BEFORE THE
OIL CONSERVATION DIVISION
Case No. 12867 Exhibit No. 2
Submitted by: OCD
Hearing Date 7-19-02

Hydrogen Sulfide Safety (H_2S)
Rule Making Process

➢ Winter 2001

OCD director assigns the OCD Environmental Bureau the task of reviewing the current Rule 118 (Hydrogen Sulfide Gas-Public Safety) to ensure the rule adequately provides protection for the public.

➢ Spring 2001

OCD implements the following action items:

- Gathered industry and other governmental current standards and rules.
- OCD reviewed standards to assess prevention, preparedness and protection for the public.
- Performed peer review of air dispersion models.
- Drafted new proposed H_2S Rule

Hydrogen Sulfide Safety (H_2S) Rule Making Process

- Summer 2001-2002
  - •Set-up H_2S workgroup comprising of industry, public representatives, and governmental agencies.
  - •Meetings were held in Hobbs, Farmington and Santa Fe.
  - •Electronic mail was utilized for accepting comments to streamline the process.
  - •An open dialog was maintained to ensure workgroup representatives could input comments and express any concerns.
  - •Peer review of H_2S models and hazards.
- June 2002 OCD set proposed rule for OCC hearing and issued public notice.

H_2S Work Group Members

- New Mexico Oil & Gas Association
  - Deborah D. Seligman-NMOGA
  - Bruce Gantner-Burlington
  - Bob Manthei-Oxy
  - Gene Montgomery-Oxy
- NM Independent Petroleum Association
  - Dan Girand-Mack Energy
- BLM-Leslie Theiss, Dee Adams
- Municipalities:
  - Hobbs- David Hooten (LEPC)
  - Farmington-Aztec- Don Cooper (LEPC)
  - Carlsbad- Harry Burgess
- OCD Environmental Bureau
  - Roger Anderson, Wayne Price, Ed Martin,
  - Randy Bayliss (peer review only)
- Department of Public Safety (DPS)
  - Max Johnson

Hydrogen Sulfide (H_2S)
Current Rule 118
Inadequacies

- Advisory Rule rather than Requirement.
- Exempted certain tanks with H_2S concentrations up to 1000 ppm. The new proposed rule will be <300 ppm.
- Exempted certain facilities with H_2S concentrations of < 500 ppm. The new proposed rule will be <100 ppm.
- Exempted all facilities from the following requirements if the H_2S volume fraction of the gas stream equated to less than 10 mcf/day:
    - No safety devices or procedures required.
    - No signs or fencing required.
    - No Contingency Plans required.

Current Rule
10 mcf/day Exemption

Current Rule Exempts any Facility with an H_2S Volume Fraction less than (<) 10 mcf/day.

Example:

- 1,000 mcf/day @ 10,000 ppm (1%) of H_2S = 10 mcf/day of pure H_2S.
- 10 mcf/day equates to the following Radius of Exposures (ROE):

