OFFICE OF GENERAL COUNSEL

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OIL AND GAS DOCKET NO. 8A-0226191

THE APPLICATION OF OCCIDENTAL PERMIAN FOR AUTHORITY PURSUANT TO STATEWIDE RULE 36 TO INJECT HYDROGEN SULPHIDE GAS ON ITS CENTRAL MALLET AND NORTHWEST MALLET UNITS, SLAUGHTER FIELD, HOCKLEY COUNTY, TEXAS

HEARD BY: Thomas H. Richter, P.E., Technical Examiner
Mark Helmueller, Hearings Examiner

APPLICANT:	**REPRESENTING:**
John Soule, attorney	Occidental Permian
Rick Foppiano	
Mike Honnert	
PROTESTANT:	
Don Graf, attorney	CH Foundation & Helen Jones Foundation

PROCEDURAL HISTORY

Date of Application:	September 21, 2000
Date of Notice:	September 28, 2000
Date of Hearing:	December 7, 2000
Date of Transcript:	January 5, 2001

EXAMINERS' REPORT AND PROPOSAL FOR DECISION
STATEMENT OF THE CASE

Occidental Permian ("Oxy" or "applicant") seeks authority pursuant to Statewide Rule 36(c)(10)(A) to reinject produced H_2S-CO_2 (hydrogen sulphide-carbon dioxide) gas into existing WAG (water alternating gas) secondary recovery injection wells on its Central Mallet Unit and a portion of its adjacent Northwest Mallet Unit. Producing wells from the unit produce gas and oil containing H_2S. The CH Foundation & Helen Jones Foundation ("the Foundations" or "protestant"),

owners of a large portion of the surface of the two units, are opposed to the application because of fears of increased safety risks.

DISCUSSION OF THE EVIDENCE

APPLICANT'S EVIDENCE

The Slaughter Field was discovered in 1937. Secondary recovery by waterflooding commenced in the 1960's. Tertiary recovery using CO_2 on the Central Mallet Unit commenced in December 1984 and on the northwest Mallet Unit in 1992. Currently there are four H_2S gas injection operations in the Slaughter Field area. Prior to the commencement of CO_2 injection on the subject units, the H_2S concentration was 4% in the native gas. With the injection of the CO_2, the H_2S concentration has been diluted to now 0.4%.

The Mallet CO_2 Removal Plant is located just north of the Slaughter Gasoline Plant (both manned 24 hours a day) on the Central Mallet Unit. The CO_2 plant removes CO_2 as well as other contaminates from the produced gas and returns essentially pure CO_2 to the field for reinjection and the Slaughter Gasoline Plant recovers the liquids. Inlet into the CO_2 plant is 151 MMCFD [1] of which 90% is CO_2 and 0.5% is H_2S. The outlet gas is 96 MMCFD of sweetened CO_2 which is returned to the respective properties for reinjection. Approximately 11 MMCFD methane/29%H_2S goes to the Slaughter Gasoline Plant for sulphur and liquid removal. The remaining 43 MMCFD of "sour CO_2" in piped to the Oxy Anton Irish Field 35 miles to the northeast through a 30"pipeline. Oxy now seeks to commence reinjecting a portion of this "sour CO_2" into its WAG wells on the Central Mallet Unit and a portion of the bordering Northwest Mallet Unit. The H_2S concentration varies between 0.3% to 0.7% from the plant outlet. For calculation purposes, one percent H_2S is used.

Currently there are 134 injection wells on the Central Mallet Unit and six wells on the Northwest Mallet Unit permitted for sweet CO_2, water and hydrocarbon gas injection. Oxy seeks to add H_2S to the fluids to be injected.[2] Commission administrative approval of the Rule 46 amended applications is dependent on the results of this hearing. The Commission District Office, in its letter dated November 17, 2000, states that the Certificate of Compliance Statewide Rule 36 (Form H-9) and the contingency plan for the Central Mallet Unit and the Northwest Mallet Unit have been reviewed and approved for the proposed injection that includes H_2S. The Commission District office performed a physical inspection of the units and the facilities. The approved H-9 shows an H_2S concentration of 10,000 ppm (parts per million), a maximum escape volume of 60,000 MCFD, a 100 ppm radius of exposure (ROE) of 5,519' and a 500 ppm ROE of 2,522'. It should be noted that

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[1] Inlet gas comes from the Oxy Cedar Lake Unit, Exxon-Mobil Units and from a Texaco lease.

