

**APPLICATION OF O' RYAN OIL AND GAS TO AMEND PERMIT NO. F-15381 TO ALLOW DISPOSAL OF OIL AND GAS WASTE CONTAINING HYDROGEN SULFIDE GAS INTO A FORMATION PRODUCTIVE OF OIL AND GAS AND FOR AUTHORIZATION PURSUANT TO STATEWIDE RULE 36 TO INJECT FLUIDS CONTAINING HYDROGEN SULFIDE IN THE BURNETT-SLOAN UNIT WELL NO. B2 IN THE TROOPER (SMACKOVER) FIELD, NAVARRO COUNTY, TEXAS**

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**HEARD BY:** Andres J. Trevino, P.E., Technical Examiner

**DATE OF HEARING:** October 7, 2010

**APPEARANCES:**

**REPRESENTING:**

Flip Whitworth  
Kerry Pollard

O' Ryan Oil and Gas

**EXAMINERS' REPORT AND RECOMMENDATION**

**STATEMENT OF THE CASE**

O' Ryan Oil and Gas ("O' Ryan ") requests authority pursuant to Statewide Rule 36 to inject fluids containing hydrogen sulfide (H<sub>2</sub>S) in its Burnett-Sloan Unit Well No. B2 in the Trooper (Smackover) Field in Navarro County. Statewide Rule 36(c)(10)(A)(i) states that injection of fluids containing hydrogen sulfide will be allowed only after public hearing when "... injection fluid is a gaseous mixture, or would be a gaseous mixture in the event of a release to the atmosphere, and where the 100 ppm radius of exposure is in excess of 50 feet and includes any part of a public area except a public road; or, if the 500 ppm radius of exposure is in excess of 50 feet and includes any part of a public road; or if the 100 ppm radius of exposure is 3,000 feet or greater."

O' Ryan's unprotested application pursuant to Rule 46 will be administratively approved by Technical Permitting upon approval of this Rule 36 application. This Rule 36 application was unprotested and the examiner recommends approval.

**DISCUSSION OF THE EVIDENCE**

O' Ryan seeks to amend an existing disposal Permit No. F-15381 to add an additional well to dispose gas containing hydrogen sulfide gas. O'Ryan has authority under its existing disposal Permit No. F-15381 issued on March 22, 2006 to inject gas containing H<sub>2</sub>S into the Burnett-Sloan Unit Well No. 1. The Trooper (Smackover) Field was discovered

in 1985. Cumulative production from the field is over 1.65 MMBO from primarily two production wells. H<sub>2</sub>S content of the gas produced from the field is about 4 to 7%.

O’Ryan is in the process of building a gas plant to service several leases in the area operated by O’Ryan. The leases include the Burnett-Sloan Unit in the Trooper (Smackover) Field, the Sloan “D” lease in the Big “R” (Smackover) Field and the Hulan Yarber (Smackover) Unit in the Tynes (Smackover) Field. The plant will remove the hydrogen sulfide, carbon dioxide and nitrogen from produced gas. The gas will be sold for the first time in each fields’ history.

The Burnett-Sloan Unit Well No. B2 was drilled as a second producer in the field. The well had limited commercial production as it was drilled lower in the structure and near the oil/water contact. The well was completed in the Trooper (Smackover) Field with perforations between 9,294 feet and 9,410 feet. The other producing well in the field is Burnett-Sloan Unit Well No. H1, also operated by O’ Ryan.

O’ Ryan plans to inject a mixture of 46.3% H<sub>2</sub>S and 46.5% carbon dioxide (CO<sub>2</sub>) into the Burnett-Sloan Unit Well No. B2, between the depths of 9,294 feet and 9,410 feet, which includes the entire Smackover formation. This proposed injection will allow the Burnett-Sloan Unit Well No. B1 to be brought back on production, increasing recovery from the field.

O’ Ryan plans to inject a maximum of 1,550 MCFD of H<sub>2</sub>S and CO<sub>2</sub>, with a maximum surface injection pressure of 4,500 psig. It is estimated that the average daily injection volume will be 1,400 MCFD.

