eog resources

P.O. Box 2267, Midland, Texas 79702
Phone: (432)848-9133

December 18, 2023

Mr. Joel Stone, Environmental Scientist & Specialist
EMNRD- Oil Conservation Division
1220 S St. Francis Dr. Santa Fe, NM 87505

Re: Notice of an Incomplete Hydrogen Sulfide Contingency Plan, Papaya 10 Central 502H Central Tank Battery

Dear Mr. Stone,

I have incorporated all the requested additional information, modifications, and clarifications into the contingency plan. Regarding your insightful questions:

*1.EOG needs to provide the radius of exposure calculations, indicating hydrogen sulfide concentration and escape rate, for the Papaya 10 Central 502H Central Tank Battery.*

| | | |
|---|---|---|
| 100 PPM Radius of Exposure | | |
| $ROE_{100ppm}$= | 1.589 * % H2S Concentration * Escape Rate) ^ 0.6258 | |
| | [1.589* (20,000/1,000,000) * 4,000,000] ^ 0.6258 | |
| | 1,564 | ft |
| 500 PPM Radius of Exposure | | |
| $ROE_{500ppm}$= | 0.4546 * % H2S Concentration * Escape Rate) ^ 0.6258 | |
| | [0.4546* (20,000/1,000,000) * 4,000,000] ^ 0.6258 | |
| | 715 | ft |
| % H2S Concentration | 20,000 ppm/1,000,000 = 2.0% | |
| Escape Rate, scf/d | 4,000,000 scf/d | |

*4. EOG also states that personnel will be evacuated to an upwind/crosswind location. EOG needs to describe the specific evacuation routes to assembly areas that should be followed in the event of an H2S release.*

When planning an H2S evacuation route, it's crucial to consider wind direction, as it can change. Designating a route that is consistently upwind or crosswind may not be feasible due to the unpredictable nature of wind shifts during an emergency. Instead, EOG focuses on flexible planning that can adapt to changing conditions by training potential evacuees to look at windsocks and evacuate as quickly and efficiently as possible upwind/crosswind.

Should you have any further queries or require additional clarity, please don't hesitate to reach out.

Sincerely,

Patricia Donald

Patricia Donald
Regulatory Specialist

New Mexico

$H_2S$ Contingency Plan

2023

# Papaya 10 Central 502H

# Central Tank Battery

32.498652, -103.464475

Lea County, NM

## Scope

The EOG Resources, Inc. (EOG) Hydrogen Sulfide ($H_2S$) Contingency Plan (Contingency Plan) for the Papaya 10 Central Tank Battery (CTB) provides methods to alert and protect the public within the Area of Exposure of a release of a Potentially Hazardous Volume of $H_2S$ from the Papaya 10 CTB. The Contingency Plan outlines emergency procedures for personnel at the Papaya 10 CTB to follow in the event of a release, describes the training and drills that will be conducted, and specifies coordination with state emergency plans and responders. Contigency plan will be reviewed annually and updated as needed.

## Site Description

The Papaya 10 CTB is an active tank battery located in Unit D, Section 10, Township 21S, Range 34 E. This location is equipped with 24-hour H2S monitors and surveillance camera.

## Definitions

**Area of Exposure** – the area within a circle constructed with a point of escape at its center and the radius of exposure as its radius.

**Potentially Hazardous Volume** – the volume of $H_2S$ gas of such concentration that:

- the 100-ppm radius of exposure includes a Public Area,
- the 500-ppm radius of exposure includes a Public Road, or
- the 100-ppm radius of exposure exceeds 3,000 feet.

**Public Area** – a building or structure that is not associated with the well, facility or operation for which the radius of exposure is being calculated and that is used as a dwelling, office, place of business, church, school, hospital or government building, or a portion of a park, city, town, village or designated school bus stop or other similar area where members of the public may reasonably be expected to be present.

**Public Road** – a federal, state, municipal or county road or highway.

## Emergency Procedures

In the event of a release of $H_2S$ above 100 ppm, EOG will begin the emergency shutdown (ESD) process for the facility via either the onsite ESD procedures or the central control room in order to stop additional flow of $H_2S$ into the facility.

