# Hydrogen Sulfide Drilling Operations Plan

#### Maduro Unit #10H

Cimarex Energy Co. UL: C, Sec. 29, 19S, 33E Lea Co., NM HOBBS OCD

JAN 2 9 2014

# 1 All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:

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- A. Characteristics of H<sub>2</sub>S
- B. Physical effects and hazards
- C. Principal and operation of H2S detectors, warning system and briefing areas.
- D. Evacuation procedure, routes and first aid.
- E. Proper use of safety equipment & life support systems
- F. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.

#### 2 H<sub>2</sub>S Detection and Alarm Systems:

- A. H2S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H2S detectors may play placed as deemed necessary.
- B. An audio alarm system will be installed on the derrick floor and in the top doghouse.

#### 3 Windsock and/or wind streamers:

- A. Windsock at mudpit area should be high enough to be visible.

  - Windsock on the rig floor and / or top doghouse should be high enough to be visible.

## 4 Condition Flags and Signs

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- A. Warning sign on access road to location.
- B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H₂S present in dangerous concentration). Only H2S trained and certified personnel admitted to location.

#### 5 Well control equipment:

A. See exhibit "E-1"

#### 6 Communication:

- A. While working under masks chalkboards will be used for communication.
- B. Hand signals will be used where chalk board is inappropriate.
- C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.

## 7 Drillstem Testing:

No DSTs or cores are planned at this time.

- 8 Drilling contractor supervisor will be required to be familiar with the effects H<sub>2</sub>S has on tubular goods and other mechanical equipment.
- 9 If H<sub>2</sub>S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas seperator will be brought into service along with H<sub>2</sub>S scavengers if necessary.

## H<sub>2</sub>S Contingency Plan Maduro Unit #10H

Cimarex Energy Co. UL: C, Sec. 29, 19S, 33E Lea Co., NM

## **Emergency Procedures**

In the event of a release of gas containing H<sub>2</sub>S, the first responder(s) must:

- « Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- « Evacuate any public places encompassed by the 100 ppm ROE.
- « Be equipped with H₂S monitors and air packs in order to control the release.
- « Use the "buddy system" to ensure no injuries occur during the response.
- « Take precautions to avoid personal injury during this operation.
- « Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- « Have received training in the:
  - Detection of H₂S, and
  - · Measures for protection against the gas,
  - · Equipment used for protection and emergency response.

#### **Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO<sub>2</sub>). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

Characteristics of H2S and SO2

Common	Chemical	Specific	Threshold	Hazardous	Lethal
Name	Formula	Gravity	Limit	Limit	Concentration
Hydrogen Sulfide	H₂S	1.189 Air=1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO <sub>2</sub>	2.21 Air=1	2 ppm	N/A	1000 ppm

#### **Contacting Authorities**

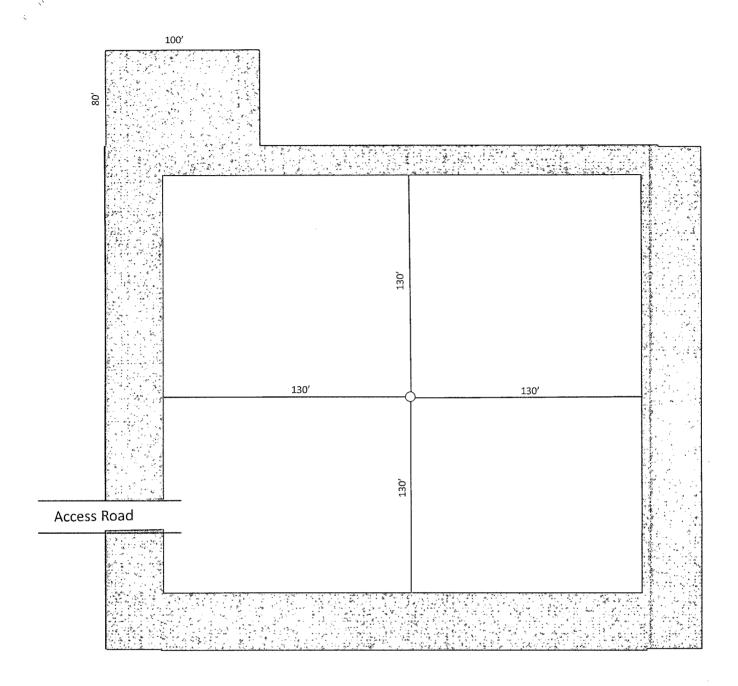
Cimarex Energy Co. of Colorado's personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Cimarex Energy Co. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

# H₂S Contingency Plan Emergency Contacts

# Maduro Unit #10H

Cimarex Energy Co. UL: C, Sec. 29, 19S, 33E Lea Co., NM

Cimarex Energy Co. of Colora	800-969-4789			
Co. Office and After-Hours N				
Key Personnel	Title	Office		Mobile
Name		432-620-1934		580-243-8485
Larry Seigrist	Drilling Manager			
Doug McQuitty	Drilling Superintendent	432-620-1933		806-640-2605
Scott Lucas	Drilling Superintendent	432-620-1989		432-894-5572
Conner Cromeens	Construction Foreman			432-270-0313
Roy Shirley	Construction Superintendent	an appropries for angularity his advantage are published as propriess are hospitalists and hospitalists are hospitalists.	· 2000p 20 1	432-634-2136
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Ambulance		911		
State Police		575-746-2703		
City Police		575-746-2703		
Sheriff's Office	575-746-9888			
Fire Department	575-746-2701			
Local Emergency Planning	575-746-2122			
New Mexico Oil Conservat	575-748-1283			
Carlsbad				
Ambulance		911		
State Police	575-885-3137			
City Police	575-885-2111			
Sheriff's Office	575-887-7551			
Fire Department	575-887-3798			
Local Emergency Planning	575-887-6544			
US Bureau of Land Manag	575-887-6544			
Santa Fe				
New Mexico Emergency R	505-476-9600			
New Mexico Emergency R	505-827-9126			
New Mexico State Emerge	505-476-9635			
<u>National</u>	<u> </u>			
National Emergency Respo	800-424-8802			
<u>Medical</u>				
Flight for Life - 4000 24th	806-743-9911			
Aerocare - R3, Box 49F; Lu	806-747-8923			
Med Flight Air Amb - 2301	505-842-4433			
SB Air Med Service - 2505	Clark Carr Loop S.E.; Albuquerque, NM	505-842-4949		
<u>Other</u>				
Boots & Coots IWC	800-256-9688	or	281-931-8884	
Cudd Pressure Control	432-699-0139	or	432-563-3356	
	575-746-2757			
Halliburton		373-740-2737		



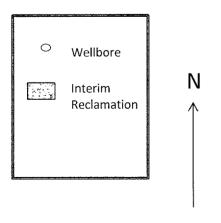


Exhibit D-1
Interim Reclamation Diagram
Maduro Unit No. 10H
Cimarex Energy Co. of Colorado
SHL 29-19S-33E; 330 FNL & 1980 FWL
BHL 32-19S-33E; 2310 FNL & 1980 FWL
Lea County, NM