PHILLIPS PETROLEUM COMPANY'S
PROPOSED ALTERNATIVE TO RULE 118
HYDROGEN SULFIDE GAS

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 9010 Exhibit No. 1
Submitted by: Phillips
Hearing Date 11/20/86

CASE 9010:

RULE 118. Hydrogen Sulfide

A. Wells drilled in known H_2S-producing areas where the calculated 100 ppm radius of exposure (ROE) includes a public area or is 3,000 feet or greater should be planned, drilled and completed with due regard to, and guidance from, "Recommended Procedures (RP #49) for Drilling....." published by the American Petroleum Institute, latest edition.

B. Within 180 days after promulgation of this rule or within 90 days after completion of the first well on a lease, each operator in Chaves, Eddy, Lea and Roosevelt Counties shall submit to the Division's district office having jurisdiction, for each lease in each pool in production at that time, a gas analysis of a representative sample of the gas stream showing the hydrogen sulfide concentration. The analysys shall be performed by an industry-recognized method and procedure. In the event it is impractical to furnish a gas stream analysis, the operator may submit a measurement of hydrogen sulfide in the tank vapors performed by an industry-recognized method and procedure. The measurement shall be reported in writing specifying the name of operator, lease, pool, tester, test method, measured H_2S concentration, and the maximum available gas escape rate. This written information shall be provided on NMOCD Form _____.

C. 1. Any lease producing or processing plant handling gas with H_2S concentration of 500 ppm (0.05%) or more shall have a plainly visible warning sign at the tank battery or plant entrance stating "Caution - Poisonous Gas" in black and yellow colors, legible from at least 50 feet.

2. Any lease producing gas with H_2S concentration of 1,000 ppm (0.1%) or more shall have, in addition to the sign required in subparagraph 1, a second sign at the foot of the battery stairway stating "Lethal Concentrations of Poisonous Gas May Be Present Beyond This Point." If the 100 ppm ROE is greater than 50 feet an additional sign as described in subparagraph 1 shall be posted at each road entrance to the lease.

3. Any lease producing or processing plant handling gas with H_2S concentration as described by (a)-(c) below shall install an automatic detection and warning device to prevent the undetected continuing escape of dangerous concentrations of H_2S. In addition, the operator shall prepare a contingency plan to be carried out should a substantial portion of the gas stream be released, or conditions exist which threaten control of the stream. The plan shall provide for notification of endangered parties as well as law enforcement personnel and institution of measures for closing in the flow of gas.

(a) The 100 ppm ROE is in excess of 50 feet and includes any part of a "public area" except a public road.

(b) The 500 ppm ROE is greater than 50 feet and includes any part of a public road.

✓ REG3.1/rule2

(c) The 100 ppm radius of exposure is greater than 3,000 feet.

D. The operator of a lease producing or gas processing plant handling hydrogen sulfide gas with a 100 ppm ROE greater than 50 feet shall take appropriate measures to inform persons having occasion to be on or near the property. Such measures may include, but are not limited to, training in the characteristics and dangers of H_2S, warning signs, fencing the more dangerous areas, provision of and requiring use of fresh air breathing equipment, monitoring and warning devices, wind direction indicators, and maintaining tanks, thief hatches and gaskets, valves and piping in condition so as to prevent avoidable loss of vapors. Where release of hydrogen sulfide is unavoidable, the operator, when feasible, shall burn the gas stream or vent from an elevated stack in such a manner as to avoid endangering human life.

E. Definitions. The following words and terms, when used in this section, shall have the following meanings, unless the context clearly indicates otherwise:

1. Public area: A dwelling, place of business, church, school, hospital, school bus stop, government building, a public road, all or any portion of a park, city, town, village, or other similar area that can expect to be populated.

Radius of Exposure (ROE) Determination:

100 ppm ROE = [(1.589)(mole fraction H_2S)(Q)] to the power of (0.6258)

500 ppm ROE = [(0.456)(mole fraction H_2S)(Q)] to the power of (0.6258)

Where: ROE = radius of exposure, feet
Q = maximum volume determined to be available for escape, cubic feet per day
H_2S = mole fraction of hydrogen sulfide in the gaseous mixture available for escape

New Mexico Oil Conservation Division Form _____

Operator: _____

Lease: _____

Pool: _____

Tester: _____

Test Method: _____

H_2S Concentration (ppm): _____

Maximum Available Gas Escape Rate (MSCFD): _____

REG3.1/rule3

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION UPON ITS OWN MOTION FOR THE ADOPTION OF A NEW RULE 118 TO PROVIDE FOR THE REGULATION OF HYDROGEN SULFIDE GAS IN SUCH A MANNER AS TO AVOID ENDANGERING HUMAN LIFE.