The Burnett-Sloan Unit Well No. B2 has 2,210 feet of 9 5/8” surface casing cemented to surface. The well has 5 1/2” production casing set at 9,450 feet, with top of cement at 6,400 feet, per a cement bond log. The well has 2 7/8” tubing on a packer set at 9,200 feet. The Texas Commission on Environmental Quality recommends that usable quality water be protected to a depth of 100 feet.

The radii of exposure was calculated assuming a worst case scenario of an injection wellhead blowout. The 500 part per million (ppm) radius of exposure (ROE) for the subject well is 825 feet and the 100 ppm ROE is 2,020 feet. These calculations are based on the CANARY model by Quest Consultants Inc. and assume 46.3% H<sub>2</sub>S concentration and a maximum escape volume of 11,700 MCFD. The 500 and 100 ppm ROE do not include any public roads, residences or businesses. The contingency plan has been reviewed by the Commission's District Office.

The proposed injection well is designed to meet all safety requirements of Rule 36. The well will have an automated H<sub>2</sub>S detection system. The equipment will have sensing points located at the wellhead, separators and location perimeter. The system will shut in the well at 15 ppm and will activate an automatic phone dialer to alert O’Ryan designated

employee of the condition. All tubular and metal components that come in contact with H<sub>2</sub>S will meet NACE standards.

### FINDINGS OF FACT

1. Notice of this hearing was given to all persons entitled to notice at least ten (10) days prior to the subject hearing. Notice of this hearing was published in *The Corsicana Daily Sun*, a newspaper of general circulation in Navarro County, for four consecutive weeks, beginning April 14, 2010.
2. The Trooper (Smackover) Field was discovered in 1985 and cumulative production from the field is over 1.65 MMBO.
3. O’Ryan has authority under its existing disposal Permit No. F-15381 issued on March 22, 2006 to inject gas containing H<sub>2</sub>S into the Burnett-Sloan Unit Well No. 1.
4. The Burnett-Sloan Unit Well No. B2 was drilled as a second producing well but had limited commercial production as it was drilled lower in the structure and near the oil/water contact.
5. O’Ryan will build a gas plant to remove hydrogen sulfide, carbon dioxide and nitrogen from several leases in the Trooper (Smackover) Field, the Big “R” (Smackover) Field and the Tynes (Smackover) Field. O’Ryan will sell the remaining produced gas for the first time.
6. The Burnett-Sloan Unit Well No. B2 is completed in a manner which will prevent migration of injected fluids.
  - a. The Texas Commission on Environmental Quality recommends that usable quality water be protected to a depth of 100 feet.
  - b. The well has 2,210 feet of 9 5/8” surface casing cemented to surface.
  - c. The well has 5 1/2” production casing set at 9,450 feet, with top of cement at 6,400 feet, per a cement bond log.
  - d. The well has 2 7/8” tubing on a packer set at 9,200 feet.
  - e. The proposed injection interval is from 9,294 feet to 9,410 feet.
7. The 500 part per million (ppm) radius of exposure (ROE) for the subject well is 825 feet and the 100 ppm ROE is 2,020 feet. The radii of exposure are calculated based on worst case scenario of a injection wellhead blowout with

maximum escape volumes and hydrogen sulfide concentrations. There are no public roads, residences or businesses within the 500 and 100 ppm ROE.

8. Use of the subject well to dispose of H<sub>2</sub>S gas will result in the recovery of additional hydrocarbons as the Burnett-Sloan Unit Well No. B1 will be brought back into oil production and will sale natural gas previously injected back into the Smackover formation.
9. The proposed injection meets the safety requirements of Rule 36 regarding warning and marker provisions, security provisions and materials and equipment.
10. The Contingency Plan is being reviewed by the Commission's District Office.

#### **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. O' Ryan Oil and Gas has complied with the safety provisions of Statewide Rule 36 for injection of fluid containing hydrogen sulfide.

#### **EXAMINERS' RECOMMENDATION**

The examiner recommends approval of the application of O' Ryan Oil and Gas to inject fluid containing hydrogen sulfide into the Burnett-Sloan Unit Well No. B2 in the Trooper (Smackover) Field, Navarro County.

Respectfully submitted,

Andres J. Trevino  
Technical Examiner