

MM Safety Inc. DBA:  
Master Marketing & Safety  
P.O. Box 69338  
Odessa, Texas 79769

JUN - 4 2009

## H2S CONTINGENCY PLAN

API - 30-015-35062

J. Cleo Thompson

Mesa Arriba #4

Unit G: Section 10, Township 22 South, Range 26 East

1664' North Line, 1650' East Line

Eddy County, NM

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## **SCOPE**

This plan establishes **J. Cleo Thompson** guidelines for all company and contract employees whose duties may involve exposure to hydrogen sulfide gas (H<sub>2</sub>S) on the **Mesa Arriba #4. This lease is located 1664 feet from the north line, 1650 feet from the east line in Section 10 of Township 22 -S, Range 26 East, of Eddy County, New Mexico.** This plan also establishes procedure for isolation of the work site and evacuating the public on the condition that:

- A. There is a release of H<sub>2</sub>S that encompasses the radius of exposure (ROE) in this plan and,
- B. There are persons and/or roads within the ROE and,
- C. There is the endangerment of human or animal life within the ROE.

## **OBJECTIVE**

The objective of the **J. Cleo Thompson Company** is to:

- A. Prevent any and all accidents, and to prevent the uncontrolled release of H<sub>2</sub>S into the atmosphere and,
- B. Provide proper evacuation procedures to cope with emergencies and,
- C. Provide immediate and adequate medical attention should an injury occur.

**It should be noted that J. Cleo Thompson does not expect there top be any release of H<sub>2</sub>S into the atmosphere but has taken the necessary steps to react properly to and control any hazards encountered on any of our facilities.**

## **GENERAL EMERGENCY ACTION**

**In the event of an emergency, the following action should be initiated,**

1. All personnel shall immediately evacuate to an up-wind and up-hill “*safe breathing*” area.
2. Those who must enter the hazard area must wear positive pressure self-contained breathing apparatus and must use other appropriate safety equipment as outlined on page 10.
3. Isolate the well, if possible.
4. Use the “Buddy System” at all times.
5. Account for all personnel and take appropriate action as necessary for personnel safety.
6. Display the appropriate color warning flag to describe the type of emergency.
7. Contact ***J. Cleo Thompson*** personnel at the earliest time available according to the emergency call out list on Page 4.

The ***J. Cleo Thompson*** supervisor will assess the situation and assign duties to various persons to bring the situation under control. The ***J. Cleo Thompson*** supervisor will assign the notification of local emergency response agencies and residents. Media inquiries are to be referred to:

***J. Cleo Thompson***  
***325 North St. Paul, Suite 4300***  
***Dallas, Texas 75201***

**J. Cleo Thompson**  
**Emergency Call Out Numbers**

NAME	OFFICE NUMBER	CELLULAR NUMBER	HOME NUMBER
Johnnie Holder Drilling Foreman	(432) 550-8887	(432) 556-9325	(432) 363-8054
Jim Stevens Operations Manger	(432) 550-8887	(432) 664-2917	(432) 563-5504
Amador Pando Production Foreman	<del>575</del> (505) 677-2396	<del>575</del> (505) 746-7324	<del>575</del> (505) 677-2396
Gary Moreau Pumper	<del>575</del> (505) 677-2396	<del>575</del> (505) 631-5643	

J. Cleo Thompson is aware and will abide by city; county and state burn ban policies.

**Emergency Notification Numbers  
Eddy, County**

<b>Organization or Agency</b>	<b>Phone Number</b>
<b>New Mexico State Police</b>	<b>(505) 885-3137</b>
<b>Eddy County Sheriff's Department</b>	<b>(505) 887-7551</b>
<b>Emergency Medical Service (Ambulance)</b>	<b>911</b>
<b>Eddy County Emergency Management</b>	<b>(505) 887-9511</b>
<b>State Emergency Response Center (SERC) Max Johnson (Chairman)</b>	<b>(505) 476-9620</b>
<b>Carlsbad Fire Department</b>	<b>911 or (505) 885-3125</b>
<b>Oil Conservation Division (District II)</b>	<b>(505) 748-1283</b>
<b>City of Carlsbad, New Mexico</b>	<b>(505) 887-1191</b>
<b>National Response Center (NRC)</b>	<b>(800) 424-8802</b>
<b>Chemtrec</b>	<b>(800) 424-9300</b>
<b>Midland Safety &amp; Health</b>	<b>(432) 520-3838</b>
<b>Krishna Marker (MM Safety Inc.)</b>	<b>(432) 425-8262</b>

