

Title: Consultant

E-mail Address: Sandra@rkford.com

Date: December 23, 2003

Phone: 432-682-0440

OIL CONSERVATION DIVISION

Approved by:

Title:

Approval Date:

Conditions of Approval:

Attached ☐

*Sign W. Leam*

*District Supervisor*

DEC 29 2003

Expiration Date: DEC 29 2004



## Newpark Drilling Fluids, LLC



### Preston Exploration, LLC

Cemetery "2" State No.1  
Section 2, T-20-S, R-25-E  
Eddy County, New Mexico

## Mud Program Summary

<u>Depth</u>	<u>Casing</u>	<u>Hole Size</u>	<u>Mud Wt.</u>	<u>Viscosity</u>	<u>Fluid Loss</u>	<u>pH</u>
0' - 350'	13-3/8"	17-1/2"	8.6-8.7	34-36	N/C	N/C
350' - 3,000'	8-5/8"	12-1/4"	8.4-8.5	28-29	N/C	9-10
3,000' - 6,600'	-	7-7/8"	8.4-8.5	28-29	N/C	9-10
6,600' - 8,200'	-	7-7/8"	8.8-9.0	28-29	N/C	9-10
8,200' - 9,600'	5-1/2"	7-7/8"	8.8-9.4	32-38	15-8	9-10

DISTRICT I  
P.O. Box 1980, Hobbs, NM 88241-1980

State of New Mexico  
Energy, Minerals and Natural Resources Department

Form C-102  
Revised February 10, 1994  
Submit to Appropriate District Office  
State Lease - 4 Copies  
Fee Lease - 3 Copies

DISTRICT II  
P.O. Drawer DD, Artesia, NM 88211-0719

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

DISTRICT IV  
P.O. BOX 2088, SANTA FE, N.M. 87504-2088

## OIL CONSERVATION DIVISION

P.O. Box 2088  
Santa Fe, New Mexico 87504-2088

☐ AMENDED REPORT

### WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
Property Code	Property Name CEMETARY 2 STATE	Well Number #1
OGRID No.	Operator Name PRESTON EXPLORATION, LLC	Elevation 3433

#### Surface Location

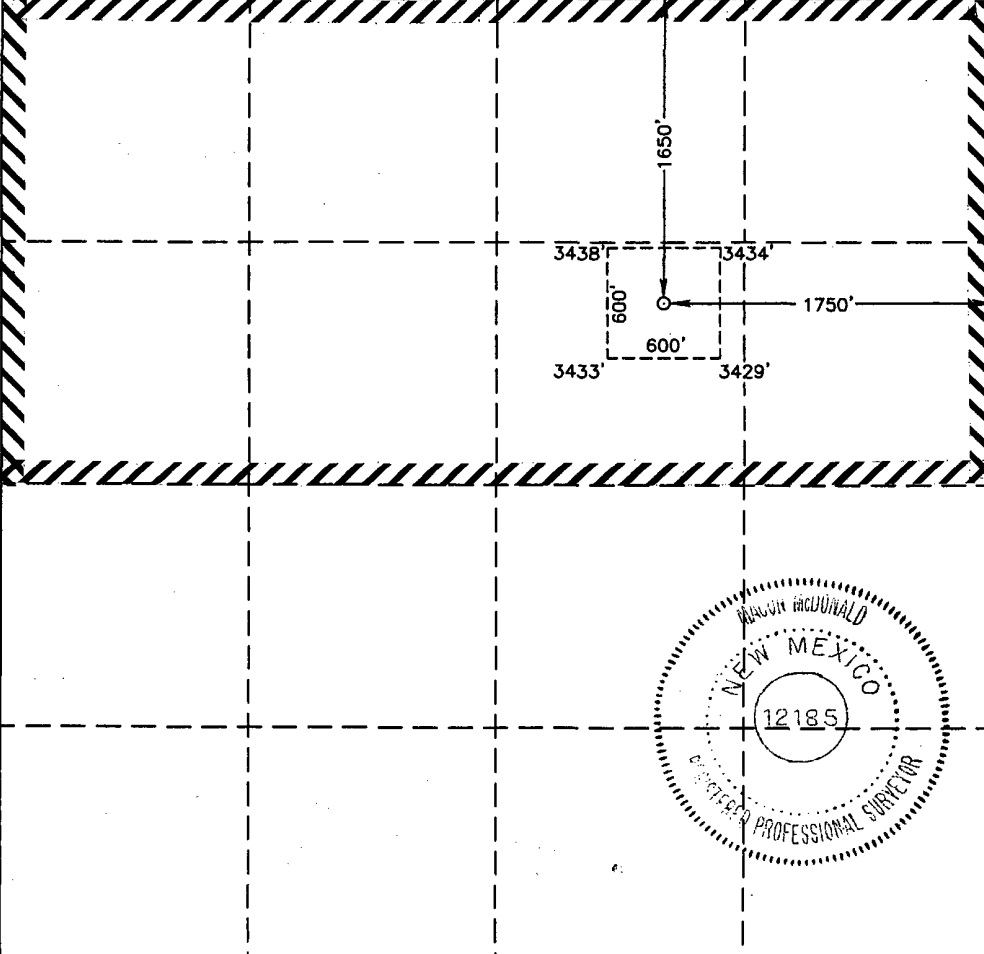
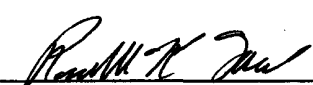
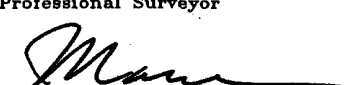
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	2	20 S	25 E		1650	NORTH	1750	EAST	EDDY

#### Bottom Hole Location If Different From Surface

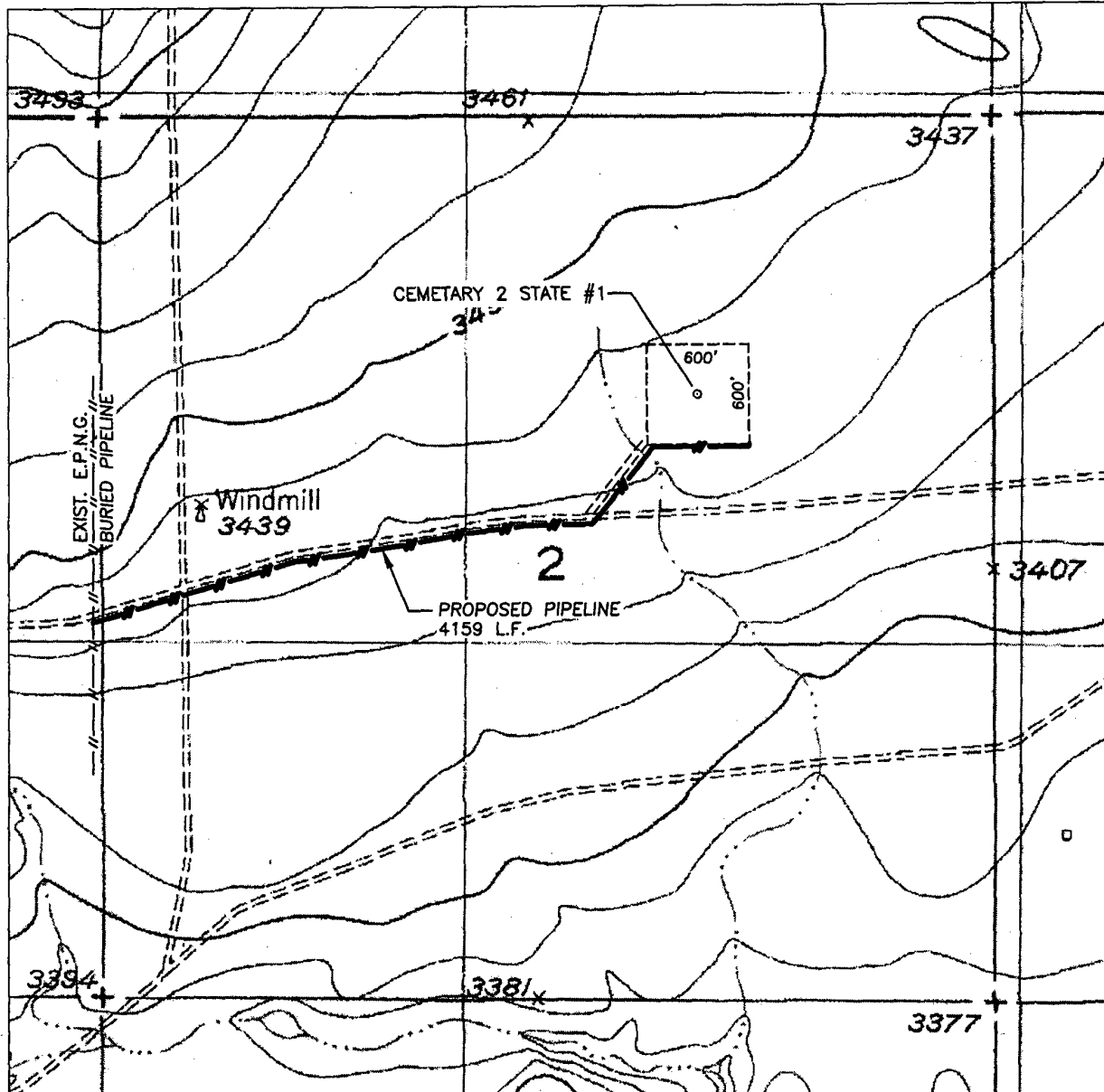
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres	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