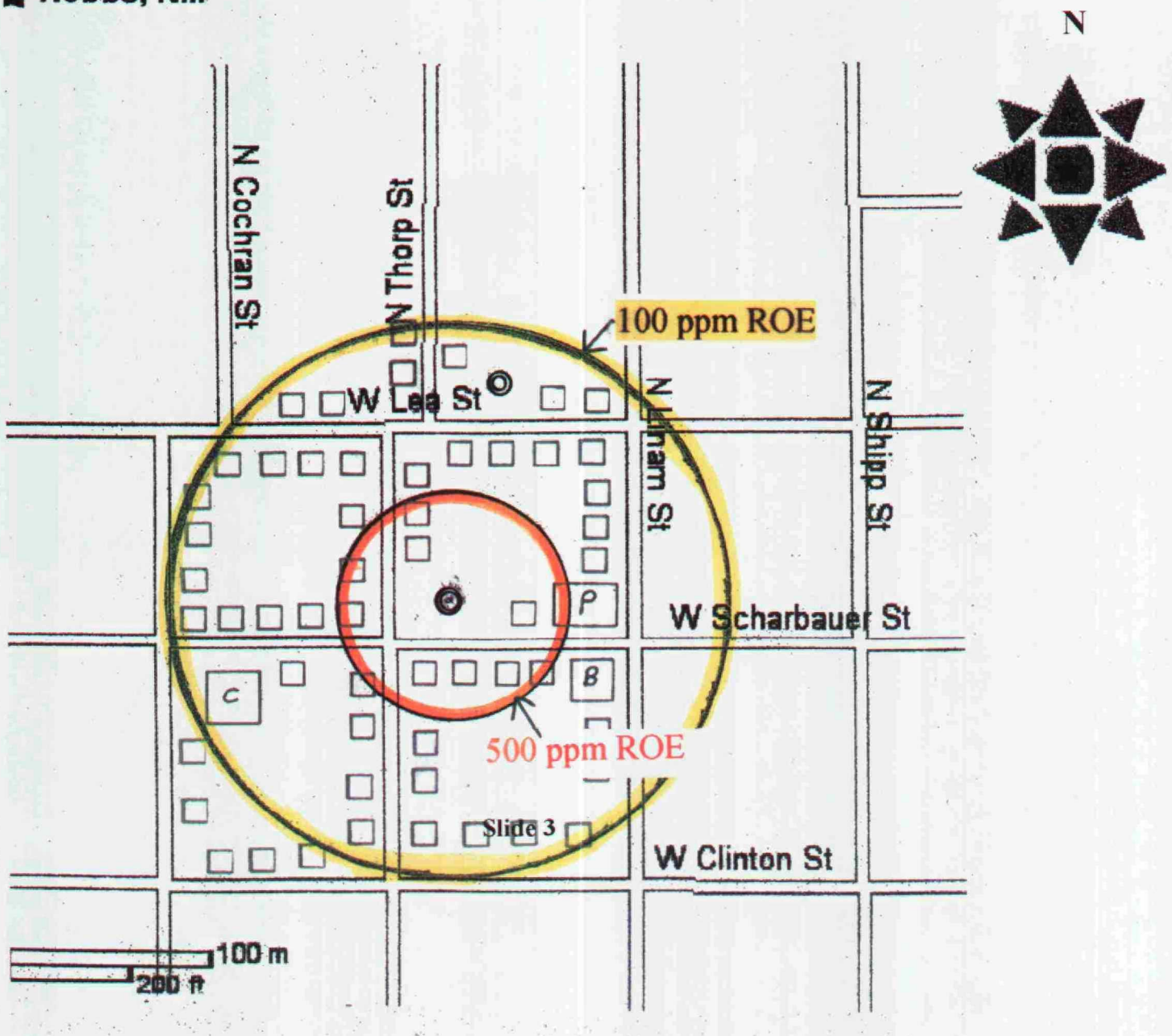
500 ppm @ 200 feet

100 ppm @ 450 feet

Next slide reflects the impact of a 10 mcf/day release for the example given above. All the houses, business and public meeting places may not have been protected under the current rule.

Areas inside of the circles below are exempted from public safety contingency plans and other safety control requirements under the current rule 118.

Hobbs, NM



Proposed Rule
General
subsection A.

Identifies the Hazards and Characteristics of Hydrogen Sulfide H_2S

Proposed Rule

Scope

subsection B.

Provides for Public Safety in areas where potentially hazardous volumes of H_2S may exist and defines who is regulated by this rule.

Proposed Rule
Key Definitions
subsection C.

Potentially Hazardous Volumes (PHV)

Volume of H_2S gas of such concentration that:

- 100 ppm Radius of Exposure (ROE) includes a Public Area.
- 500 ppm Radius of Exposure (ROE) includes a Public Road.
- 100 ppm Radius of Exposure (ROE) is in excess of 3,000 feet.

