

CALLAWAY SAFETY EQUIPMENT CO., INC.  
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**POGO**

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POGO PRODUCING COMPANY  
LOST TANK "35" STATE # 5  
UNIT "I" SECTION 35  
T21S-R31E EDDY CO. NM

**“CONTINGENCY PLAN”**

# HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

## APPLICABILITY:

The provisions of this plan are effective when drilling operations are conducted in areas where zones may be penetrated that are known to contain, or may be reasonably expected to contain, hydrogen sulfide gas in concentrations of 100 parts per million or more.

## TRAINING REQUIREMENTS:

A. When conducting drilling operations in an area where hydrogen sulfide gas might be encountered, all personnel at the well site will have had proper training in the following areas:

1. The hazards and characteristics of hydrogen sulfide gas (H<sub>2</sub>S).
2. Toxicity of hydrogen sulfide and sulfur dioxide.
3. Hydrogen sulfide gas detectors, warning systems, evacuation procedures, and proper use and maintenance of personal protective equipment.
4. Proper rescue procedures, first aid, and artificial respiration.

B. In addition, supervisory personnel will be trained in the following areas:

1. The effects of hydrogen sulfide on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well, and blowout prevention and well control procedures.
3. The contents and requirements of the Hydrogen Sulfide Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable hydrogen sulfide zone (within 3 days or 500 feet) and weekly hydrogen sulfide and well control drills for all personnel in each crew. The initial training session will include a review of the site specific Hydrogen Sulfide Drilling Operations Plan and the Public Protection Plan. This plan will be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

A. Attached is a detailed well site diagram showing:

- Drilling rig orientation
- Prevailing wind direction (Southwest)
- Location of briefing areas
- Location of Caution/Danger Signs
- Location of hydrogen sulfide monitors
- Location of wind direction Indicators

#### **HYDROGEN SULFIDE SAFETY EQUIPMENT:**

- A. All safety equipment and systems will be installed, tested and deemed operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone reasonably expected to contain hydrogen sulfide.
- B. During drilling operations, a flare line will be routed from the BOP manifold to the reserve pit. Should suspected sour gas be vented through the flare line, a flare pistol will be used to ignite the flare.
- C. Protective equipment for essential personnel will be installed and maintained as follows:
1. 30-minute air packs will be maintained on the rig floor and near the briefing area.
  2. 30-minute work units will be maintained at the H2S trailer and/or on the rig floor.
  3. 30-minute escape units will be maintained on the rig floor.
  4. 300 cu. ft. air cylinders will be maintained in the H2S trailer.
  5. Associated breathing air equipment will also be installed and maintained.
  6. Hydrogen sulfide monitor will be located in the doghouse on the rig floor with sensors placed on the rig floor, at the bell nipple, the shale shaker, and in the pit area.
  7. An audible/visual alarm will be located near the doghouse on the rig floor.

#### **VISUAL WARNING SYSTEMS:**

- A. High visibility Caution/Danger signs will be posted on roads providing direct access to the well location.
- B. Green, yellow, and red condition flags to be displayed to denote Normal Conditions, Potential Danger, and Danger, H<sub>2</sub>S Present.
- C. Wind socks to be located at the protection center and in the pit area to continuously indicate wind direction.

#### **CIRCULATING MEDIUM:**

- A. Drilling fluid to be conditioned to minimize the volume of H<sub>2</sub>S circulated to the surface.

#### **SPECIAL WELL CONTROL EQUIPMENT:**

- A. In addition to the normal BOP stack and choke manifold, a drilling head will be used to help control and H<sub>2</sub>S contaminated drilling.

#### **WELL TESTING:**

- A. Drill stem testing of zones known, or reasonably expected, to contain hydrogen sulfide in concentrations of 100 pps or more will use the closed chamber method of testing.

#### **COMMUNICATION:**

- A. Radio communication will be available at the drilling rig and also in company vehicles.

#### **ADDITIONAL INFORMATION:**

- A. Additional information concerning Emergency Reaction Steps, Ignition Procedures, Training Requirements, and Emergency Equipment Requirements will be available on location at the well site.

If at this time the supervising person determines the release of H2S cannot be contained to the site location and the general public is in harms way he will take the necessary steps to protect the workers and the public.