Emergency Shutdown Procedure (ESD) Procedure:

This site is equipped with Cygnet, allowing an emergency shutdown of the location to be conducted remotely from the 24-hour monitored Control Center. The Control Center has the capability to remotely shut in the well via ESD valve on the wellhead that will shut the well from flowing. These ESD valves are tested monthly.

In the event a remote ESD attempt fails, the closest $H_2S$ trained employee equipped with $H_2S$ personal protective equipment (PPE) and respirator will activate the ESD button located at the entrance of location.

The Contingency Plan will be activated if the ESD process fails to shut-in the well, a well control issue occurs or the $H_2S$ levels exceed 100 ppm in the radius of exposure.

**Roles and Responsibilities:**

**Incident Commander** - the Foreman has overall responsibility in an emergency, will activate emergency procedures, and make critical decisions.

**Communication Commander** – the Control Center will call emergency services and issue a mass alert via email to notify personnel of the emergency at the facility. Communication Commander will notify on-call field and safety personnel to activate Contigency Plan via telephone.

**Scene Supervisors** - Lease Operators will control access to the facility and keep people away from unsafe areas. Additionally, the Lease Operators will notify New Mexico State Police to stop traffic ½-mile East/West of the facility and keep them informed of the status of the situation at the facility. No traffic will be allowed within the perimeter of the facility until the facility has been determined to be safe for re-entry by the Incident Commander.

**Immediate Action Steps to be Taken by the Incident Commander/Scene Supervisors:**

- Evacuate personnel at the facility to an upwind/crosswind location and account for all personnel. Personnel are trained to look at windsocks to determine wind direction.
- Eliminate potential ignition sources.
- Call Emergency Services (911) for any persons who are unresponsive or may be critically injured.
- Isolate the facility and prevent entry by additional persons (other than emergency responders) into the 100-ppm radius of exposure.
- Confirm with the Control Center that the emergency notification steps to relevant agencies have been initiated.
- Evacuate any Public Areas within the 100-ppm radius of exposure, if applicable.
- Notify the Incident Commander of the event, if not already aware.
- Notify the Regulatory group so that required release reporting can be timely made to the appropriate state agencies (NMAC 19.15.27, and19.15.28)
- Public officials will be briefed on any recommended road closures, evacuations, or shelter in place.
- Ambient air will be continuously monitored by onsite fixed detection monitors. Periodic monitoring by a handheld electronic monitor will be conducted in addition to the fixed detection. No persons will be allowed to reenter until the concentration has been verified to be below the OSHA permissible exposure limit of 20 ppm.

## Coordination with State Emergency Plans

As described in the action steps listed in the previous section of the Contingency Plan, calling 911 and having the control center notify the relevant agencies starts the coordination process. Additionally, the necessary reports will be made to state agencies, and public officials will be briefed on evacuation, roadblocks, and shelter-in-place recommendations. The State Emergency Response Commission (SERC) and the Local Emergency Planning Commission (LEPC) may also be involved in coordinating emergency services under the Contingency Plan. EOG shall notify the New Mexico Energy, Minerals and Natural Resources Department (NMEMNRD), Oil Conservation Division (Division) upon a release of H2S requiring activation of the Contingency Plan as soon as possible, but no more than four (4) hours after Contigency Plan activation, recognizing that a prompt response should supersede notification. EOG shall submit a full report of the incident to the OCD on form C-141 no later than 15 days following the release requiring Contingency Plan activation (19.15.11.16 NMAC).

Per 19.15.11.9.B(2)(e) NMAC, New Mexico State Police shall be notified of $H_2S$ Contingency Plan activation. EOG shall cooperate with the other involved emergency responders, such as the New Mexico State Police, local fire department, city police, Sheriff's Office, NMOCD, or other appropriate public emergency response agencies to manage an effective and safe response to the emergency.

