

July 19, 1996

**OIL AND GAS DOCKET NO. 05-0211806**

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**APPLICATION OF SONAT EXPLORATION COMPANY-TYLER TO CONSIDER  
EXCEPTION TO STATEWIDE RULE 38, REED (HAYNESVILLE) FIELD, FREESTONE  
COUNTY, TEXAS**

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**HEARD BY:** Thomas H. Richter, P.E., Technical Examiner, Legal Division  
Colin Lineberry, Hearings Examiner, Legal Division

**APPEARANCES:**

George C. Neale, Attorney  
Jay Hightower  
Rex Morris  
Mike Bellar

**REPRESENTING:**

Sonat Exploration Co.-Tyler

**PROTESTANT:**

Lloyd A. Muennink, Attorney

George R. Brown Partnership

**PROCEDURAL HISTORY**

|                      |                |
|----------------------|----------------|
| Date of Application: | March 14, 1996 |
| Date of Notice:      | March 29, 1996 |
| Date of Hearing:     | April 25, 1996 |
| Date of Transcript:  | April 29, 1996 |
| PFD Issued:          | July 19, 1996  |

**EXAMINER'S REPORT AND PROPOSAL FOR DECISION**

**STATEMENT OF THE CASE**

This is the application of Sonat Exploration Company-Tyler ("Sonat") for an exception to Statewide Rule 38 to drill its Reed Gas Unit No. 4 Well No. 4 in the Reed (Haynesville) Field based on confiscation. The subject well will be the fourth well on the unit. The application is protested by George R. Brown Partnership ("Brown").

### DISCUSSION OF THE EVIDENCE

The Reed (Haynesville) Field was discovered in June 1967 at 11,837' subsurface depth. Special field rules adopted by Order No. 5-68,377, effective March 13, 1978 provide for minimum well spacing of 660'/1,320' (lease line/between well), 640 acre gas proration units and optional 320 acre density and an allocation formula based on 100% acreage. The field is classified as a non-associated prorated gas field. Sonat seeks a Rule 38 exception to drill its Reed GU #4 Well No. 4 ("subject well") on its 682.67 acre tract. Currently there are two existing producing wells on the tract: Reed GU No. 4 Wells No. 1 and 2. A third well on the tract, the Reed GU No. 4 Well No. 3 is in the final stages of completion with a provision the No. 3 well cannot be produced concurrently with Well No. 1. Sonat stated that Well No. 1 will be recompleted to another zone upon first production from Well No. 3. The subject well will be a regular location with respect to lease lines and between well spacing.

Production from the field is from Cotton Valley Lime which is in the Haynesville Formation. Structure does not play a major role in locating wells in the field. The major controlling factor for production is adequate porosity development. The subject well is located in the north-central area of the subject tract. The location was chosen based on an area that would be unaffected by wells on lease or off-lease.

Volumetric analysis indicates that the original gas-in-place underlying the subject tract was 24.7 BCF based on an initial reservoir pressure of 7,093 PSI. The recoverable gas-in-place is calculated to be 20.9 BCF using a recovery factor of 85% based on an abandonment pressure of 900 PSI. Estimated ultimate recovery from the two existing wells is 10.68 BCF of gas. Well No. 3 will recover an estimated 3.44 BCF of gas based on volumetric analysis using an initial bottomhole pressure of 6,332 PSI (derived from a formation pressure test run on the well). The total estimated ultimate recovery from the three wells is 14.12 BCF of gas. The remaining 6.7 BCF of recoverable reserves cannot be produced by the existing three wells. Sonat believes that there could possibly be some drainage from offset wells (initial BHP of Well 4-1 was 7,093 PSI and the recent BHP of the newly completed Well 4-3 is 6,332 PSI). This is approximately a 10% pressure depletion. Thus the current recoverable gas-in-place is 6.09 BCF of gas (6.7 BCF less 10%).

The three wells on the Reed GU No. 4 will drain 524 of the 682.67 acres which leaves 159 acres. An investigation of ultimate recoveries and drainage areas of the subject tract and the offsetting leases estimates average ultimate recoveries of 4.368 BCF of gas per well (ranging from .6 BCF of 6.1 BCF) and 188 acres per well (ranging from 32 acres to 302 acres).

Sonat believes that Brown is unaffected by this application. The Brown, Wettermark lease is located at the southwest part of the Reed GU No. 4. Brown's closest well, the Wettermark Well No. 2 is located approximately one mile from the proposed location for the subject well. Wells between the proposed well and the Wettermark Well No. 2 are: the Marathon, Hale Well No. 2; the Sonat, Reed GU No. 4 Wells No. 2 and 3.

