Hydrogen Sulfide Drilling Operations Plan

Pintail 23 Federal Com No. 8

Cimarex Energy Co. of Colorado Unit M, Section 23 T25S-R26E, Eddy County, NM 30-015-38457

H₂S equipment will be rigged up at Surface. The plan should be implemented before drilling out from the surface.

1. Due to a one-time encounter on a previous well, an Intra-salt Pocket was charged with H₂S and a burnable amount of hydrocarbons.

First Potential Problem Zone:

Initial suspected problem zone	Salt Zone @ 1,333'	
Potential Open Flow Capacity	1 mcf	
Expected H₂S Concentration	11,000 ppm	
100' ROE	6'	
500' ROE	3'	

Cimarex will have 24-hour H₂S Safety Supervisors on location while drilling the first 2,000' on this well.

2. Second Potential Problem Zone:

Initial suspected problem zone	Delaware Mountain Group @ 1,800'
Potential Open Flow Capacity	100 mcf
Expected H₂S Concentration	1,000 ppm
100' ROE	24'
500' ROE	11'

- 3. All Company and Contract personnel admitted on location must be trained by a qualified H₂S safety instructor to the following:
 - A. Characteristics of H₂S
 - B. Physical effects and hazards
 - C. Proper use of safety equipment and life support systems.
 - D. Principle and operation of H₂S detectors, warning system and briefing areas.
 - E. Evacuation procedure, routes and first aid.
 - F. Proper use of 30 minute pressure demand air pack.

4. H₂S Detection and Alarm Systems:

A. H₂S detectors and audio alarm system to be located at bell nipple, end of flow line (mud pit) and on derrick floor or doghouse.

5. Windsock and/or wind streamers:

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

6. Condition Flags and Signs:

- 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 emergency personnel admitted to location.

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7. Well control equipment:

A. See exhibit "E"

8. 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.

9. <u>Drillstem Testing:</u>

No DSTs or cores are planned at this time.

- 10. Drilling contractor supervisor will be required to be familiar with the effects H₂S has on tubular goods and other mechanical equipment.
- 11. If H₂S 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 H₂S scavengers if necessary.

H₂S Contingency Plan Pintail 23 Federal Com No. 8 Cimarex Energy Co. of Colorado Unit M, Section 23 T25S-R26E, Eddy County, NM

Emergency Procedures

In the event of a release of gas containing H₂S, 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 (SO₂). 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		Lethal
Name	Formula	Gravity	Limit	Hazardous Limit	Concentration
Hydrogen Sulfide	H₂S	1.189 Air=1	10 ppm	100 ppm/hr	600 ppm
Sulfur Dioxide	SO ₂	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

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Cimarex Energy Co. of Colorado Unit M, Section 23 T25S-R26E, Eddy County, NM

Cimarex Energy Co. of Colorado		800-969-4789			1
Co. Office and After-Hours Menu	1				ļ
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<u>Key Personnel</u> Name	Title	Office		Mobile	
Doug Park	Drilling Manager	432-620-1934		972-333-1	407
Dee Smith	Drilling Super	432-620-1933		972-882-1	
Jim Evans	Drilling Super	432-620-1929		972-465-0	<u> </u>
Roy Shirley	Field Super	432-020-1323		432-634-2	
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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 Cor	nmittee	575-746-2122			
New Mexico Oil Conservation		575-748-1283			
<u>Carlsbad</u>					<u> </u>
Ambulance		911			
State Police		575-885-3137			
City Police		575-885-2111			
Sheriff's Office		575-887-7551			<u> </u>
Fire Department		575-887-3798			
Local Emergency Planning Cor	·	575-887-6544			
US Bureau of Land Manageme	ent	575-887-6544			<u> </u>
Santa Ea					
<u>Santa Fe</u> New Mexico Emergency Respo	onse Commission (Santa Ea)	505-476-9600			<u> </u>
	onse Commission (Santa Fe)	505-827-9126			
New Mexico State Emergency		505-476-9635			<u> </u>
IACAA IAIGVICO Orace Fillel Bellch	орегалона септе	303-470-3033			
National_					
National Emergency Response	Center (Washington, D.C.)	800-424-8802			
<u>Medical</u>					
Flight for Life - 4000 24th St.;		806-743-9911			
Aerocare - R3, Box 49F; Lubbo		806-747-8923			
	e Blvd S.E., #D3; Albuquerque, NM	505-842-4433			
SB Air Med Service - 2505 Clar	k Carr Loop S.E.; Albuquerque, NM	505-842-4949			
Other					
Boots & Coots IWC		800-256-9688	or 281-931-8884		
Cudd Pressure Control		432-699-0139	or		
Halliburton		575-746-2757		.52 505 5	