[2] The injection well applications (Form H-1 and Form H-1A) were filed in July 2000 and no protest was filed.

the average rate of injection during 1999 was 38,500 MCFD.

The units are traversed by several public roads: FM 301, FM 1585, Wildcat Road, Wrangler Road, Samson Post Road, Tumbleweed Road and Mobil Road. There are other lease roads throughout the units. The units are located in a remote ranch land area. The biggest user of these "public roads" are oil field related personnel. The Department of Public Safety, Sheriff's office and emergency response offices have all been briefed on the current application and are aware of the H_2S operations in this entire area over many years. There are no "public areas" as defined by Statewide Rule 36 within the 100 ppm ROE. The unit's surface is cattle ranch land. Oxy has met with the Mallet Ranch Foreman, Mr. Carter Williams, on numerous occasions over the years concerning Rule 36 safety aspects and H_2S education. The phone numbers of all contact personal are listed in the contingency plan.

The various maximum volume escape rates were based on the tubulars at any given point i.e., production string casing, tubing, reservoir flow rate, line pipe etc. The section which would allow the greatest flow rate is the 2,000 feet long 12" outlet line from the CO_2 Removal Plant to the distribution line junction. Pointedly, this ROE area is already covered by the approved H-9 for the Gas Plant. There are block valves off each lateral from a distribution line and at junctions of pipe size changes. The main distribution line through the unit has 3 automatic low pressure shut down valves (fail closed). Normal line pressure is 2,500 psig and 10% decrease (250 psig) will cause the system segment to close. There are also check valves in the line systems to prevent back flow. Each injection well is set up with a radio telemetry system which sends data every minute to the central computer system which is monitored 24 hour a day. The system measures pressures, flow rates (gas or fluid), temperature, and valve settings. The motor control valves are set to "fail" closed in the event of power failure. Each injection well is equipped with back check valves, a blow down vent stack, hi-lo pressure monitoring shut down and hi-lo rate shut down. The telemetry system can also shut a well in from a remote location.

All wellhead equipment and tubulars are H_2S classified as the area has been producing H_2S hydrocarbons since field discovery. Security and sign provisions pursuant to Statewide Rule 36 are in place.

Notice of hearing of this application was published in the *Levelland & Hockley County News-Press*, a semi-weekly newspaper of general circulation in Hockley County for four consecutive weeks on October 1, 8, 15, 22, 2000. Notice of hearing was also furnished to: the County Clerk of Hockley County, Texaco E&P, MG Hicks Oil Company, Mallet Ranch, Sundown City Clerk, ExxonMobil, Scythian LTD, Devon Energy, Kerr-McGee Corp., Sundown Police Dept., Hockley County Sheriff Dept., Sundown EMS and Sundown Fire Dept.

PROTESTANT'S EVIDENCE

The Foundations protest this application out of concern that the operations would result in

an additional safety burden and an increase in potential liability if a surface user were injured.[3] The Foundations want Oxy to agree to defend and indemnify them for the additional potential liability. Protestants' claim that an additional 10 to 20 miles of pipeline would now transport H2S gas. Additionally, Protestants were concerned that response times in the event of an incident would be greater.

EXAMINERS' OPINION

The examiners' recommend the application be approved. The application is in compliance pursuant to Statewide Rule 36(c)(10)(A)(ii) and the other relevant provisions of the rule.

FINDINGS OF FACT

1. Statewide Rule 36 requires that all injection applications concerning hydrogen sulphide be presented at a public hearing. Notice of hearing of this application was published in the *Levelland & Hockley County News-Press*, a semi-weekly newspaper of general circulation in Hockley County for four consecutive weeks on October 1, 8, 15, 22, 2000. Notice of hearing was also furnished to: the County Clerk of Hockley County, Texaco E&P, MG Hicks Oil Company, Mallet Ranch, Sundown City Clerk, ExxonMobil, Scythian LTD, Devon Energy, Kerr-McGee Corp., Sundown Police Dept., Hockley County Sheriff Dept., Sundown EMS and Sundown Fire Dept.

2. The Slaughter Field was discovered in 1937 and produces hydrocarbons containing hydrogen sulphide (H_2S). Secondary recovery by waterflooding commenced in the 1960's.

    a. Tertiary recovery using water and CO_2 (WAG) on the Occidental Permian (Oxy), Central Mallet Unit commenced in December 1984 and on the Northwest Mallet Unit in 1992.

    b. Currently there are four H_2S gas injection operations in the Slaughter Field area.