### **Mesa Arriba #4**

Carlsbad                      Eddy County Contacts:

#### **Eddy County Offices**

County Offices                      101 Greene Street                      505-887-9511  
County Manager:                      Steve Massey  
Commissioner:                      Lucky Briggs                      Cell: 505-706-1425  
Emergency Coordinator: Joel Arwine                      Cell: 505-361-3404  
\*\*\*\*\*Please contact Joel on any emergency\*\*\*\*\*

#### **City Of Carlsbad, New Mexico Offices:**

City of Carlsbad                      101 N. Halaqueno Street                      505-887-1191  
Mayor Bob Forrest                      505-887-1191  
Harry Burgess / City Administrator                      505-887-1191  
Cell: 505-200-6360

**City Emergency Management Coordinator:**  
**Liz Baggs**

Office: 505-887-1191  
Home: 505-885-6564  
Cell: 505-361-0860

#### **Carlsbad Youth Sports Complex:**

City Administrator                      Office: 505-887-1191  
Access to Complex:  
Public Works Director / Luis Camero                      Home: 505-885-8624  
Cell: 505-706-2270

#### **Neighboring Residents to Mesa Arriba #4**

Roger Armstrong                      3514 W. Lea Street                      Contact: 505-887-1937  
Ben Jenkins                      4023 W. Lea Street                      Contact: 505-887-2755

**EMERGENCY PROCEDURES FOR UNCONTROLLABLE  
RELEASE OF HYDROGEN SULFIDE GAS (H<sub>2</sub>S)**

1. Secure and don self-contained breathing apparatus.
2. Remove all personnel to up-wind and up-hill “safe breathing” zone.
3. Contact all concerned employees and immediate supervisor for instructions.
4. Take steps to protect and/or remove the general public to an upwind area away from the source of H<sub>2</sub>S.
5. Deny entry to unnecessary personnel.
6. Notify necessary public safety personnel:
  - a. State Police if on or near a **state road**
  - b. Sheriff’s Department if on or near a **county road***(For assistance in the evacuation of the general public and to help maintain roadblocks)*
7. Contact the Oil Conservation Division. (OCD)
8. While attempting to control the release, maintain tight security and safety procedures
9. Use the “Buddy System” when entering any hazardous area.

**The responsibility of this plan is with the J. Cleo Thompson supervisor(s) who shall be in complete command during the emergency.**



## **IGNITION PROCEDURES FOR UNCONTROLLABLE WELL CONDITIONS**

The decision to ignite the well is the decision of the company supervisor(s). This decision should be made only as a last resort and in a situation where it is determined that:

- Human life and/or property are endangered
- There is no hope of controlling the blowout under the prevailing conditions at the well.

## **INSTRUCTIONS FOR IGNITING THE RELEASE**

1. Two personnel are required for the ignition operation. They **must** wear positive pressure self-contained breathing apparatus and a D-ring style full body safety harness with a non-flammable safety rope attached. (**Must be an OSHA approved body harness**)
2. One (safety) person will test the atmosphere for explosive gases with an approved Triple-range ( $H_2S$ ,  $O_2$ , LFL) monitor. The other person (company supervisor) is responsible for igniting the well.
3. Primary method of ignition shall be with the 25mm flare gun with range of approximately 500 feet.
4. Ignite up-wind and do not approach any closer than is warranted.
5. Select a safe ignition site, which offers ultimate egress.
6. Before activating flare gun, check for presence of combustible gas.
7. After ignition, continue emergency action and procedure as before.
8. All unassigned personnel will limit their actions to those directed by the company supervisor.

After the well is ignited, burning  $H_2S$  will produce  $SO_2$ , which is also highly toxic. **Do not assume the area is safe after the well is ignited.**

A **NO SMOKING POLICY** shall be strictly enforced on location at all times.



# **EMERGENCY EQUIPMENT REQUIREMENTS**

## **1. Respiratory Protection**

- **Rescue Units (SCBA's):** One (1) unit shall be placed at each briefing area and 2 shall be stored in the safety trailer.
- **Work/Escape Units:** Four (4) units shall be stored on the rig floor connected to the safety trailer with sufficient hose to allow workers to adequately perform duties with minimal restriction.
- **Emergency Escape Units:** Four (4) units shall be stored in the top dog house for emergency evacuation purposes.