**EMERGENCY CALL LIST:** ( Start and continue until ONE of these people have been contacted)

	<u>OFFICE</u>	<u>MOBILE</u>	<u>HOME</u>
POGO Producing Co.	432 685 8100		
Richard Wright	432 685 8140	432 556 7595	432 699 7108
Barrett Smith	432 685 8141	432 425 0149	432 520 7337
Rex Jasper	432 685 8143	432 631 0127	432 694 1839
Donny Davis	pgr 432 563 6944	432 556 5927	432 570 9555
Jerry Cooper	432 685 8101		432 697 4629

**EMERGENCY RESPONSE NUMBERS:**

State Police:	Eddy County		505 748 9718
State Police:	Lea County		505 392 5588
Sheriff	Eddy County		505 746 2701
Sheriff	Lea County		
Emergency Medical Ser (Ambulance)	Eddy County		911 or 505 746 2701
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Artesia Police Dept			505 746 5001

Artesia Fire Dept		505 746 5001
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Callaway Safety	Lea/Eddy County	505 392 2973
BJ Services	Artesia	505 746 3140
	Hobbs	505 392 5556
Halliburton	Artesia	1 800 523 2482
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Wild Well Control	Midland	432 550 6202
	Mobile	432 553 1166

# HYDROGEN SULFIDE DRILLING OPERATIONS PLAN

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## TRAINING REQUIREMENTS:

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1. The hazards and characteristics of hydrogen sulfide gas (H<sub>2</sub>S).
2. Toxicity of hydrogen sulfide and sulfur dioxide.
3. Hydrogen sulfide gas detectors, warning systems, evacuation procedures, and proper use and maintenance of personal protective equipment.
4. Proper rescue procedures, first aid, and artificial respiration.

B. In addition, supervisory personnel will be trained in the following areas:

1. The effects of hydrogen sulfide on metal components. If high tensile tubulars are to be used, personnel will be trained in their special maintenance requirements.
2. Corrective action and shut-in procedures when drilling or reworking a well, and blowout prevention and well control procedures.
3. The contents and requirements of the Hydrogen Sulfide Drilling Operations Plan and the Public Protection Plan.

There will be an initial training session just prior to encountering a known or probable hydrogen sulfide zone (within 3 days or 500 feet) and weekly hydrogen sulfide and well control drills for all personnel in each crew. The initial training session will include a review of the site specific Hydrogen Sulfide Drilling Operations Plan and the Public Protection Plan. This plan will be available at the well site. All personnel will be required to carry documentation that they have received the proper training.

A. Attached is a detailed well site diagram showing:

- Drilling rig orientation
- Prevailing wind direction (Southwest)
- Location of briefing areas
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- Location of hydrogen sulfide monitors
- Location of wind direction Indicators

#### **HYDROGEN SULFIDE SAFETY EQUIPMENT:**

- A. All safety equipment and systems will be installed, tested and deemed operational when drilling reaches a depth of 500 feet above, or three days prior to penetrating the first zone reasonably expected to contain hydrogen sulfide.
- B. During drilling operations, a flare line will be routed from the BOP manifold to the reserve pit. Should suspected sour gas be vented through the flare line, a flare pistol will be used to ignite the flare.
- C. Protective equipment for essential personnel will be installed and maintained as follows:
1. 30-minute air packs will be maintained on the rig floor and near the briefing area.
  2. 30-minute work units will be maintained at the H<sub>2</sub>S trailer and/or on the rig floor.
  3. 30-minute escape units will be maintained on the rig floor.
  4. 300 cu. ft. air cylinders will be maintained in the H<sub>2</sub>S trailer.
  5. Associated breathing air equipment will also be installed and maintained.
  6. Hydrogen sulfide monitor will be located in the doghouse on the rig floor with sensors placed on the rig floor, at the bell nipple, the shale shaker, and in the pit area.
  7. An audible/visual alarm will be located near the doghouse on the rig floor.



#### **VISUAL WARNING SYSTEMS:**

- A. High visibility Caution/Danger signs will be posted on roads providing direct access to the well location.
- B. Green, yellow, and red condition flags to be displayed to denote Normal Conditions, Potential Danger, and Danger, H<sub>2</sub>S Present.
- C. Wind socks to be located at the protection center and in the pit area to continuously indicate wind direction.

#### **CIRCULATING MEDIUM:**

- A. Drilling fluid to be conditioned to minimize the volume of H<sub>2</sub>S circulated to the surface.

#### **SPECIAL WELL CONTROL EQUIPMENT:**

- A. In addition to the normal BOP stack and choke manifold, a drilling head will be used to help control and H<sub>2</sub>S contaminated drilling.

#### **WELL TESTING:**

- A. Drill stem testing of zones known, or reasonably expected, to contain hydrogen sulfide in concentrations of 100 pps or more will use the closed chamber method of testing.

#### **COMMUNICATION:**

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#### **CIRCULATING MEDIUM:**

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#### **CIRCULATING MEDIUM:**

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