CASE NO. 9010
Order No. R-8363

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on October 23 and November 20, 1986, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 18th day of December, 1986, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS THAT:

(1) Due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) The Oil Conservation Division, hereinafter referred to as the "Division", proposes adoption of a new rule 118 in its rules and regulations of statewide application for the regulation of hydrogen sulfide (H_2S) gas to the end that human lives of the general public will not be endangered.

(3) A draft of the proposed rule was circulated as early as May 1986, and several times thereafter to various industry gatherings and was attached to the docket for the October 23 hearing which was posted to the general mailing list prior to said hearing.

(4) Several parties commented on said rules following testimony by the Division's witness at the first hearing, generally suggesting review of the rules by an industry committee.

(5) A volunteer committee was formed, met and redrafted the proposed rule, which redraft was presented at the November

20 hearing by the Division's witness who served as chairman of the volunteer industry committee.

(6) At the conclusion of the testimony, the Commission heard comments from interested parties and, in addition, because the redraft of the rule was not available to the audience until the hearing convened, agreed to receive written comments for a period of fourteen days following the adjournment of the hearing.

(7) Such period having lapsed and all such comments having been received and reviewed, the Commission considers notice and opportunity for comment to be adequate such that all interested parties have had opportunity to express contrary views or alternative language.

(8) Hydrogen sulfide gas is present in natural gas produced from oil and gas wells and processed in gas processing plants at various locations within the State.

(9) Hydrogen sulfide gas is a highly toxic and poisonous gas which can cause illness and death at concentrations less than one one-hundredth of one percent (.01%) and is perhaps doubly dangerous in that although the gas has an extremely foul odor similar to rotten eggs, it has the first effect on the human body of paralyzing the sense of smell.

(10) The presence of hydrogen sulfide gas in sufficient concentrations to constitute a threat to human life in numerous stages of producing, transporting, and processing of oil and gas in the state is sufficient reason to promulgate the proposed rule.

(11) Individual operators should determine and report to the Division the H_2S concentration in the various production and processing streams of the state so as to permit evaluation of the potential risks involved in the operations over the state and to take appropriate action to protect the members of the general public who may have occasion to venture into areas which are potentially dangerous due to such concentrations of the gas.

(12) Various industry-developed treatises have been published or are being developed which provide information and guidance to operators for appropriate precautions and measures which can and should be taken to protect human life and property where this gas is present. Among these are: API (American Petroleum Institute) RP-49 "Recommended Practices for Safe Drilling of Wells Containing Hydrogen Sulfide"; API RP-55 "Conducting Oil and Gas Production Operations Involving

Hydrogen Sulfide"; and API draft report "Land, Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide."

(13) The rules to be adopted should provide for guidance to operators and the minimal requirements necessary to accomplish the desired protection of the public without unreasonable expense or burden on the operator.

(14) Because the danger from H_2S increases with both the concentrations and rate of release to the atmosphere a step-wise approach to appropriate safeguard measures is essential to achieve the results described hereinabove.

(15) Reasonable time should be provided after the effective date of the rule for the gathering of data and the implementation of the proposed rules by installing signs and other required safeguards and the training of personnel.

(16) A form should be adopted for the reporting of H_2S data required under the proposed rule.

(17) The proposed rule, attached hereto as Exhibit "A", will serve to protect human life in areas where the general public may be at risk should they have occasion to venture into areas where dangerous volumes and concentrations of H_2S exist, and said rules should be adopted.

(18) The Director of the Division should be authorized to grant exceptions to the proposed rule for good cause shown when such exception will not result in a threat to human life.

(19) The proposed rule should be promulgated as of January 1, 1987.

IT IS THEREFORE ORDERED THAT:

(1) New Division Rule 118, as shown on Exhibit "A" attached to this order, is hereby adopted effective January 1, 1987.

(2) The reports required by Section D of said rule should be submitted on the form, attached to this order as Exhibit "B".

(3) Jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JIM BACA, Member

ED KELLEY, Member

R. L. STAMETS,
Chairman and Secretary

S E A L

RULE 118 - HYDROGEN SULFIDE GAS - PUBLIC SAFETY

A. The intent of this rule is to provide for the protection of the public's safety in areas where hydrogen sulfide (H_2S) gas in concentrations greater than 100 parts per million (PPM) may be encountered.

B. Producing operations should be conducted with due consideration and guidance from American Petroleum Institute (API) publication "Conducting Oil and Gas Production Operations Involving Hydrogen Sulfide" (RP-55). The operator of a lease producing, or a gas processing plant handling, or any other related facility where H_2S gas is present in concentrations of 100 PPM or more shall take reasonable measures to forewarn and safeguard persons having occasion to be on or near the property. In addition to training operator's employees in H_2S safety such measures may include, but are not necessarily limited to, posting of warning signs, fencing of surface installations, installation of safety devices and wind direction indicators, and maintaining tanks, thief hatches and gaskets, valves and piping in condition so as to prevent avoidable loss of vapors. Where release of hydrogen sulfide is unavoidable, the operator shall burn or vent the gas stream in such a manner as to avoid endangering human life.