## Contact List for Eddy and Lea Counties

**EOG Personnel**

| | | |
|---|---|---|
| Control Room | 24-hour Operation | 432-848-9170 |
| Fruit Basket Production Superintendent | Vale Trevino | 817-894-5327 |
| Fruit Basket Foreman | Aaron Bishop | 575-703-6527 |
| NM Safety Superintendent | Justice Taylor | 432-653-6540 |
| TX Safety Superintendent | Marco Rocha | 432-701-3313 |
| Safety Supervisor | Ashley Mayfield | 432-258-7998 |

*On call positions will step in during off days and vacations.

**State Emergency Response Commission (SERC)**

P.O. Box 27111
Santa Fe, NM 87502

(505) 250-7397
(505) 476-9635- Emergency

**Law Enforcement**
Eddy County Sheriff 575-887-7551 or 911
Lea County Sheriff 575-396-3611 or 911

**Hobbs Police Department**
300 N. Turner Street 575-397-9265 or 911
Hobbs, NM 88240

**New Mexico State Police**
5100 Jack Gomez Blvd.
Hobbs, NM 88240 575-392-5880 or 911

**National Response Center (NRC)**
2100 2nd St. SW Stop 7238 800- 424-8802
Washington, DC 20593

**Lea County Emergency Management Director**
Lorenzo Velasquez 575-391-2983
1019 E. Bender Blvd. 575-942-8222 (cell)
Hobbs, NM 88240

**Fire Department** 911

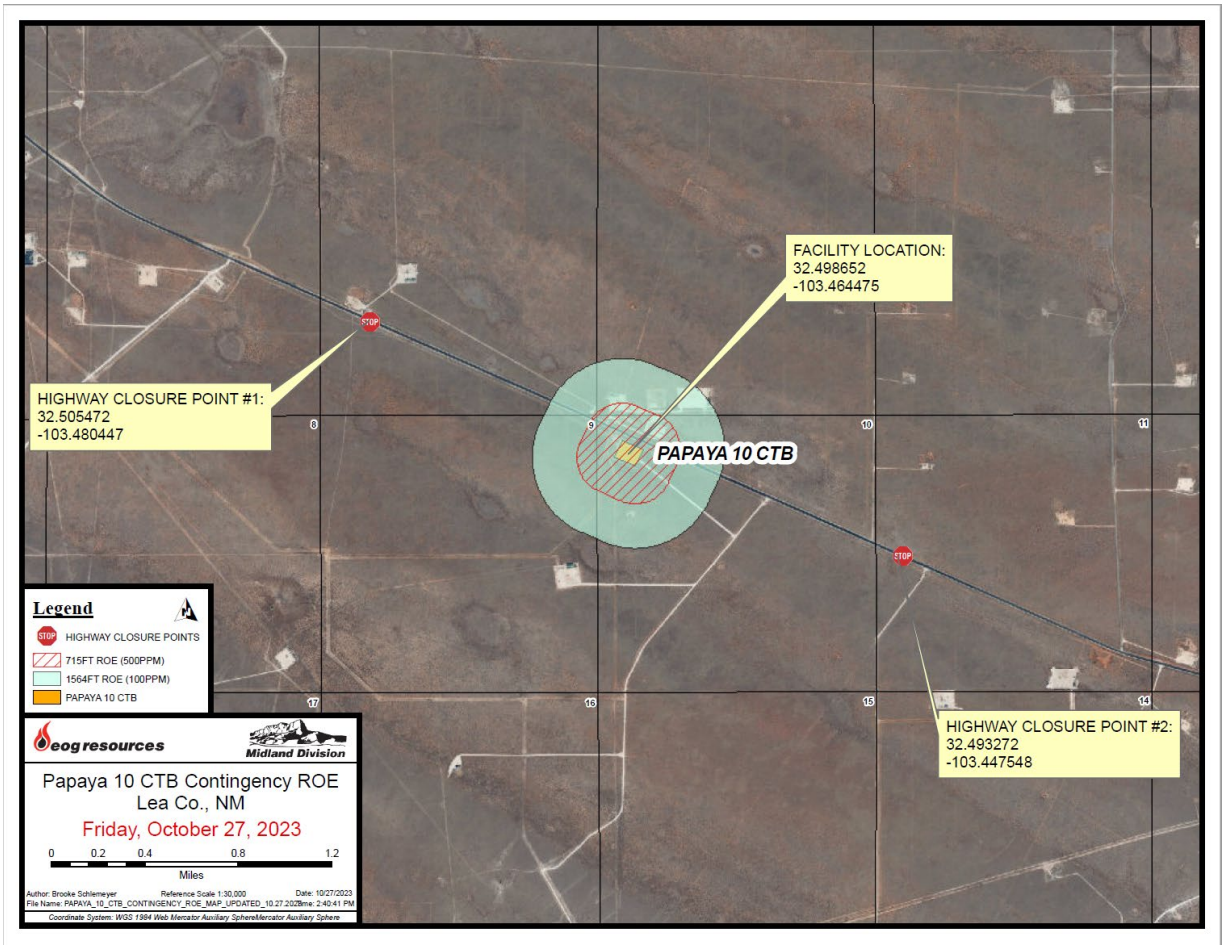
**Bureau of Land Management** 575-393-3612