Proposed Rule
Key Definitions
subsection C. Cont'd

Radius of Exposure (ROE):

An imaginary circle constructed around a point of escape, the radius of which is calculated using the Pasquill-Gifford equation which is derived from the well know Gaussian Plume Model assuming a continuous source.

Example Equation for determining the distance in feet of a ROE of 100 ppm H_2S.

$$X(\text{feet}) = \{1.589 \times H_2S \text{ Concentration} \times \text{Gas flow}\}^{.6258}$$

Other Models or methods may be used if approved by OCD.

Proposed Rule
Determination of H_2S Risk
subsection D.

Requirements:

- Requires qualified testing of gas systems.
- Allows operators to submit previous data if not over one year old.
- All existing wells are exempt from testing if representative data is available.
- Facilities >100 ppm must calculate ROE.
- If ROE meets definition of PHV then Test data and ROE calculations must be submitted electronically within 180 days.
- Recalculation Required.

If Facilities <100 ppm, then facility is exempted from this Rule.

Proposed Rule
H_2S Contingency Plans
subsection E.

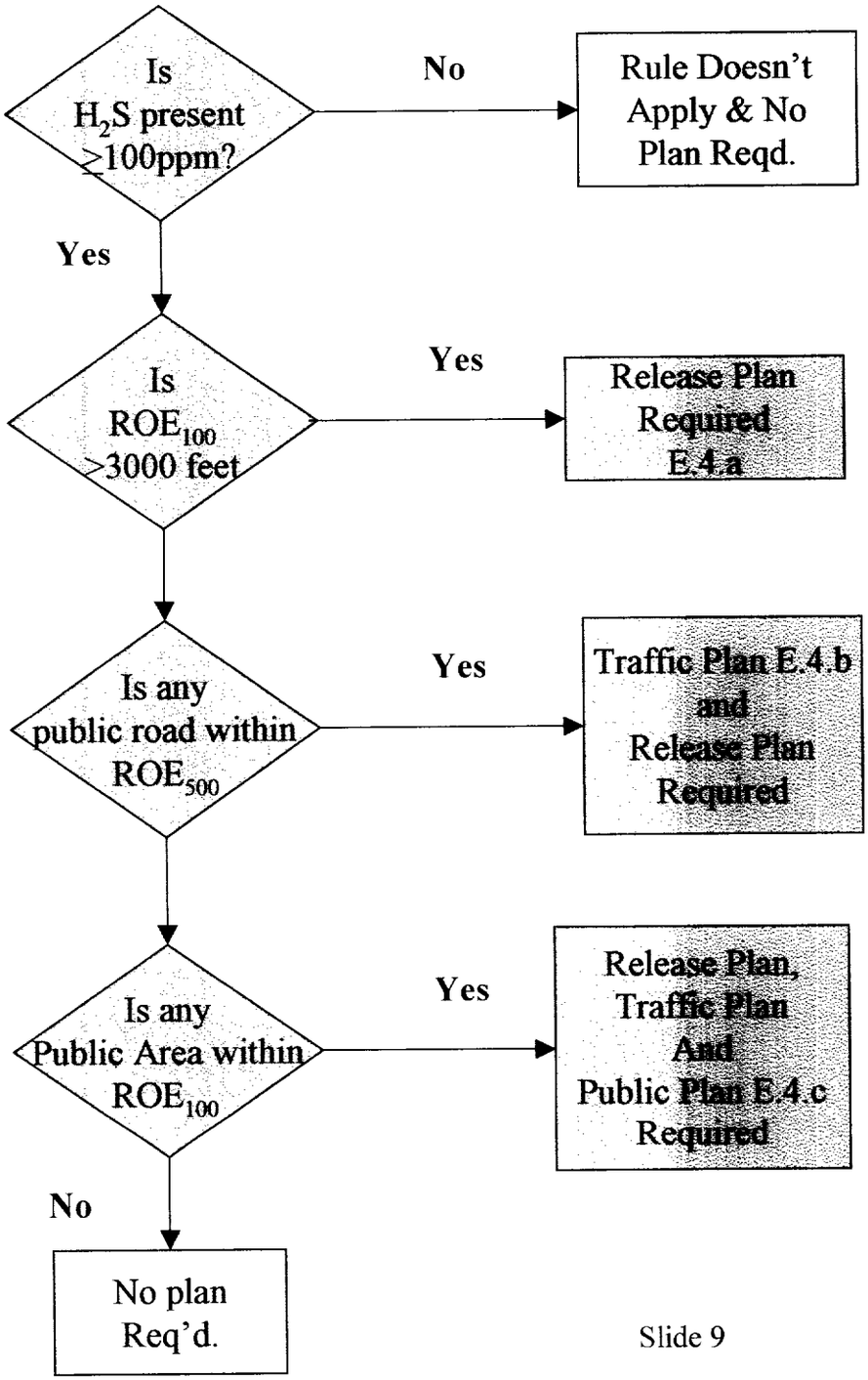
- **<u>General:</u>**
  - **To alert and protect people at risk**
  - **To control, monitor and abate the discharge**