	<b>OPERATOR CERTIFICATION</b>  <i>I hereby certify the the information contained herein is true and complete to the best of my knowledge and belief.</i>   Signature Randell K. Ford Printed Name Agent Title 12-15-03 Date
	<b>SURVEYOR CERTIFICATION</b>  <i>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.</i>  December 1, 2003 Date Surveyed Signature & Seal of Professional Surveyor  W.O. Num. 2003-0800 Certificate No. MACON McDONALD N.M. P.L.S. No. 12185

# PIPELINE EASEMENT



SCALE: 1" = 1000'

CONTOUR INTERVAL = 10'

SEC. 2 TWP. 20-S RGE. 25-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION PIPELINE EASEMENT

ELEVATION VARIABLE

OPERATOR PRESTON EXPLORATION, LLC

LEASE CEMETARY 2 STATE #1

U.S.G.S. TOPOGRAPHIC MAP

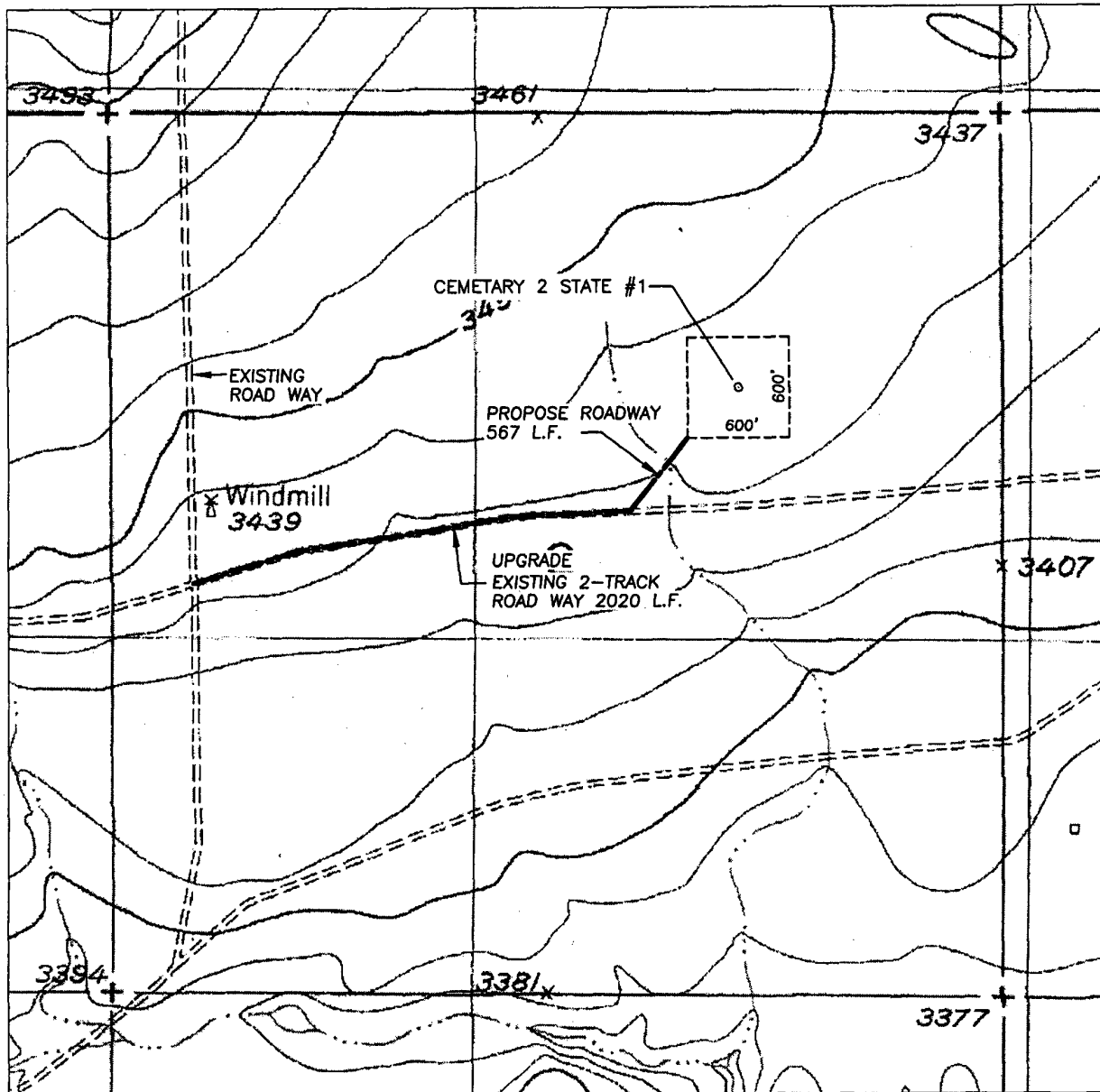
SEVEN RIVERS, N.M.



**WEST COMPANY**  
**of Midland, Inc.**

110 W. LOUISIANA, STE. 110  
MIDLAND TEXAS, 79701  
(432) 687-0865 - (432) 687-0868 FAX

# ROADWAY EASEMENT



SCALE: 1" = 1000'

CONTOUR INTERVAL = 10'

SEC. 2 TWP. 20-S RGE. 25-E

SURVEY \_\_\_\_\_ N.M.P.M.

COUNTY \_\_\_\_\_ EDDY

DESCRIPTION ROADWAY EASEMENT

ELEVATION VARIABLE

OPERATOR PRESTON EXPLORATION, LLC

LEASE CEMETARY 2 STATE #1

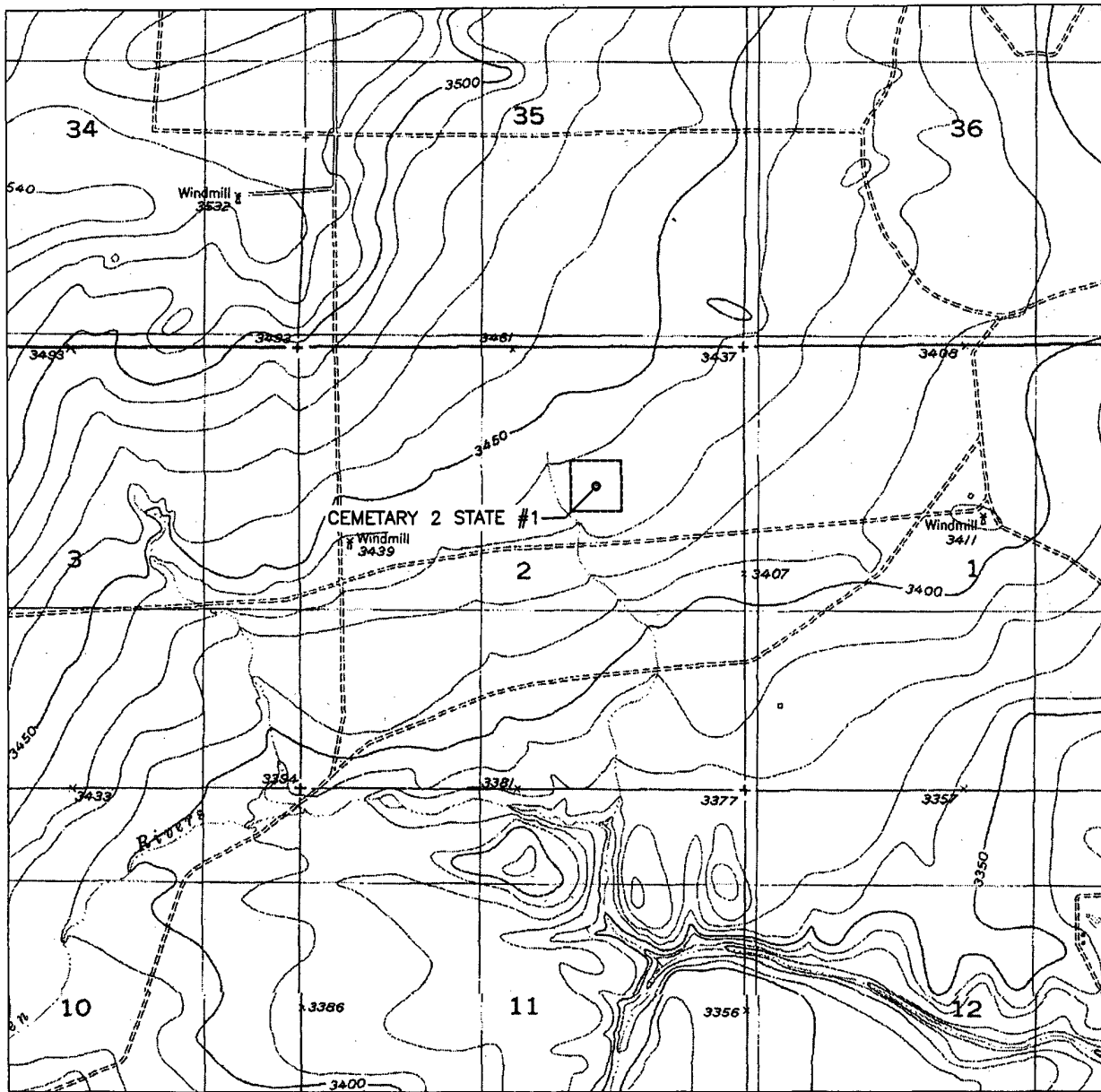
U.S.G.S. TOPOGRAPHIC MAP  
SEVEN RIVERS, N.M.