**New Mexico Oil Conservation Division**
(11) Hobbs 575-241-7063
(11) Santa Fe 505-476-3441

**Hospitals**
Carlsbad Medical Center 575-887-4100
Nor-Lea Hospital District 575-396-6611
Hobbs Hospital 575-492-5000

## Map

The map below identifies potentially affected public roads and depicts proposed evacuation routes and roadblock locations.



## Required Signage and Facility Safety Equipment

Facilities where the gas contains $H_2S$ in concentrations greater than 100 ppm shall have lease signs at the entrance to the location stating:

**Danger**
Hydrogen Sulfide Poison Gas
May Be Present

*Actual sign at the Papaya

Signs shall meet the current ANSI Z535.1-2002 (Safety Color Code) guidelines.

Additionally, these locations will have windsocks or wind streamers to detect wind direction.

Fixed $H_2S$ monitors are present at the location. Location is not staffed 24 hours/day, but monitors are operational 24 hours/day.

Necessary safety equipment and supplies (e.g., personal $H_2S$ monitors, SCBAs) are in workers' vehicles.

## Ignition Procedures

If control of the facility is lost and ignition may occur, protect against exposure to Sulfur Dioxide ($SO_2$). Intentional ignition must be coordinated with NMOCD and local officials, including the NM State Police. NM State Police and fire officials will take over as incident command on scene of any major release.

## Characteristics of Hydrogen Sulfide and Sulfur Dioxide

The properties of all gases are usually described in the context of seven major categories:

1. Color
2. Odor
3. Vapor Density
4. Explosive Limits
5. Flammability
6. Solubility (In water)
7. Boiling Point

$H_2S$ is no exception. Information from these categories should be considered to provide a complete picture of the properties of the gas.

### 1. *Color-Transparent*

$H_2S$ is colorless so it is invisible. This fact simply means that you can't rely on your eyes to detect its presence, which makes this gas extremely dangerous to be around.

### 2. *Odor- Rotten Eggs*

$H_2S$ has a distinctive offensive smell, similar to "rotten eggs." For this reason, it earned its common name "sour gas." However, $H_2S$, even in low concentrations, is so toxic that it attacks and quickly impairs a person's sense of smell, so it could be fatal to rely on your nose as a detection device.

### 3. *Vapor Density – Specific Gravity of 1.192*

$H_2S$ is heavier than air, so it tends to settle in low-lying areas like pits, cellars, or tanks. If you are in a location where $H_2S$ is known to exist, protect yourself. Whenever possible, work in an area upwind and keep to higher ground.

### 4. *Explosive limits – 4.3% to 46%*

Mixed with the right proportion of air or oxygen, $H_2S$ will ignite and burn or explode.

### 5. *Flammability*

$H_2S$ will burn readily with a distinctive clear blue flame, producing Sulfur Dioxide ($SO_2$), another hazardous gas that irritates the eyes and lungs.