- **<u>When Required:</u>**
  - **Any time a PHV may be present**

- **<u>Input from Emergency Response Authorities and OCD Required</u>**

Hydrogen Sulfide (H_2S) Contingency Planning Flowchart

The H_2S Contingency Plan can be part of a locations Emergency Response Plan



H_2S Contingency Plan Elements

H_2S Contingency Plan Elements Proposed Rule

Release Plan subsection E.4.a.

- Immediate action Plan
- Call List- of emergency personnel
- Plat or maps showing ROE's
- Call List- names and phone numbers of operator personnel to be contacted

Proposed Rule
Traffic Plan
subsection E.4.b.

- Must contain all of the elements of a release plan and the following additional elements:
  - Instructions and procedures for alerting and coordinating emergency response authorities for Public Roads.
  - Plat or maps showing ROE's and all involved Public Roads.
  - Traffic plan to divert and safely remove any pubic member.

Proposed Rule
Public Plan

subsection E.4.c

- Must contain all of the elements of a release plan and the following additional elements:
  - Detailed plans of action to alert and protect personnel at risk and emergency response authorities.
  - Call list [ambulance services, hospitals, fire depts., doctors, contractors, or public agencies as appropriate]
  - Coordination of response pursuant to NM HMER Plan (i.e. NM State Police)
  - Plat or map of the facility
  - Names and phone numbers of affected persons
  - Advance briefing of entire call list
  - Additional support information

Proposed Rule
H_2S Contingency Plans
subsection E. cont'd

- OCD may impose additional requirements
- Submission of Plans required:
  - Submit to OCD electronically
  - Submit to LEPC
  - Within 180 days of determining ROE
  - Plans may be submitted with APD's
- Penalties may be imposed for Failure to Submit
- Annual Reviews are required
- Plans must be made available

Proposed Rule
H_2S Contingency Plans
subsection E. cont'd

Activation Levels

- Release of any PHV
- If sustained concentration > 50 ppm at the property line of any facility

Proposed Rule Drilling, Workover and Servicing Operations

subsection F.

- API standards incorporated.
- Minimum standards required:
  - Before Commencing Operations:
    - Operators shall complete an H_2S Contingency Plan where required.
    - Training shall be completed.
    - All related safety equipment and warning systems shall be operational.
    - Detection and monitoring equipment is not required until drilling is within 500 feet of anticipated zone containing $H_2S > 100$ ppm.
  - Egress Routes shall be maintained.

Proposed Rule
Drilling, Workover and Servicing Operations
subsection F. (minimum standards cont'd.)

- Operators shall provide H_2S detection and monitoring equipment as follows:
  - Automatic, visible and audible alarms to activate at 20 ppm.
  - Detection systems shall be calibrated, tested and recorded monthly.
- Wind indicator and warning signs required.
- Operating Practices where H_2S >100 ppm.
  - Circulating media shall be mud.
  - Alternate methods allowed if approved.
  - Flare, ignition, and supplemental fuel systems required.
  - H_2S rated remote controlled choke, valves, and BOP stack arrangements required when a PHV may be present in a Public Area.