**WEST COMPANY**  
of Midland, Inc.

110 W. LOUISIANA, STE. 110  
MIDLAND TEXAS, 79701  
(432) 687-0865 - (432) 687-0868 FAX

# LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL = 10'

SEC. 2 TWP. 20-S RGE. 25-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1650' FNL & 1750' FEL

ELEVATION 3433'

OPERATOR PRESTON EXPLORATION, LLC

LEASE CEMETARY 2 STATE #1

U.S.G.S. TOPOGRAPHIC MAP

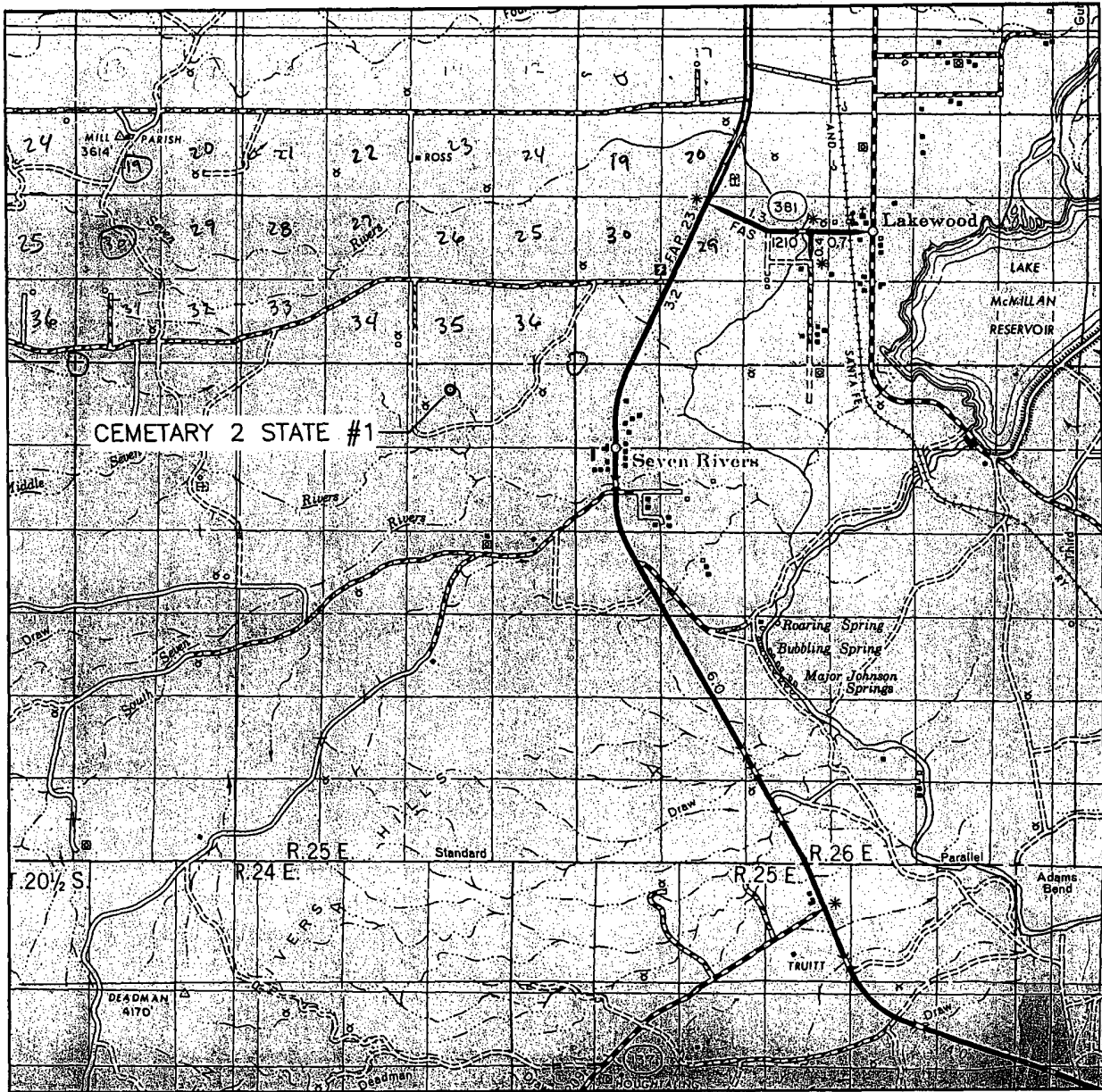
SEVEN RIVERS, N.M.



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110 W. LOUISIANA, STE. 110  
MIDLAND TEXAS, 79701  
(432) 687-0865 - (432) 687-0868 FAX

## VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 2 TWP. 20-S RGE. 25-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1650' FNL & 1750' FEL

ELEVATION 3433

OPERATOR PRESTON EXPLORATION, LLC

LEASE CEMETARY 2 STATE #1

**WEST COMPANY**  
**of Midland, Inc.**

110 W. LOUISIANA, STE. 110  
MIDLAND TEXAS, 79701

(432) 687-0865 - (432) 687-0868 FAX

PRESTON EXPLORATION, LLC.  
DRIVING DIRECTIONS TO THE CEMETARY 2 STATE #1  
SECTION 2, TOWNSHIP-20-S, RANGE-25-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

Beginning at the intersection of County Road #23 and Highway 285.

Then travel West on said County Road #23 for 3.0 miles to existing road heading South.

Then travel South on existing road for 1.5 miles to a 2-track road heading East.

Then travel East on 2-track road for 0.45 miles to a proposed road staked to the Northeast.

Follow staked road Northeast for 900 feet to the proposed well.



**CONTINGENCY PLAN**

**FOR**

**DRILLING OPERATIONS**

**PRESTON EXPLORATION, LLC.**

**CEMETARY 2 STATE #1**

**EDDY COUNTY, NM**

**DECEMBER 17, 2003**



**Safety International, Inc.**

Safety Compliance Rental • Safety Education Specialists  
Safety Consultants

HEADQUARTERS/TRAINING CENTER • 2412 E. I-20 SOUTH SERVICE RD. • ODESSA, TX 79766  
MAILING ADDRESS • P.O. BOX 12060 • ODESSA, TEXAS 79768-2060  
915/580-3770 • FAX 915/332-9223

# **CONTINGENCY PLAN**

## **INDEX**

- 1. LOCATION INFORMATION**
- 2. EMERGENCY NOTIFICATION**
- 3. EMERGENCY PROCEDURES AND RESPONSIBILITIES**
- 4. IGNITING THE WELL**
- 5. LOCATION LAYOUT AND EQUIPMENT**
- 6. TRAINING PROCEDURES AND MATERIALS**
- 7. CHECK LIST**
- 8. WELL CONTROL WORKSHEET**

## **SAFETY**

It is the PRESTON EXPLORATION, LLC. policy in all operations to do everything possible to insure the safety of its employees and the contractor's employees on the job site; additionally, to provide for the safety and comfort of persons near the operation by protecting the environment to the fullest degree possible.