3. Occidental Permian proposes combining produced H_2S gas with the sweet CO_2 for gas re-injection purposes.

    a. Currently there are 134 injection wells on the Central Mallet Unit and six wells on

[3]At the hearing, Protestants expressed concern that not all potentially affected individuals received notice of the injection well applications filed in July 2000. Protestants provided no evidence that any required party did not receive notice of the injection well applications prior to their approval by the Commission. Additionally, Protestants did not assert that they or any other person had not received proper notice of the pending application.

the Northwest Mallet Unit permitted for sweet CO_2, water and hydrocarbon gas injection.

b. The Mallet CO_2 Removal Plant removes CO_2 as well as other contaminates from the produced gas and returns essentially pure CO_2 to the field for reinjection.

c. Inlet into the CO_2 plant is 151 MMCFD of which 90% is CO2 and 0.5% is H_2S. The outlet gas is 96 MMCFD of sweetened CO_2.

d. The remaining 43 MMCFD of "sour CO_2" in piped to the Oxy Anton Irish Field 35 miles to the northeast through a 30"pipeline. The volume of H_2S-CO_2 needed in the Anton Irish Field has decreased.

e. The H_2S concentration varies between 0.3% to 0.7% from the plant outlet. For calculation purposes, one percent H_2S is used.

4. The Commission District Office has reviewed and approved the Certificate of Compliance Statewide Rule 36 (Form H-9) and the contingency plan for the Central Mallet Unit and the Northwest Mallet Unit for the proposed injection that includes H_2S.

a. The Commission District office performed a physical inspection of the units and the facilities for Rule 36 compliance.

b. The Commission District Office approved Form H-9 (Certificate of Compliance) shows an H_2S concentration of 10,000 ppm (parts per million), a maximum escape volume of 60,000 MCFD, a 100 ppm radius of exposure (ROE) of 5,519' and a 500 ppm ROE of 2,522'.

c. The calculated ROE's resulting from the additional H_2S into injection wells and the injection transfer lines essentially does not increase the ROE's that are currently in-place for the existing production facilities on the units.

5. There are no "public areas" as defined by Statewide Rule 36 within the 100 ppm ROE.

6. There are "public roads" traversing through the units that encounter the 500 ppm ROE.

a. The units are located in a remote ranch land area. The biggest user of these "public roads" are oil field related personnel.

b. The various maximum volume escape rates were based on the tubulars at any given point i.e., production string casing, tubing, reservoir flow rate, line pipe etc.

7. Oxy has in-place and proposes emergency/safety systems for all injection processes that are

designed to prevent or detect an accidental release of H_2S gas.

a. Automatic Valves and motor valves are designed to "fail" to a closed/shut-in position. There is instrumentation that monitors pressure changes and flow rate changes and has the ability to shut-in segments of the injection system.

b. There are block valves off each lateral from a distribution line and at junctions of pipe size changes.

c. The main distribution line through the unit has 3 automatic low pressure shut down valves (fail closed).

d. There are check valves in the line systems to prevent back flow.

e. Each injection well is set up with a radio telemetry system which send data every minute to the central computer system which is monitored 24 hour a day. The system measures pressures, flow rates (gas or fluid), temperature, and valve settings.

f. Each injection well is equipped with back check valves, a blow down vent stack, hi-lo pressure monitoring shut down and hi-lo rate shut down. The telemetry system can shut the well in from a remote location such as from a lease operators home.

g. The gas plant is manned 24 hours a day.

8. All training, security and sign provisions of Rule 36 have been or will be complied with.

9. The contingency plan contains the names and phone numbers of all law enforcement agencies and emergency services.

10. All tubulars and other metal components which will come into contact with H_2S meet NACE standards.

CONCLUSIONS OF LAW

1. Proper notice was timely given to all parties entitled to noticed pursuant to applicable statutes and rules.

2. All things have occurred and have been accomplished to give the Commission jurisdiction in this case.

3. Occidental Permian has complied with the safety provisions of Statewide Rule 36.

EXAMINERS' RECOMMENDATION

The examiners recommend that the application of Occidental Permian to inject gas containing hydrogen sulphide into the Central Mallet and Northwest Mallet Units, Slaughter Field be approved.

Respectfully submitted,

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