C. Wells drilled in known H_2S gas producing areas, or where there is substantial probability of encountering H_2S gas in concentrations of 100 PPM or more, should be planned and drilled with due regard to and guidance from API RP-49 "Recommended Practices for Safe Drilling of Wells Containing Hydrogen Sulfide", latest edition. Wells completed and serviced by well servicing units where there is substantial probability of encountering H_2S gas in concentrations of 100 PPM or more should be worked on with due regard to the latest industry accepted practices. These practices may include, but are not necessarily limited to, the proper training of personnel in H_2S safety and the use of H_2S safety equipment as listed for safe operations by the American Petroleum Institute draft report for "Land, Oil and Gas Well Servicing and Workover Operations Involving Hydrogen Sulfide."*

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EXHIBIT "A"

D. Within ninety (90) days after completion of the first well on a lease, or within ninety (90) days after H_2S is discovered in a gas stream, each operator shall submit in writing to the Division's district office having jurisdiction, on a form acceptable to the Division, for each lease in each pool in production at that time, the H_2S concentration from an analysis of a representative sample of the gas stream. The analysis shall be performed by an industry-recognized method and procedure. The measurement report shall specify the name of the operator, lease or facility name, pool, testing point, tester, test method, and the measured H_2S concentration. Tests within the past three (3) years and which are still representative may be utilized for submittal from previously producing leases. NOTE: Owners or operators of existing wells and facilities shall have until July 1, 1987, to come into compliance with this paragraph of these rules.

E. 1. Any well, lease, processing plant or related facility handling H_2S gas with a concentration of 500 PPM (0.05%) or more shall have a warning sign at the entrance. The sign, as a minimum, shall be legible from at least fifty (50) feet, and contain the words "poison gas." The use of existing signs will meet the requirements of this section providing they convey the intended safety message.

E. 2. Any lease producing gas or related facility having storage tanks containing gas with a H_2S concentration of 1,000 PPM (0.1%) or more shall have, in addition to the sign required in subparagraph E.1., a sign at the foot of the battery stairway that shall accomplish the requirements of E.1., plus specify any protective measures that may be necessary. This paragraph does not apply to gas processing plants.

E.3. Any well, lease or processing plant handling gas with H_2S concentration and volume such that the H_2S fraction equates to 10 MCF per day or more of H_2S and which is located within one-fourth (1/4) mile of a dwelling, public place or highway shall install safety devices and maintain them in operable condition or shall establish safety procedures designed to prevent the undetected continuing escape of H_2S. Wind direction indicators shall be installed at at least one strategic location at or near the site and shall be readily visible throughout the site. Also, unattended surface facilities or plants within one-fourth (1/4) mile of a dwelling or public meeting place shall be protected from public access by fencing and locking, or other equivalent security means. In addition, the operator shall prepare a contingency plan to be carried out should the public be threatened by a release. The

plan shall provide for notification of endangered parties, as well as public safety personnel, for evacuation of threatened parties as warranted, and institution of measures for closing in the flow of gas. Contingency plans shall be available for Division inspection and shall be retained at the location which lends itself best to activation of any such plan. The operator, as an alternative, may utilize Figure 4.1 of API (RP-55) Revised March, 1983 and if the 100 PPM radius of exposure includes a dwelling, public place or highway, the operator must meet the public safety requirements as specified in this section.

E.4. The provisions of this section shall be applicable within 30 days after the filing of sample data showing the existence and concentration of H_2S gas described in Paragraphs E.1. through E.3. above. In unusual circumstances guidance on placement and content of signs may be obtained from the supervisor of the appropriate Division District Office.

F. The Director of the Division may administratively grant exceptions or extensions to the requirements of this rule for good cause shown and where such exception will not result in a threat to human life.

*At such time as the American Petroleum Institute adopts the "Recommended Practice for Land Oil and Gas Well Servicing and Workover Operations on Involving Hydrogen Sulfide", it shall take the place of any previous draft reports.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION
H_2S REPORTING FORM
DIVISION RULE 118

OPERATOR: _____

ADDRESS: _____

_____

_____
(Pool, Plant, or Facility Name)

Lease, Plant or Facility	Well No.	Sampling Point (Tank, Separator, etc.)	Location USTR	Name of Tester	Test Method	Test Date	H_2S Concentration (Report in PPM) Vol. if available

Signed: _____

Title: _____

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EXHIBIT "6"