The primary purpose of the procedures outlined herein is to guide the personnel on location in the event that Hydrogen Sulfide (H<sub>2</sub>S) reaches the surface

**TO PROTECT THEIR OWN SAFETY AND THE SAFETY OF OTHERS, ALL  
PERSONNEL ON THE JOB SITE WILL RIGIDLY ADHERE TO THIS PLAN**

Initial Suspected Problem Zone: BONE SPRING/UPPER PENN

Potential Open Flow Capacity: UNKNOWN

Expected Concentration: 10,000 PPM

The plan should be implemented before drilling into formation at 3200 feet.

The cementing, casing and mud program is contained in the Preston Exploration, LLC.

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State of New Mexico  
Energy Minerals and Natural Resources

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-101  
Revised June 10, 2003

Submit to appropriate District Office  
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**APPLICATION FOR PERMIT TO DRILL, RE-ENTER, DEEPEN, PLUGBACK, OR ADD A ZONE**

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		<sup>3</sup> API Number 30 -
<sup>4</sup> Property Code	<sup>5</sup> Property Name Cemetery 2 State	<sup>6</sup> Well No. 1

**7 Surface Location**

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	2	20S	25E		1650	North	1650	East	Eddy

**8 Proposed 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

<sup>9</sup> Proposed Pool 1  
Cemetery, Morrow

<sup>10</sup> Proposed Pool 2

<sup>11</sup> Work Type Code N	<sup>12</sup> Well Type Code G	<sup>13</sup> Cable/Rotary R	<sup>14</sup> Lease Type Code S	<sup>15</sup> Ground Level Elevation 3432
<sup>16</sup> Multiple No	<sup>17</sup> Proposed Depth 10,100'	<sup>18</sup> Formation Morrow	<sup>19</sup> Contractor Unknown	<sup>20</sup> Spud Date December 20, 2003

**21 Proposed Casing and Cement Program**

Hole Size	Casing Size	Casing weight/foot	Setting Depth	Sacks of Cement	Estimated TOC
17-1/2	13-3/8	48	350	250	Surface
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**22** Describe the proposed program. If this application is to DEEPEN or PLUG BACK, give the data on the present productive zone and proposed new productive zone. Describe the blowout prevention program, if any. Use additional sheets if necessary.

Drill, Case and complete well in the Morrow formation.

- BOP's include: 1) Hydrill double Ram 13-5/8" x 3000 psi  
2) Double Ram 13-5/8" x 5000 psi  
3) Choke Manifold 4" x 5000 psi  
4) Five Station accumulator closing unit with remote control

H<sub>2</sub>S equipment will be on location out from under surface.

<sup>23</sup> I hereby certify that the information given above is true and complete to the best of my knowledge and belief.		OIL CONSERVATION DIVISION	
Signature: <i>Sandra Nobles</i>			
Printed name: Sandra Nobles		Approved by:	
Title: Consultant		Title:	
E-mail Address: Sandra@rtford.com		Approval Date:	
Date: November 20, 2003		Expiration Date:	
Phone: 432-682-0440		Conditions of Approval:	
		Attached <input type="checkbox"/>	

## DISTRICT I

P.O. Box 1980, Hobbs, NM 88241-1980

## DISTRICT II

P.O. Drawer DD, Artesia, NM 88211-0719

## DISTRICT III

1000 Rio Brazos Rd., Artesia, NM 87410

## DISTRICT IV

P.O. BOX 2088, SANTA FE, N.M. 87504-2088

## State of New Mexico

Energy, Minerals and Natural Resources Department

Form C-102

Revised February 10, 1994

Submit to Appropriate District Office

State Lease - 4 Copies

Fee Lease - 3 Copies

## OIL CONSERVATION DIVISION

P.O. Box 2088

Santa Fe, New Mexico 87504-2088

☐ AMENDED REPORT

## WELL LOCATION AND ACREAGE DEDICATION PLAT

API Number	Pool Code	Pool Name
Property Code	Property Name CEMETARY 2 STATE	Well Number #1
OGED No.	Operator Name PRESTON EXPLORATION, LLC	Elevation 3432

## Surface Location

UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
G	2	20 S	25 E		1650	NORTH	1650	EAST	EDDY

## Bottom Hole Location If Different From Surface

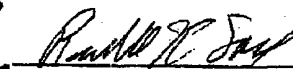
UL or lot No.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County

Dedicated Acres	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

## OPERATOR CERTIFICATION

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



Signature

Randell K. Ford

Printed Name

Agent

Title

11-20-03

Date

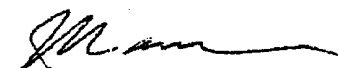
## SURVEYOR CERTIFICATION

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

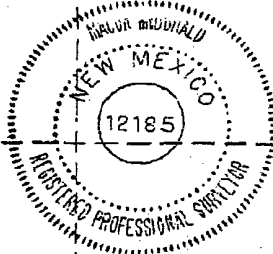
November 4, 2003

Date Surveyed

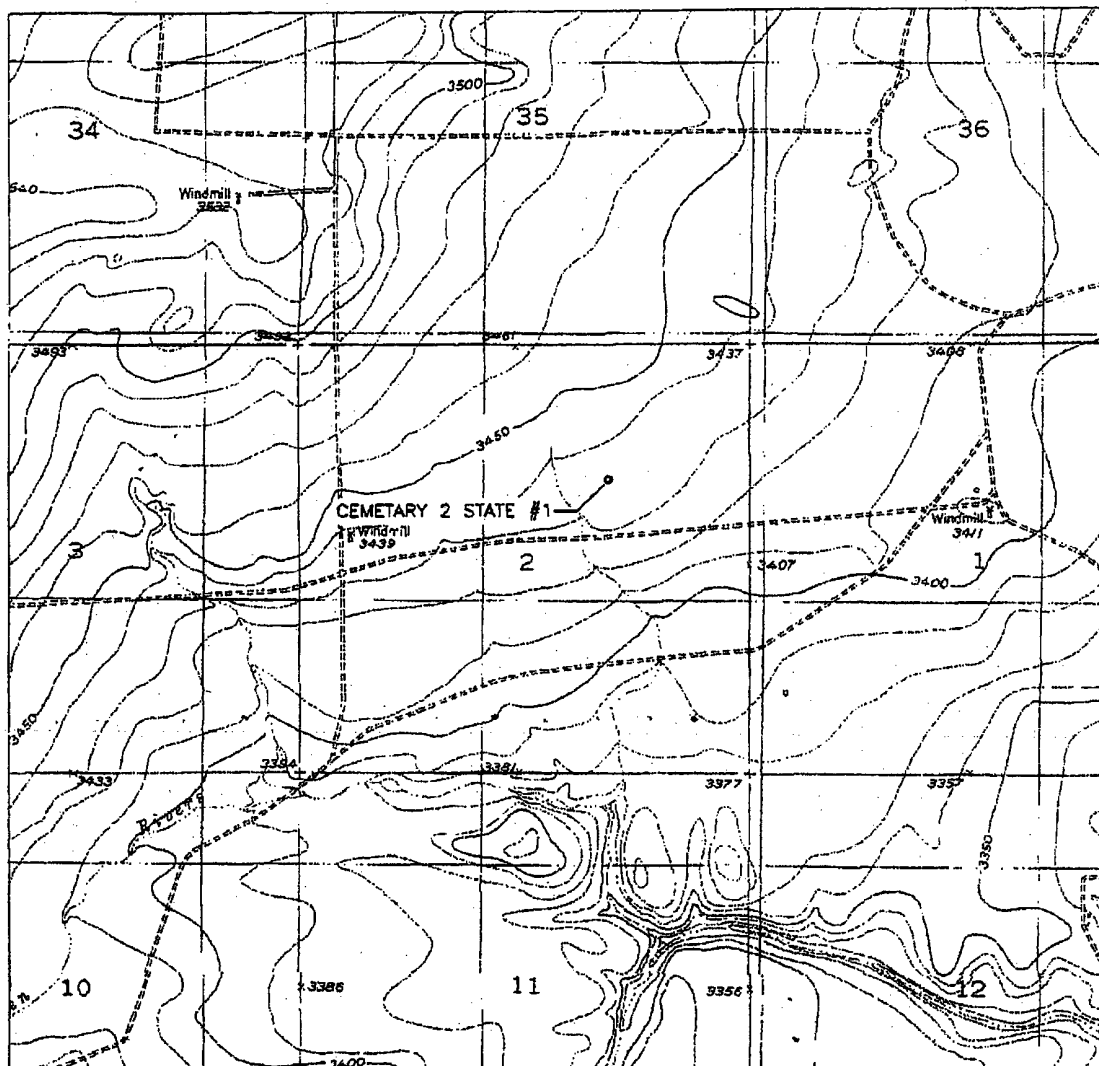
JSR

Signature & Seal of  
Professional Surveyor

W.O. Num. 2003-0800

Certificate No. MACON McDONALD  
N.M. P.L.S. No.