Proposed Rule
Drilling, Workover and Servicing Operations
subsection F. (minimum standards cont'd.)

- Operating Practices where H_2S >100 ppm continued:
  - <u>Mud programs require:</u>
    - De-gassing
    - Flaring
    - Equipment that is designed and rated for H_2S operations
    - Capability of well control.
  - <u>Well Testing: (drill stem)</u>
    - Drill stem testing must be conducted during daylight hours.
    - Formation fluids discharged into closed chamber only.
    - Operators shall notify OCD 24 hours in advance of testing if an H_2S contingency plan is required.

Proposed Rule Production Facilities and Down Stream Facilities.

Subsection G.

- API standards incorporated.
- Minimum standards required where H_2S >100 ppm.
  - Operators shall complete an H_2S Contingency Plan where required.
  - Danger or warning signs required.
  - Signs shall meet certain standards.
  - Located within 50 feet of the facility.
  - If fenced, signs at the gates will suffice.
  - Flow lines shall have signs where they cross public roads.
  - Fencing and gates required: If facility is located in a Public Area or within ¼ mile of a residence, school, church, park, playground, school bus stop or place of business.
  - Fencing shall meet certain standards.
  - Gates shall remain locked when unattended.

Proposed Rule
Production Facilities and Down Stream Facilities.
Subsection G. (minimum standards cont'd.)

- Wind direction indicators required.
- Secondary well controls required when any well's ROE of 100 ppm incorporates a Public Area.
- Wells shall have a secondary means of immediate well control such as:
  - Appropriate christmas tree.
  - Downhole completion equipment.
  - Equipment shall allow accessibility under pressure.

Proposed Rule
Production Facilities and Down Stream Facilities.
Subsection G. (minimum standards cont'd.)

- Automatic safety valves or shutdown systems required when any facility's ROE of 100 ppm incorporates a Public Area.
- Tank or vessels containing >300 ppm H_2S are subject to the following additional requirements.
  - ➢ Stairs and ladders shall be chained or marked to restrict entry, unless site is fenced then signs on gates will suffice,
  - ➢ Danger or warning signs required.
    - Signs shall meet certain standards.
    - Located within 50 feet of the facility.
- <u>Compliance Schedule:</u> All facilities shall meet the requirements of this subsection within <u>one year</u> of the effective date of this rule.

Proposed Rule
Personal Protection
and
Training
subsection H.

Requires all persons responsible for the implementation of any H_2S contingency plan to be trained in the following areas:

- Hydrogen Sulfide hazards
- Detection of Hydrogen Sulfide
- Personal Protection
- Contingency procedures

Proposed Rule Standards for Equipment Exposed to H_2S

subsection I.

Requires operators to:

- Choose equipment with consideration for both the the H_2S working environment and stress.
- Incorporate NACE Standards
- Allows corrosive protection by chemical inhibition.

Proposed Rule
Exemptions
subsection J.

Exemptions:

It is proposed that the wording of this subsection be changed to:

"An exemption to certain requirements of this Section may be granted by petitioning the director. Any such petition shall provide specific information as to the circumstances that warrant approval of the exemption requested and how the public safety will be protected. Submission of a safety plan required by other governmental agencies may accompany the petition for exemption. The director, after considering all relevant factors, may approve an exemption if the circumstances warrant."

Proposed Rule
Release
subsection K.

Activation of Contingency Plan Required:

- Where the potential exists for exposure to a PHV.
- Where a concentration of H_2S is >50 ppm at the property line of any facility.

OCD Notification:

- Within one hour of discovery, if practical.
- File a Release report (C-141) within 15 days.

Proposed Rule
Corrective Actions
subsection L.

<u>OCD may require corrective action if necessary to:</u>

- Maintain control of a well, or any other facility, or to safeguard public safety.