## **2. Signs and Flags**

- **One (1) Condition Sign shall be placed at location entrance with the following language:**

**DANGER  
H<sub>2</sub>S**

**POTENTIAL DANGER (Green)**

**MODERATE DANGER (Yellow or Orange)**

**EXTREME DANGER (Red)**

- **Condition Flags shall be displayed at the sign in one of the following designations:**

**Green / normal conditions**  
**H<sub>2</sub>S Present**

**Yellow or Orange / potential danger**

**Red/ danger,**

- 3. **Briefing Area:** Two (2) briefing areas, designated by signs, shall be located perpendicular to each other and be easily visible and readily accessible.

- 4. **Windsocks:** Two (2) windsocks shall be strategically placed where they are easily visible from all points.

## **5. Hydrogen Sulfide Detectors and Alarms:**

- One (1) stationary H<sub>2</sub>S monitor with three sensors shall be located on the rig in the top dog house. The H<sub>2</sub>S monitor shall be calibrated to alarm at 10PPM for the low alarm (visual alarm) and 15 PPM for the high alarm (audible alarm). Calibrations shall be checked every 30 days or as needed. The sensors shall be located as follows:

#1 – Rig floor

#2 – Bell Nipple

#3 – Flow line or where the well bore fluid is discharged

- A gas sampling pump, with detector tubes capable of measuring H<sub>2</sub>S gas, shall be located in the safety trailer.

## **6. Additional Rescue Equipment**

- One Hundred Feet (100') of 5/8" OSHA approved rope.
- Two (2) OSHA approved full body harness
- One (1) Stretcher

## **7. Fire Extinguishers:**

- One (1) 20#, Class ABC fire extinguisher shall be located in the safety trailer.

## **8. Communication:**

- Cellular Phones/Mobile Phones or two- way radios shall be available via the vehicles on location and on the rig floor.

## **TOXIC EFFECTS OF HYDROGEN SULFIDE**

Hydrogen sulfide (H<sub>2</sub>S) is extremely toxic. The acceptable ceiling concentration for an eight (8) hour exposure is 10 PPM, which is .001% by volume. Hydrogen sulfide (H<sub>2</sub>S) is colorless. Hydrogen Sulfide (H<sub>2</sub>S) is heavier than air; the specific gravity is equal to 1.19, which is 20% heavier than ambient temp air, which is 1.00. Hydrogen sulfide (H<sub>2</sub>S) can form an explosive mixture with air between 4.3% and 46.0%. By volume hydrogen sulfide (H<sub>2</sub>S) is as toxic as hydrogen cyanide and is between 5-6 times more toxic than carbon monoxide.

### **TOXICITY OF VARIOUS GASES**

<i><b>Common Name</b></i>	<i><b>Chemical Formula</b></i>	<i><b>Specific Gravity</b></i>	<i><b>Threshold Limit<sup>1</sup></b></i>	<i><b>Hazardous Limit<sup>2</sup></b></i>	<i><b>Lethal Concentration<sup>3</sup></b></i>
Hydrogen Cyanide	HCN	0.94	10 PPM	150 PPM/Hr	300 PPM
Hydrogen Sulfide	H <sub>2</sub> S	1.189	10 PPM <sup>4</sup> 15 PPM <sup>5</sup>	100 PPM/Hr	600 PPM
Sulfur Dioxide	SO <sub>2</sub>	2.21	2 PPM	N/A	100 PPM
Chlorine	CL <sub>2</sub>	2.45	1 PPM	4 PPM/Hr	1000 PPM
Carbon Monoxide	CO	0.97	50 PPM	400 PPM/Hr	1000 PPM
Carbon Dioxide	CO <sub>2</sub>	1.52	5000 PPM	5%	10%
Methane	CH <sub>4</sub>	0.55	90,000 PPM	Combustible @ 5%	N/A

- (1) Threshold limit – Concentration at which it is believed that all workers may be repeatedly exposed, day after day with out adverse effects also referred to as Time Weighted Average (TWA).
- (2) Hazardous limit – Concentration that may cause death
- (3) Lethal concentration – Concentrations that will cause death with short-term exposure
- (4) Threshold limit – 10PPM – NIOSH guide to chemical hazards
- (5) Short- term threshold limit – Concentration higher than Threshold limit with limits placed on time one can be exposed. Exposure time is limited to 15 minutes followed by one (1) hour in fresh air. This cycle can be repeated for (4) times during a normal eight (8) hour workday.