## LOCATION VERIFICATION MAP



SCALE: 1" = 2000'

CONTOUR INTERVAL = 10'

SEC. 2 TWP. 20-S; RGE. 25-E.

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1650' FNL & 1650' FEL

ELEVATION 3432

OPERATOR PRESTON EXPLORATION, LLC

LEASE CEMETARY 2 STATE #1

U.S.G.S. TOPOGRAPHIC MAP

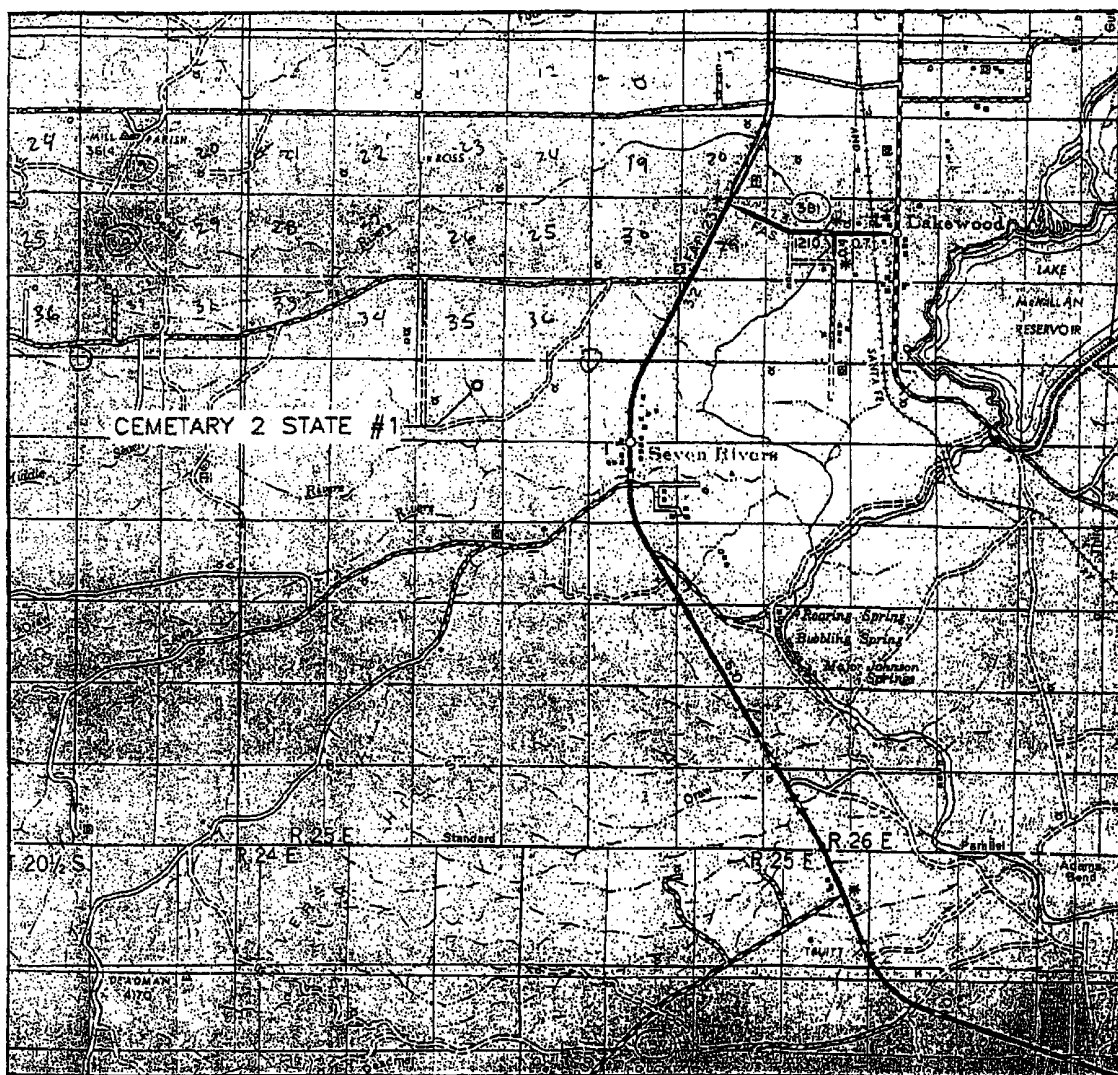
SEVEN RIVERS, N.M.



**WEST COMPANY**  
of Midland, Inc.

110 W. LOUISIANA, STE. 110  
MIDLAND TEXAS, 79701  
(432) 687-0865 - (432) 687-0868 FAX

# VICINITY MAP



SCALE: 1" = 2 MILES

SEC. 2 TWP. 20-S RGE. 25-E

SURVEY N.M.P.M.

COUNTY EDDY

DESCRIPTION 1650' FNL & 1650' FEL

ELEVATION 3432

OPERATOR PRESTON EXPLORATION, LLC

LEASE CEMETARY 2 STATE #1

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PRESTON EXPLORATION, LLC.  
DRIVING DIRECTIONS TO THE CEMETARY 2 STATE #1  
SECTION 2, TOWNSHIP-20-S, RANGE-25-E, N.M.P.M.  
EDDY COUNTY, NEW MEXICO

Beginning at the intersection of County Road #23 and Highway 285.

Then travel West on said County Road #23 for 0.85 miles to 2-track road heading Southwest.

Then travel Southwest on 2-track road for 1.65 miles to a 2-track road heading west.

Then travel West on 2-track road for 0.7 miles to a proposed road stake to North.

Follow staked road North for 700 feet to the proposed well.





Artesia, NM

14 Miles To Artesia, NM

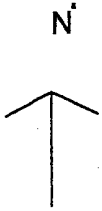
US Hwy 285

15 Miles To Carlsbad, NM



Carlsbad, NM

PRESTON EXPLORATION  
CEMETARY 2 STATE



County Rd #23(Rock  
Daisy Road)

8/10 Of Mile To  
Turn

5/10 of mile



Suburban Home

Preston Exp  
Cemetery 2 State #1

1 6/10 Mile To  
Windmill



Windmill

7/10 To Road  
From Windmill

## **EMERGENCY NOTIFICATION**

### **EVACUATION PLAN**

The following general plan has been developed in the event that any public evacuation becomes necessary.

1. PRESTON EXPLORATION, LLC. has requested and has been assured the support of the various public safety entities in the area.
2. Any evacuation will be conducted by the EDDY COUNTY NEW MEXICO County Sheriff's Department.
3. Assistance from other public safety entities may be requested if required.
4. The included maps detail the area of the well site including the inventory of the public within the radius of exposure of the well.
5. In the event that there is any suspected problem on the well, the well site supervisor will notify the EDDY COUNTY NEW MEXICO County Sheriff's Office (505 746-5004) for ALERT STATUS.
6. ALERT STATUS will require that available public support personnel will proceed to the EDDY COUNTY NEW MEXICO County Sheriff's Office in Artesia New Mexico and standby for instructions.
7. If isolation and evacuation are necessary, then units will be dispatched to points marked on the map with instructions to maintain roadblocks.
8. Evacuation teams will then proceed to sectors to be evacuated. Evacuation procedure will follow appropriate consideration for wind conditions.
9. On Site- Personnel will establish safe perimeters using H2S and LEL Detectors.
10. OIL Conservation Division and other authorities will be notified as soon as possible.
11. Other supplemental contractors will be contacted and called in as needed.