6. ***Solubility- 4 to 1 Ratio with water***

$H_2S$ can be dissolved in liquids, which means that it can be present in any container or vessel used to carry or hold well fluids including oil, water, emulsion, and sludge. The solubility of $H_2S$ is dependent on temperature and pressure, but if conditions are right, simply agitating a fluid containing $H_2S$ may release the gas into the air.

7. ***Boiling Point – (-76 degrees Fahrenheit)***

Liquefied $H_2S$ boils at a very low temperature, so it is usually found as a gas.

## Training Programs and Drills

When working in an area where $H_2S$ may be encountered, specific training is provided to personnel in compliance with applicable regulations. All in-person training and drills are tracked via a QR code sign-in sheet. The code is scanned, and the attendee fills out the associated online form. The response is saved and transferred to a spreadsheet which is then stored on the shared EOG drive for access. Computer-based training (CBT) completion is tracked within the CTB software**.**

**Basic Employee and Contractor Training:**

- Employee and contractor $H_2S$ training includes:
  - Hazards and characteristics of $H_2S$
  - Proper use and maintenance of personal protective equipment and life support systems
  - Proper use of $H_2S$ detectors, alarms, and other warning systems
  - Location of briefing areas
  - Evacuation procedures and routes
  - First aid and rescue procedures
- $H_2S$ refresher training is conducted annually.
- Personnel working at the Papaya 10 CTB are provided with a copy of the Contingency Plan.
- Supervisory personnel are provided additional training related to their roles and responsibilities under the Continency Plan.
- Onsite and/or classroom drills simulating a release of $H_2S$ is conducted periodically to train on implementing the Contingency Plan.

No training of residents is necessary for the Papaya 10 CTB since there are no residential neighbors.

State of New Mexico
Energy, Minerals and Natural Resources Department

**Michelle Lujan Grisham**
Governor

**Dylan M. Fuge**
Deputy Secretary

**Dylan Fuge,** Division Director (Acting)
**Oil Conservation Division**

**BY ELECTRONIC MAIL**

February 8, 2024

Patricia Donald, Regulatory Specialist
EOG Resources, Inc.
P.O. Box 2267
Midland, TX 79702
patricia_donald@eogresources.com

**RE: EOG Resources, Inc. - Notice of a Complete Hydrogen Sulfide Contingency Plan, Papaya 10 Central 502H Central Tank Battery**

Dear Ms. Donald,

The New Mexico Energy, Minerals and Natural Resource Department's Oil Conservation Division (OCD) has reviewed the updated Hydrogen Sulfide ($H_2S$) Contingency Plan submitted to the OCD on December 18, 2023, by EOG Resources, Inc. (EOG) for the Papaya 10 Central 502H Central Tank Battery located in Lea County, New Mexico. The submitted $H_2S$ Contingency Plan includes all content components as required by 19.15.11 NMAC; therefore, the OCD has determined that the submitted $H_2S$ Contingency Plan is complete.

Please be advised that OCD's acceptance of this plan does not relieve EOG of responsibility should its operations fail to adequately detect, investigate, and/or undertake corrective actions to prevent or stop a hydrogen sulfide release. In addition, OCD's acceptance does not relieve EOG of responsibility for compliance with any other federal, state, or local laws and/or regulations.

Please do not hesitate to contact me at (505) 709-5149 or via email should you have any questions.

Respectfully,

Joel Stone

Joel Stone
Environmental Scientist & Specialist
joel.stone@emnrd.nm.gov

**District I**
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
**District II**
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
**District III**
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
**District IV**
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

# State of New Mexico
# Energy, Minerals and Natural Resources
# Oil Conservation Division
# 1220 S. St Francis Dr.
# Santa Fe, NM 87505

CONDITIONS

Action 295947

## CONDITIONS

| | |
|---|---|
| Operator:<br>EOG RESOURCES INC<br>5509 Champions Drive<br>Midland, TX 79706 | OGRID:<br>7377 |
| | Action Number:<br>295947 |
| | Action Type:<br>[UF-H2S] H2S Contingency Plan (H2S Plan) |

**CONDITIONS**

| Created By | Condition | Condition Date |
|---|---|---|
| joel.stone | None | 2/8/2024 |