OIL AND GAS DOCKET NO. 01-0222516

THE APPLICATION OF YATES ENERGY CORPORATION TO CONSIDER APPROVAL OF HYDROGEN SULFIDE GAS INJECTION, PURSUANT TO STATEWIDE RULE 36 FOR THE H. F. BORCHERS LEASE, WELL NO. 1, DUBOSE (EDWARDS -A-) FIELD, GONZALES COUNTY, TEXAS

Heard by: Donna K. Chandler, Technical Examiner

Hearing Date: October 1, 1999

Appearances:	**Representing:**
Brian Sullivan	Yates Energy Corporation
Thane Akins	

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Yates Energy Corp. requests authority pursuant to Rule 36 to inject hydrogen sulfide gas into a non-productive interval in its H. F. Borchers No. 1 in Gonzales County. Yates will also inject carbon dioxide and will continue to inject salt water into the same non-productive interval in the well. The disposal interval is the Upper Sparta at approximately 2,100 feet. The Upper Sparta does not naturally contain hydrogen sulfide. Yates requests that a new field designation be approved for the Borchers No. 1 which clearly identifies it as a hydrogen sulfide bearing field.

This application was unprotested and the examiner recommends approval.

DISCUSSION OF THE EVIDENCE

The H. F. Borchers No. 1 was drilled in 1968 to a total depth of 2,500. The well has 5 1/2" casing cemented from total depth to surface. This well was drilled by Superior Oil Company for the purpose of disposing of produced salt water, which contains hydrogen sulfide, into the Upper Sparta. The Upper Sparta is a non-productive interval and the permitted disposal zone is 2,100-2,500 feet. Over 2 million barrels of water have been injected into this interval.

Yates Energy Corporation operates all of the producing gas wells in the field. As of September 1, 1999, nine producing gas wells are on the Commission's proration schedule in this field. Currently, produced gas is processed by the gathering company to remove hydrogen sulfide and carbon dioxide. Yates plans to install an amine sweetening facility at the Borchers No. 1 to

reduce costs of processing the gas. The waste gas (hydrogen sulfide and carbon dioxide) will be disposed of in the Borchers No. 1 along with the produced water from the wells.

Yates estimates that remaining reserves as a result of processing the gas itself will be increased by 2.5 BCF, to 22.5 BCF, due to economics. The hydrogen sulfide volume in the 22.5 BCF is 206 MMCF, based on 9,100 ppm concentration in the produced gas. The carbon dioxide volume in the 22.5 BCF is 1,594 MMCF, based on 70,000 ppm concentration in the produced gas.

The Upper Sparta disposal interval is 278 feet thick and has average porosity of 15.3%. It is estimated that the injection of 18.7 MMCF of waste gas (hydrogen sulfide and carbon dioxide) will affect an area of 15.7 acres, or a radial distance of 466 feet. For the hydrogen sulfide gas only, the radial distance is only 158 feet. The distance to the nearest lease line is 569 feet.

The injected fluids will be confined to the disposal interval. The Upper Sparta zone is separated from the deeper Wilcox sands by 17,700-1,800 feet of shale. There is approximately 100 feet of shale overlying the Upper Sparta. Injection will be through 2 7/8" tubing set on a packer at 2,047 feet. Yates plans to inject a maximum of 1,000 MCF of waste gas per day.

The 100 ppm radius of exposure is 1,150 feet and the 500 ppm radius of exposure is 560 feet. These radii do not include any public area or any public road.

EXAMINER'S OPINION

The examiners recommend approval of this application. The Commission's Compliance Section requested that two issues be addressed at the hearing. Compliance is concerned that other operators may unexpectedly encounter hydrogen sulfide when drilling to the Wilcox in this area. Compliance suggests that, because the proposed injection of hydrogen sulfide gas is into a non-hydrogen sulfide bearing formation, the applicant must demonstrate that the radial influence of the disposal operation will not extend beyond the lease boundaries. Applicant has shown that the injection of 18.7 MMCF of waste gas (hydrogen sulfide and carbon dioxide) will affect an area of 15.7 acres, or a radial distance of 466 feet. The distance to the nearest lease line is 569 feet.

Second, Compliance suggests that a special field designation be approved for the disposal well to identify the non-productive zone proposed for disposal as a field containing hydrogen sulfide. This procedure has been followed in a prior Commission docket. The examiner suggests a new field designation of Dubose (Up.Sparta H_2S Disposal) Field be approved and that the Borchers No. 1 be transferred into this new field.

FINDINGS OF FACT

1. Notice was issued to all affected persons at least ten (10) days prior to the date of the hearing.

2. The H. F. Borchers No. 1 was drilled in 1968 to a total depth of 2,500 and has been a disposal well since that time.

   a. The well is used for disposal of produced salt water, which contains hydrogen sulfide, into the Upper Sparta between 2,100-2,500 feet. The Upper Sparta is a non-productive interval.

   b. Over 2 million barrels of water have been injected into the Upper Sparta interval.

   c. The well has 5 1/2" casing cemented from total depth to surface.

3. The Dubose (Edwards -A-) Field is an associated gas field. Yates Energy Corporation operates all nine of the producing gas wells in the field. There is one producing oil well in the field.

4. Currently, produced gas is processed by the gathering company to remove hydrogen sulfide and carbon dioxide.

5. Processing and disposal of waste gas by Yates will increase ultimate recovery from the field by 2.5 BCF of gas as a result of decreased costs to Yates.

6. The hydrogen sulfide volume in the remaining 22.5 BCF of gas is 206 MMCF, based on 9,100 ppm concentration in the produced gas. The carbon dioxide volume in the 22.5 BCF is 1,594 MMCF, based on 70,000 ppm concentration in the produced gas.

7. The injection of 18.7 MMCF of waste gas (hydrogen sulfide and carbon dioxide) will affect an area of 15.7 acres, or a radial distance of 466 feet. For the hydrogen sulfide gas only, the radial distance is only 158 feet. The distance to the nearest lease line is 569 feet.

8. The injected fluids will be confined to the disposal interval between 2,100 and 2,500 feet.

   a. The Upper Sparta zone is separated from the deeper Wilcox sands by 1,700-1,800 feet of shale.

b. The Upper Sparta is separated by overlying sands by approximately 100 feet of shale.

c. Injection will be through 2 7/8" tubing set on a packer at 2,047 feet.

9. The calculated 100 ppm radius of exposure is 1,150 feet and the 500 ppm radius of exposure is 560 feet. These radii do not include any public area or any public road.

10. Approval of a new field designation for the H. F. Borchers No. 1 will indicate to other operators that hydrogen sulfide may be encountered when drilling to the Wilcox in this area.

CONCLUSIONS OF LAW

1. Proper notice was timely issued to all persons legally entitled to notice.

2. All things have been accomplished to give the Commission jurisdiction in this matter.

3. Yates Energy Corporation's application for injection of fluid containing hydrogen sulfide meets the requirements of Rule 36.

EXAMINER'S RECOMMENDATION

Based on the above findings and conclusions of law, the examiner recommends approval of a new field designation for the H. F. Borchers No. 1 and transfer of the H. F. Borchers No. 1 from the Dubose (Edwards -A-) Field to the Dubose (Up.Sparta H2S Disposal) Field. It is further recommended that Yates Energy Corporation's application for authority pursuant to Rule 36 be approved.

Respectfully submitted,

Donna K. Chandler
Technical Examiner