**EMERGENCY CALL LIST**  
**PRESTON EXPLORATION, LLC.**  
**415 W.WALL SUITE 1700**  
**MIDLAND, TEXAS 79701**  
**OFFICE: 281 367-8697**  
**FAX: 281 364-4919**

<u>NAME</u>	<u>TITLE</u>	<u>PHONE NUMBERS</u>
Doug Sprague	Petroleum Engineer	Office (281) 367-8197 Cell (281) 615-4170 Home (281) 360-0238
Mitch Honeycutt	Exploration Manager	Office (281) 367-8697 Cell (281) 414-4121 Home (281) 364-0025
Randell Ford R.K. Ford & Associates	Consultant	Office (915) 682-0440 Cell (915) 559-2222 Home (915) 570-7216

# EMERGENCY CALL LIST

## BIG DOG DRILLING

NAME

TITLE

PHONE NUMBERS

**Amendment to be filed later**

## **EMERGENCY CALL LIST**

### **PUBLIC SAFETY**

<b><u>AGENCY</u></b>	<b><u>LOCATION</u></b>	<b><u>TELEPHONE #</u></b>
Sheriff's Department	Eddy County New Mexico	505 746-5004
Fire Department	Eddy County New Mexico	505 746-5004
New Mexico State Troopers	Eddy County New Mexico	505 746-5004
Highway Department	Eddy County New Mexico	505 746-5004
Oil Conservation Division	Santa Fe New Mexico	505 746-5004

## **EMERGENCY CALL LIST**

### **MEDICAL SUPPORT**

<b><u>AGENCY</u></b>	<b><u>LOCATION</u></b>	<b><u>TELEPHONE #</u></b>
Artesia General Hospital	Artesia New Mexico	505 746-2999
Ambulance Service	Artesia New Mexico	505 746-5004

**EMERGENCY CALL LIST**

**SUPPLEMENTAL EQUIPMENT**

**SAFETY COMPANY**

SAFETY, INTERNATIONAL, INC.

ODESSA, TEXAS

432-580-3770

## **EMERGENCY CALL LIST**

**RESIDENTS WITHIN 3000 FOOT RADIUS OF EXPOSURE**  
**NONE**



# **EMERGENCY PROCEDURES**

## **RESPONSIBILITY**

In the event of a release of potentially hazardous amounts of H<sub>2</sub>S, all personnel will immediately proceed upwind to the nearest designated safe area and don their protective breathing equipment. The PRESTON EXPLORATION, LLC. representative will immediately, upon assessing the situation, set this plan into action by taking the proper procedures to contain the gas and notify the appropriate people and agencies.

If the PRESTON EXPLORATION, LLC. Representative is incapacitated or not on Location, this responsibility will fall to the BIG DOG DRILLING Tool pusher.

### **PRESTON EXPLORATION, LLC.**

1. In an emergency situation, the Operations Supervisor on duty will have complete responsibility and will take whatever action is deemed necessary in an emergency situation to insure the personnel's safety, to protect the well and to prevent property damage.
2. The Operation Supervisor Shall advise the Operation Superintend when procedures as specified herein have been met, will inform of emergencies and deviation from the plan, and see that procedures are observed at all times.
3. The Operation Supervisor shall advise each contractor, Service Company, and all others entering the site that Hydrogen Sulfide may be encountered and the potential hazards that may exist. This may be delegated to another competent person.
4. The rig site management team will keep the numbers of person on location to a minimum during operations.
5. The Operations Supervisor Assess the situation when alarm sounds, and issue work orders. When conditions warrant, order all personnel to "Safe Briefing Areas".
6. The Operations Supervisor will direct corrective actions to control flow of gas.
7. Has full responsibility for the decision to ignite the well. The decision will be made only as a last resort.

### **BIG DOG DRILLING COMPANY**

1. The Toolpusher will assume all responsibilities of the Drilling Foreman in an emergency situation in the event that the Drilling Foreman becomes incapacitated.
2. The Toolpusher will order the Driller to secure the rig, if time permits.

## **EMERGENCY PROCEDURES**

### **DRILLING CREW ACTIONS**

1. All personnel will don their protective breathing apparatus. The drilling crew will take necessary precaution as indicated in OPERATING PROCEDURES.
2. The "Buddy System" will be implemented. All personnel will act upon directions from the Operator's Representative.
3. If there are nonessential personnel on location, they will move off location.
4. Entrance to the location will be patrolled, and the proper well condition flag will be displayed at the entrance to the location.

### **IN THE EVENT OF AN ACCIDENTAL RELEASE OF POTENTIALLY HAZARDOUS VOLUME OF H<sub>2</sub>S, THE FOLLOWING PROCEDURES WILL BE TAKEN:**

1. All personnel on location will be accounted for and emergency search should begin for any missing.
2. All search missions will be conducted under fresh air masks in teams of two. Should the search team need to approach the well, safety harness and rope should be used.
3. All individual companies and agencies should be contacted according to the EMERGENCY CALL LIST.
4. An assigned crew member will blockade the entrance to the location. No unauthorized personnel will be allowed entry into the location.
5. The Operator's Representative will remain on location and attempt to regain control of the well.
6. The Company's designated representatives will begin evacuation of those persons in immediate danger.

## **TEMPORARY SERVICE PERSONNEL**

All service personnel, such as cementing crews, logging crews, specialists, mechanics and welders will furnish their own safety equipment as required to comply with OSHA and PRESTON EXPLORATION, LLC.

### **VISITORS**

Visitors and nonessential personnel will be prohibited from remaining in, or entering a contaminated area where Hydrogen Sulfide concentration in the atmosphere exceeds 15 ppm.

## **EMERGENCY PROCEDURES**

**NOTE:** WHEN HYDROGEN SULFIDE MIGHT BE ENCOUNTERED, NO PERSONNEL ON LOCATION WILL BE PERMITTED TO SLEEP IN VEHICLES.

## **INSTRUCTIONS FOR IGNITING THE WELL**

THE DECISION TO IGNITE THE WELL IS THE RESPONSIBILITY OF THE PRESTON EXPLORATION, LLC. REPRESENTATIVE. In the event he is incapacitated or unavailable, it becomes the responsibility of the BIG DOG DRILLING COMPANY TOOL PUSHES.

The decision to ignite the well should be made only as a last resort and in the situation where it is clear that:

1. Human life is in danger
2. There is no hope of controlling the well under current conditions.

The PRESTON EXPLORATION, LLC. Corporate Office should be notified as soon as possible. The first phase of evacuation should be initiated immediately.

Once the decision has been made the following procedures should be followed:

1. Four (4) people, wearing self-contained breathing apparatus will be needed for the actual lighting of the well. They must first establish the flammable perimeter by using an explosimeter. This should be established at 30% to 40% of the lower flammable limits.
2. After the flammable perimeter has been established and everyone removed from the area, the ignition team should select a site upwind of the well, from which to ignite. This site should offer the maximum protection and have a clear path for retreat from the area.
3. The ignition team should have safety belts and lanyards attached and manned before attempting ignition. If the leak is not ignited on the first attempt, move in 20 to 30 feet and fire again. Continue to monitor with the explosimeter and never fire from an area with over 75% of the Lower explosive Limit (LL). If having trouble igniting the well, try firing 40 degrees to 90 degrees on either side of the well.
4. After ignition or attempted ignition, the toxic perimeter must be established and evacuation continued until the well is contained.
5. All personnel will act only as directed by the person in charge of the operations.

### **REMEMBER:**

After the well is ignited, burning Hydrogen Sulfide ( $H_2S$ ) will convert to Sulfur Dioxide ( $SO_2$ ), which is also a highly toxic gas.

**DO NOT ASSUME THE AREA IS SAFE AFTER THE WELL IS IGNITED**

## **DRILLSITE LOCATION**

1. The drilling rig should be situated on location such that the prevailing winds blow across the rig toward the reserve pit or at right angles to a line from the rig to the reserve pit.
2. The entrance to the location should be designed so that it can be barricaded if Hydrogen Sulfide emergency conditions arise. An auxiliary exit (or entrance) should be available in case of a catastrophe; a shift in wind direction would not preclude escape from the location. Appropriate warning signs and flags should be placed at all location entrances.
3. Once H<sub>2</sub>S safety procedures are established on location, no beards or facial hair which will interfere with face seal or mask will be allowed on location.
4. A minimum of two BRIEFING AREAS will be established, not less than 250 feet from the wellhead and in such location that at least one area will be up-wind from the well at all times. Upon recognition of an emergency situation, all personnel should assemble at the designated briefing areas for instructions.
5. A safety equipment trailer will be stationed at one of the briefing areas.
6. Windsocks will be installed and wind streamers (6 to 8 feet above ground level) placed at the location entrance. Windsocks shall be illuminated for night time operations. Personnel should develop wind direction consciousness.
7. The mud logging trailer will be located so as to minimize the danger from gas that breaks out of the drilling fluid.
8. Shale shaker mud tanks will be located so as to minimize the danger from gas that breaks out of the drilling fluid.
9. Electric power plant(s) will be located as far from the well bore as practical so that it may be used under conditions where it otherwise would have to be shut down.
10. When approaching depth where Hydrogen Sulfide may be encountered, appropriate warning signs will be posted on all access roads to the location and at the foot of all stairways to the derrick floor.
11. Appropriate smoking areas will be designated and smoking will be prohibited elsewhere.