## **PHYSICAL EFFECTS OF HYDROGEN SULFIDE (H<sub>2</sub>S)**

*(Concentrations are calculated @ 15.00 psia and 60 degrees F.)*

Concentrations		Physical Effects
0.001%	10 PPM	Obvious & unpleasant odor. Safe for an eight (8) hour exposure
0.005%	50 PPM	Can cause some flu-like symptoms and can cause pneumonia.
0.01%	100 PPM	IDLH <sup>1</sup> . Kills the sense of smell in 3 to 15 minutes. May irritate eyes and throat.
0.02%	200 PPM	Kills the sense of smell rapidly. Severely irritates eyes and throat. Severe flu-like symptoms after 4 or more hours may cause lung damage and/or death.
0.06%	600 PPM	Loss of consciousness quickly, death will result if not rescued promptly.

(1) Immediately dangerous to life or health

## **TOXICITY OF HYDROGEN SULFIDE**

H <sub>2</sub> S Per Cent (PPM)	0 - 2 Minutes	0 - 15 Minutes	15 - 30 Minutes	30 Minutes to 1 Hour	1 - 4 Hours	4 - 8 Hours	8 - 48 Hours
0 005 (50 ppm) 0 010 (100 ppm)				Mild Conjunctivitis, Respiratory Tract Irritation			
0 010 (100 ppm) 0 015 (150 ppm)		Coughing, Irritation of Eyes, Loss of Sense of Smell	Disturbed Respiration, Pain in Eyes, Sleepiness	Throat	Salivation & Mucous Discharge, Sharp Pain in Eyes, Coughing	Increased Symptoms*	Hemorrhage & Death *
0 015 (150 ppm) 0 020 (200 ppm)		Loss of Sense of Smell	Throat & Eye Irritation	Throat & Eye Irritation	Difficult Breathing, Blurred Vision, Light & Shy	Serious Irritating Effects	Hemorrhage & Death *
0-025 (250 ppm) 0 035 (350 ppm)	Irritation of Eyes, Loss of Sense of Smell	Irritation of Eyes	Painful Secretion of Tears, Weariness	Light & Shy, Nasal Catarrh, Pain in Eyes, Difficult Breathing	Hemorrhage & Death		
0-035 (350 ppm)		Irritation of Eyes, Loss of Sense of Smell	Difficult Respiration Coughing, Irritation of Eyes	Increased Irritation of Eyes & Nasal Tract, Dull Pain Head, Weariness, Light & Shy	Dizziness Weakness, Increased Irritation, Death	Death *	
0 050 (500 ppm)	Coughing Collapse & Unconsciousness	Respiratory Disturbances, Irritation of Eyes, Collapse	Serious Eye Irritation, Palpitation of Heart, Few Cases of Death*	Severe Pain in Eyes and Head Dizziness, Trembling of Extremities, Great Weakness & Death *			
0 060 (600 ppm) 0 070 (700 ppm) 0 080 (800 ppm) 0 100 (1000 ppm) 1 150 (1500 ppm)	Collapse * Unconsciousness Death *	Collapse * Unconsciousness Death *					

\* Data secured from experiments of dogs, which have susceptibility similar to men/women. \*\*PPM parts per million

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

SCBA should be worn when:

- Working near the top or on top of any tank.
- Disconnecting any line where H<sub>2</sub>S can reasonably be expected.
- Sampling air in the area to determine if toxic concentrations of H<sub>2</sub>S exist.
- Working in areas where over 10 PPM of H<sub>2</sub>S has been detected.
- At any time there is a doubt as to the H<sub>2</sub>S level in the area to be entered.

Air quality testing shall be continuous throughout the entire operation if a container is breeched or in a hazardous location.

All personnel shall be trained in the use of SCBA prior to working in a potentially hazardous location.

Facial hair and standard eyeglasses are not allowed with SCBA use.

Contact lenses are never allowed with the use of SCBA.

The SCBA shall be inspected monthly.

After each use, the SCBA shall be cleaned, disinfected, serviced, inspected and refilled to proper specifications.



**RESCUE & FIRST AID FOR VICTIMS OF HYDROGEN  
SULFIDE (H<sub>2</sub>S) POISONING**

Do not panic!

Remain calm and think with your head and not your heart.

Don breathing apparatus.

Protect yourself, then remove victim to fresh air as quickly as possible.  
When evacuating: walk not run, upwind and uphill from the source or  
crosswind to achieve upwind.