## **EQUIPMENT TO BE PROVIDED BY SAFETY INTERNATIONAL**

### **SAFETY TRAILER PACKAGE # 2**

- 1.) One (1) Safety Trailer Containing an 6-Bottle Breathing Air Cascade System.
- 2.) 750 Feet of Air Line Hose
- 3.) Four (4) Breathing Air Manifolds
- 4.) Four (4) 30-Minute Rescue Units
- 5.) Five (5) Work/Escapes Units
- 6.) Five (5) Escape Capsules
- 7.) One (1) Filler Hose for the Work/Escapes and Rescue Units
- 8.) One (1) Location Sign with Flags
- 9.) Two (2) Briefing Area Signs
- 10.) Two (2) Windscreens
- 11.) One (1) Electronic Monitor with Three (3) Sensor Heads, Warning Light and Siren



## **BLOWOUT PREVENTION EQUIPMENT**

1. A kill line of ample strength and length will be laid to a safe point to allow pumping into the well in an emergency situation.
2. The closing unit should be located a safe distance from the well bore and positioned for maximum utilization based on the prevailing wind direction.
3. BOP equipment will be tested in accordance with standard company practice.

### **SPECIAL EQUIPMENT**

1. Flare lines should be as long as practical, securely staked.
2. An electronic Hydrogen Sulfide monitor will be installed with a combination visual and audible alarm system located where it can be seen and/or heard throughout the drilling location.
3. The electronic Hydrogen Sulfide monitoring system will be calibrated to actuate the low alarm (visual alarm) at a concentration of 10 ppm Hydrogen Sulfide in the atmosphere and the high alarm at a concentration of 15 ppm Hydrogen Sulfide in the atmosphere.
4. Extra equipment will be available if required to provide adequate respiratory protection for all personnel on location.

## **SAFETY INTERNATIONAL FIELD SUPERVISOR QUALIFICATIONS**

Safety International, Inc. is proud of the training and qualifications of our staff of field personnel. We know that our customers are provided with the best service available in the H<sub>2</sub>S safety business. We also know that we have by far, the most rigid requirements for basic qualifications, and the most extensive training program of any H<sub>2</sub>S company.

Safety International, Inc. personnel will be qualified in Basic H<sub>2</sub>S Safety Training, which includes the maintenance of equipment, training of personnel, and general oil field safety. Specifically, all are trained in Basic First Aid and Cardiopulmonary Resuscitation (CPR).

Safety International, Inc. will provide all needed materials for training of personnel on location as required.

### **CORPORATE OFFICE**

2148 East I-20  
South Service Road  
Odessa, TX 79766  
(432) 580-3770  
FAX: (432) 332-9223

### **FIELD OFFICE**

2412 East I-20  
South Service Rd  
Odessa, Texas 79766  
(432) 580-3770  
(432) 332-9223

## **TRAINING**

Every person working in any capacity on the lease will be required to review the emergency procedures and will participate in the training program.

PRESTON EXPLORATION, LLC. will provide personnel to direct the training program and in doctrinate all authorized persons on the lease in the proper use of the safety equipment.

The training personnel will work individually with each member until they are satisfied that the crew member is familiar with the emergency procedures and the training program. This should be accomplished prior to an individual's work operation.

Training will include hands-on use of all equipment in order to familiarize the trainees with the safety equipment.

## **SAFETY TRAINING**

1. Hydrogen Sulfide Safety Training will be provided to all personnel at 1,000 feet above the expected H<sub>2</sub>S formation. The training sessions will cover, but will not be limited to the following
  - a. General information on H<sub>2</sub>S and SO<sub>2</sub> gas
  - b. Hazards of H<sub>2</sub>S and SO<sub>2</sub> gas
  - c. Safety equipment on location
  - d. Proper use and care of personal protective equipment
  - e. Operational procedures in dealing with H<sub>2</sub>S gas
  - f. Evacuation procedures
  - g. Chemicals to be used in mud to control H<sub>2</sub>S
  - h. First aid, reviving an H<sub>2</sub>S victim, toxicity, etc.
  - i. Designated safe briefing areas (S.B.A.)
  - j. Metallurgical considerations

**NOTE:** Once H<sub>2</sub>S Safety Procedures are established on location, no beards or facial hair which will interfere with face seal or mask will be allowed on location.

2. When H<sub>2</sub>S alarm is activated:
    - a. Mask up
    - b. Raise tool joints above the rotary table and shut down pump
    - c. Close in hydril
    - d. Go to Safe Briefing Area
-

## **EMERGENCY CONDITIONS**

### **Operating Conditions**

#### A. Emergency Procedures and Definition of Warning Flags

1. Condition: YELLOW -- NORMAL OPERATION
2. Condition: ORANGE -- POTENTIAL DANGER, CAUTION

##### a. **Cause for condition:**

- \* Circulating up drilling breaks
- \* Trip gas after trip
- \* Circulating out gas on choke
- \* Poisonous gas present, but below threshold concentrations

##### b. **Safety actions:**

- \* Check safety equipment and keep it with you
- \* Be alert for a change in conditions
- \* Follow instructions

3. **Condition:** RED -- EXTREME DANGER

##### a. **Cause for condition:**

- \* Uncontrolled flow from the well with lethal concentrations of H<sub>2</sub>S

##### b. **Safety actions:**

- \* Masks On. All personnel will have protective breathing equipment with them. All personnel will stay in safe briefing area unless instructed to do otherwise.
- \* The decision to ignite the well is the responsibility of the company representative and should be made only as a last resort, when it is clear that:
  - I. Human life is endangered
  - ii There is no hope of controlling the well under prevailing conditions
- \* Order evacuation of local people within the danger zone.

## **THE USE OF SELF CONTAINED BREATHING EQUIPMENT**

1. Respirators shall be inspected frequently at random, to insure that they are properly used, cleaned and maintained
2. Anyone who may use the respirators shall be trained in how to insure proper face piece to face seal. They shall wear respirators in normal air and then wear it in a test atmosphere. (Note: such items as facial hair - beard or sideburns - and eyeglass temple pieces will not allow a proper seal). Anyone who may be reasonably expected to wear respirators should have these items removed before entering a toxic atmosphere. A special mask must be obtained for anyone who must wear eye glasses. Contact lenses should not be allowed.
3. Maintenance and care of respirators:
  - A. A program for maintenance and care of respirators shall include the following:
    - \* Inspection for defects, including leak checks
    - \* Cleaning and disinfecting
    - \* Repair
    - \* Storage
  - B. Inspection: Self contained breathing apparatus for emergency use shall be inspected monthly for the following and a permanent record kept of these inspections.
    - \* Fully charged cylinders
    - \* Regulator and warning device operation
    - \* Condition of face piece and connections
    - \* Elastic or rubber parts shall be stretched or massaged to keep them pliable and prevent deterioration.
  - C. Routinely used respirators shall be collected, cleaned and disinfected as frequently as necessary to insure proper protection is provided.

4. A person assigned a task that requires use of self contained breathing equipment, should be certified, physically fit for breathing equipment usage by the local physician at least annually.
5. Respirators should be worn:
  - A. When breaking out any line where  $H_2S$  can reasonably be expected.
  - B. When sampling air in areas to determine if toxic concentrations of  $H_2S$  exist.
  - C. When working in areas where over 15 ppm  $H_2S$  has been detected.
  - D. At any time there is a doubt as to the  $H_2S$  concentration in the zone to be entered.



# Toxicity of Hydrogen Sulfide to Humans

PPM**	0-2 <u>Minutes</u>	2 - 15 <u>Minutes</u>	15 - 30 <u>Minutes</u>	30 Minutes <u>One Hour</u>	1 - 4 <u>Hours</u>	4 - 8 <u>Hours</u>	8 - 48 <u>Hours</u>
20 - 100				Mild, conjunctivitis, respiratory tract irritation	Symptoms worsen, fatigue, headache	Symptoms worsen	
100 - 150		Coughing, Irritation of eyes, loss of sense of smell	Disturbed respiration, pain in eyes, sleepiness	Throat Irritation	Salivation and mucous discharge, sharp pain in eyes, coughing	Increased symptoms	
150 - 200		Loss of sense of smell	Throat & eye Irritation	Throat & eye Irritation	Difficult, blurred vision, light shy		
200 -350	Irritation of eyes, loss of smell	Irritation of eyes	Painful secretion of tears, weariness	Light shy, nasal catarrh, pain in eyes, difficult breathing			
350 - 450	Loss of sense of smell	Irritation of eyes, dizziness	Difficult Respiration, coughing, irritation of eyes, fatigue, nausea				
450 - 700	Respiratory disturbances, Irritation of eyes, collapse, unconsciousness						
Over 700							

**FIGURE 1** Susceptibility varies greatly between individuals

\* Data secured from experiments of dogs which have a susceptibility similar to humans.  
 \*\*PPM - parts per million

## **PHYSICAL EFFECTS OF HYDROGEN SULFIDE POISONING**

### **THE PRINCIPAL HAZARD IS DEATH BY INHALATION**

When the amount of gas absorbed into the bloodstream exceeds that which is readily oxidized, systemic poisoning results, with a general action on the nervous system. Labored respiration occurs shortly and respiratory paralysis may follow immediately at concentrations of 700 ppm and above. This condition may be reached almost without warning as the originally detected odor of  $\text{H}_2\text{S}$  may have disappeared due to olfactory paralysis. Death then occurs from asphyxiation unless the exposed person is removed immediately to fresh air and breathing is stimulated by artificial respiration. Other levels of exposure may cause the following symptoms individually or in combination:

1. Headache
2. Dizziness
3. Excitement
4. Nausea or gastro-intestinal disturbances
5. Dryness and sensation of pain in nose, throat, and chest
6. Coughing
7. Drowsiness

All personnel should be alerted to the fact that detection of  $\text{H}_2\text{S}$  solely by sense of smell is highly dangerous, as the sense of smell is rapidly paralyzed by the gas. 10 ppm of  $\text{H}_2\text{S}$  detected should be treated as if it were 700 ppm.

## **TREATMENT OF HYDROGEN SULFIDE POISONING**

### **INHALATION**

As Hydrogen Sulfide in the blood oxidizes rapidly, symptoms of acute poisoning pass off when inhalation of the gas ceases. It is important, therefore, to get the victim of poisoning to fresh air as quickly as possible. He should be kept at rest and chilling should be prevented. If respiration is slow, labored or impaired, artificial respiration may be necessary.

Most persons overcome by Hydrogen Sulfide may be revived if artificial respiration is applied before heart action ceases. Victims of poisoning should be under the care of a physician as soon as possible. Irritation due to sub acute poisoning may lead to serious complications such as pneumonia. Under those conditions, treatment by the physician necessarily would be symptomatic. The patient should be kept in fresh air.

### **CONTACT WITH EYES**

Eye contact with liquid and/or gas containing Hydrogen Sulfide will cause painful irritation (conjunctivitis). Keep patient in a darkened room, apply ice compresses to eyes, put ice on forehead, and send for a physician. The irritation caused by exposure to Hydrogen Sulfide requires treatment by a physician, preferably an eye specialist. The prognosis for recovery in these cases is usually good.

### **CONTACT WITH SKIN**

Skin absorption is very low. Skin discoloration is possible after contact with liquids containing Hydrogen Sulfide. If such skin contact is suspected, the area should be thoroughly washed.

### **CHARACTERISTICS OF HYDROGEN SULFIDE**

1. Extremely toxic (Poisonous)
2. Heavier than air and colorless
3. Has the odor of rotten eggs, in small amounts
4. Burns with a blue flame and produces Sulphur Dioxide ( $\text{SO}_2$ ) Gas, which is very irritating to eyes and lungs. The  $\text{SO}_2$  is as toxic as  $\text{H}_2\text{S}$ , but the severe discomfort at low concentrations acts as a barrier to human exposure to toxic levels of this gas.
5.  $\text{H}_2\text{S}$  forms explosive mixture with air between 4.3% and 46% by volume
6.  $\text{H}_2\text{S}$  is soluble in water but becomes less soluble as the water temperature increases.
7. The toxicity of Hydrogen Sulfide is second only to Hydrogen Cyanide and is between 5 and 6 times more toxic than Carbon Monoxide.
8. Produces irritation to eyes, throat and respiratory tract.

## **EFFECTS OF HYDROGEN SULFIDE ON METAL**

Hydrogen Sulfide dissolves in water to form a weak acid that can cause some pitting, particularly in the presence of Oxygen and/or Carbon Dioxide. However, the most significant action of  $H_2S$  is its contribution to a form of Hydrogen embrittlement known as Sulfide Stress Cracking. Sulfide Stress Cracking is a result of metals being subjected to high stress levels in a corrosive environment where  $H_2S$  is present. The metal will often fail in a brittle manner. Sulfide stress cracking of steel is dependent upon and determined by:

1. Strength (hardness) of the steel-the higher the strength, the greater the susceptibility to sulfide stress cracking. Steels having yield strengths up to 95,000 psi and hardness up to Rc22 are generally resistant to sulfide stress cracking. These limitations can be extended slightly higher for properly quenched and tempered materials.
2. Total member stress (load) - higher the stress level (load) the greater the susceptibility to sulfide stress cracking.
3. Corrosive environment - corrosive reactions, acids, bacterial action, thermal degradation of low Ph fluid environment.

## **Toxicity**

Common Name	Chemical Formula	Specific Gravity(SG) Air=1	Threshold <sup>1</sup> Limit	Hazard <sup>2</sup> Limit	Lethal <sup>3</sup> Concentration
Hydrogen Cyanide	HCN	0.94	10 ppm	150 ppm/hr	300 ppm
<u>Hydrogen Sulfide</u>	<u>H<sub>2</sub>S</u>	<u>1.18</u>	<u>10 ppm<sup>4</sup></u> <u>15 ppm<sup>5</sup></u>	<u>250 ppm/hr</u>	<u>600 ppm</u>
Sulfur Dioxide	SO <sub>2</sub>	2.21	2 ppm	-----	1,000 ppm
Chlorine	Cl <sub>2</sub>	2.45	1 ppm	4 ppm/hr	1,000 ppm
Carbon Monoxide	CO	0.97	50 ppm	400 ppm/hr	1,000 ppm
Carbon Dioxide	CO <sub>2</sub>	1.52	5,000 ppm	5%	10 %
Methane	CH <sub>4</sub>	0.55	90,000 ppm	Combustible Above 5% in Air	-----

<sup>1</sup>**Threshold Limit** – Concentration at which it is believed that all workers may be repeatedly exposed day after day without adverse effects.

<sup>2</sup>**Hazardous Limit** – Concentration that may cause death.

<sup>3</sup>**Lethal Concentration** – Concentration that will cause death with short-term exposure.

<sup>4</sup>**Threshold Limit = 10 ppm** – 1972 ACGIH (American Conference of Governmental Industrial Hygienist).

<sup>5</sup>**Threshold Limit = 15 ppm** – 1989 ANSI acceptable Ceiling concentration for eight-hour exposure (based on 40-hour work week) is 15 ppm. OSHA Rules and regulations (Federal Register, Volume 54, No. 12, dated January 19, 1989)

## **PROCEDURAL CHECK LIST**

### **PERFORM EACH TOUR BY THE DRILLING CONTRACTOR PERSONNEL**

1. Check fire extinguishers to see that they have the proper charge.
2. Check pressure on breathing air cascade system to make sure they are charged to full volume.
3. Check pump pressure on stand pipe gauge and choke manifold gauge to assure proper communication between gauges and also comparison of pressure reading on each gauge.
4. Make a visual check of H<sub>2</sub>S monitoring system.

### **PERFORM EACH WEEK BY DRILLING CONTRACTOR PERSONNEL:**

1. Blowout preventer drills
2. Check nitrogen supply pressure on BOP accumulator standby

### **PERFORM EACH WEEK BY SAFETY INTERNATIONAL PERSONNEL OR DAILY ON SUPERVISION**

1. Check each piece of breathing equipment to make sure that demand regulator is working. This requires that the bottle be opened and the mask assembly be put on tight enough so that when you inhale, you get air.
2. Check butane supply for burn pit for volume and to make sure 1" line is not plugged. Check automatic ignition system.
3. Check all work units for operation; demand regulator, escape bottle air volume, supply bottle air volume.
4. Check breathing equipment mask assembly to see that straps are loosened and turned back ready to put on.
5. Check pressure on breathing equipment air bottles to make sure they are charged to full volume.
6. Confirm pressure on all supply air bottles
7. Perform breathing equipment drills with onsite personnel.