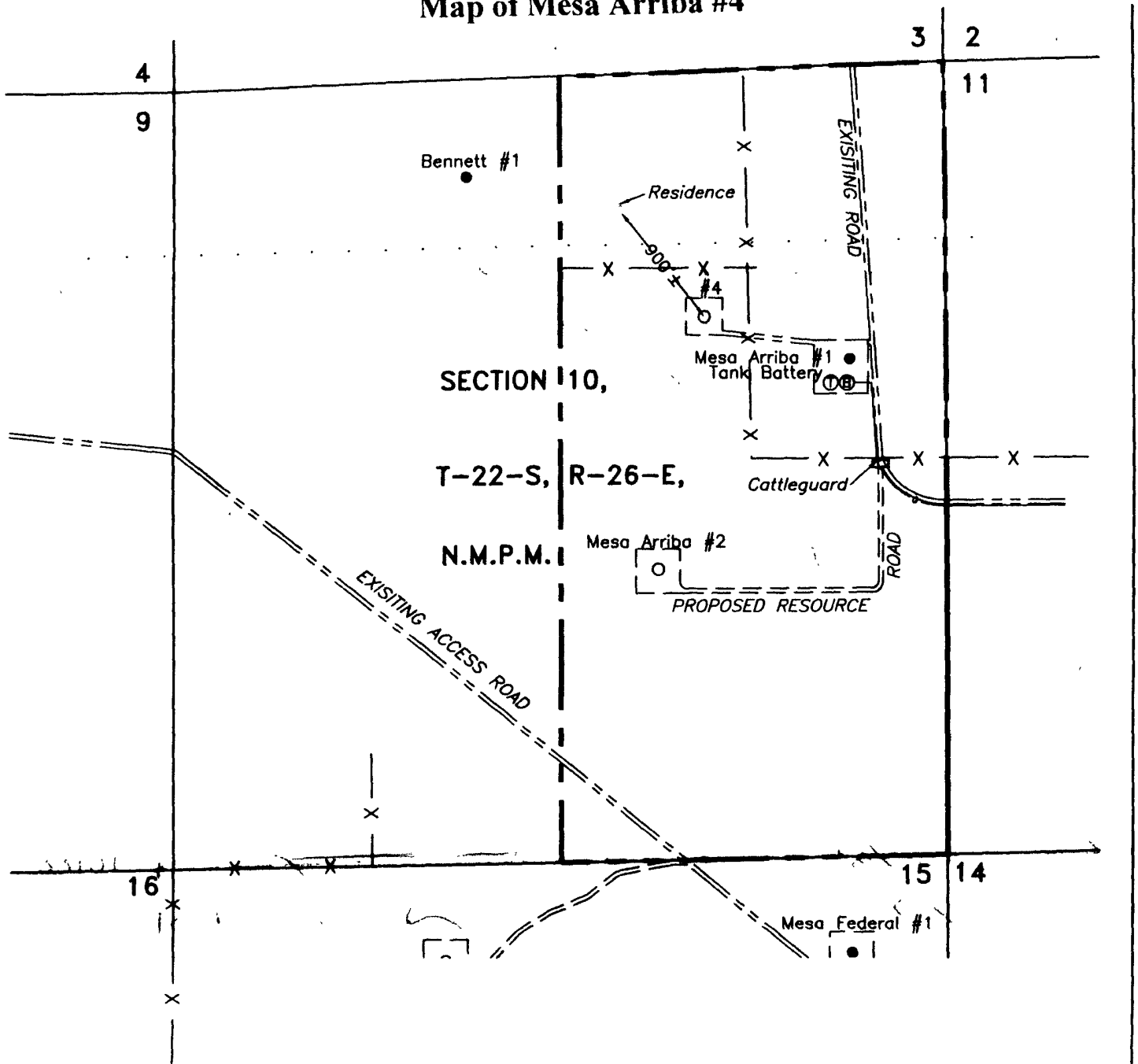
Notify emergency response personnel

Provide artificial respiration and /or CPR, as necessary.

Remove all contaminated clothing to avoid further exposure.

A minimum of two (2) personnel on location shall be trained in CPR and  
First Aid.

# Map of Mesa Arriba #4



## LEGEND OF SYMBOLS

- = Access Road
- = Resource Road on Lease
- = Resource Road on State Land
- = Resource Road on Private Land
- = Resource Road on Federal Land
- = Proposed Resource Road
- o = Staked Well Location
- o = Found 1" Iron Pipe with Brass Cap
- = Found 2" or 3" Iron Pipe with Brass Cap

## EXHIBIT "A" ACCESS ROAD MAP

J. Cleo Thompson & James Cleo Thompson, Jr., L.P.

**MESA ARRIBA NO. 4**  
Located 1664' FNL & 1650' FEL, Section 10,  
T-22-S, R-26-E, NMPM, Eddy County, NM

Drawn by: Gene M. Rodriguez

Scale: 1" = 1000'

Date: July 10, 2006

Jim Stevens