The protestant did not put present any technical evidence controverting the applicant's

assertions regarding reserves or put on a direct case. Brown contends that the applicant should propose a field rule change rather than apply for a Rule 38 exception. If this application is approved, Brown fears that its royalty owners will want Brown to drill another well on its Wettermark lease and Brown does not want to drill a third well on its lease. Brown contends that the wells in the field are in pressure communication. The Brown, Wettermark Well No. 2 upon initial completion had a bottomhole pressure (BHP) of 8,049 PSI in January 1981. The BHP of the Sonat, Reed GU No. 4 Well No. 3 was 6,332 PSI in 1996 which is a 21% depletion in pressure. The proposed subject well is located in an area surrounded by other producing wells and thus its BHP could be no more than the 6,332 PSI. Sonat counters that the initial reservoir pressures vary across the field. The Haynesville Formation has been designated as a tight gas formation by the Commission. The amount of pressure buildup times for the various wells could be different. Accurate pressure buildup tests could last for very long periods of time. Though the well log cross section indicate the Haynesville to be continuous across the area, the porosity development varies greatly both horizontally and vertically. Unless two wells are completed in the same porosity lens package, it would not be a surprise for the initial BHP's to be different. Sonat points out that even if the current reservoir pressure is 50% depleted, this would lower the estimated gas-in-place to be recovered from 6.7 BCF to approximately 3.5 BCF of gas. Sonat would drill a well to recover an estimated 3.5 BCF of gas.

### **EXAMINERS' OPINION**

Sonat has carried its burden of proof to justify its application for exception to Statewide Rule 38 based on confiscation for its proposed Reed GU No. 4 Well No. 4 in the Reed (Haynesville) Field. The proposed well will recover reserves under the subject unit that will not be recovered by the currently permitted wells on the unit. The proposed well meets the requirements of Statewide Rule 37 and is located so that it will not interfere with other wells either on lease or off lease. The closest offset operators to the proposed lease did not protest the application.

### **FINDINGS OF FACT**

Based on the evidence presented, the examiners propose the following findings:

1. Notice of this hearing was sent to all operators and gas purchasers in the subject field at least ten (10) days prior to the subject hearing.
2. The Reed (Haynesville) Field was discovered in June 1967 at 11,837' subsurface depth.
  - a. Special field rules adopted by Order No. 5-68,377, effective March 13, 1978 provide for minimum well spacing of 660'/1,320' (lease line/between well), 640 acre gas proration units and optional 320 acre density and an allocation formula based on 100% acreage.

- b. The field is classified as a non-associated prorated gas field.
3. Sonat seeks a Rule 38 exception to drill its Reed GU No. 4 Well No. 4 ("subject well") on its 682.67 acre tract.
  - a. Currently there are two existing producing wells on the tract: Reed GU No. 4 Wells No. 1 and 2.
  - b. A third well on the tract, the Reed GU No. 4 Well No. 3 is in the final stages of completion with a provision that the No. 3 well cannot be produced concurrently with Well No. 1.
  - c. Sonat stated that Well No. 1 will be recompleted to another zone upon first production from Well No. 3.
  - d. The subject well will be a regular location with respect to lease lines and between well spacing.
4. Production from the field is from Cotton Valley Lime which is the Haynesville Formation.
  - a. Structure does not play a major role in locating wells in the field. The major controlling factor for production is adequate porosity development.
  - b. The location was chosen based on an area that would be unaffected by wells on lease or off-lease.
  - c. The Haynesville Formation has been designated as a tight gas formation by the Commission.
5. The current recoverable gas-in-place on the Reed GU #4 unit that will not be recovered by any currently permitted well is 6.09 BCF of gas (6.7 BCF less 10% depletion due to drainage by offset wells).
  - a. The original recoverable gas-in-place is calculated to be 20.9 BCF using a recovery factor of 85% based on an abandonment pressure of 900 PSI.
  - b. Estimated ultimate recovery from the two existing wells is 10.68 BCF of gas.
  - c. Well No. 3 is estimated to recover 3.44 BCF of gas based on volumetric analysis with an initial bottomhole pressure of 6,332 PSI (formation test pressure that was run on the well).
  - d. The total estimated ultimate recovery from the three permitted wells on the

unit is 14.12 BCF of gas.

- e. Of the current producible reserves on the tract, 6.09 BCF of gas will not be recovered by currently permitted wells on the Reed Gas Unit.
  - f. Possible drainage from offset wells and wells on lease have lowered the reservoir pressure on the Reed Gas Unit (initial BHP of Well 4-1 was 7,093 PSI and the recent BHP of the newly completed Well 4-3 is 6,332 PSI).
6. The three wells on the Reed Gas Unit will drain 524 of the 682.67 acres which leaves 159 acres.
- a. An investigation of ultimate recoveries and drainage areas of the subject tract and the offsetting leases estimates average ultimate recoveries of 4.368 BCF of gas per well (ranging from .6 BCF of 6.1 BCF) and 188 acres per well (ranging from 32 acres to 302 acres).

#### **CONCLUSIONS OF LAW**

1. Proper notice of hearing was timely given to all persons legally entitled to notice.
2. All things have occurred and have been done to give the Commission jurisdiction to decide this matter.
3. An exception pursuant to Statewide Rule 38 to the field rules regarding well densities is necessary to permit drilling the applied-for well.
4. Approval of the requested permit to drill a well at the proposed location is necessary to give the owners of the Reed GU #4 a reasonable opportunity to recover their fair share of hydrocarbons from the Reed (Haynesville) Field underlying that unit, or the equivalent in kind, thereby preventing confiscation.

**EXAMINERS' RECOMMENDATION**

Based on the above findings and conclusions of law, the examiners recommend approval of the proposed Rule 38 exception for the Sonat Exploration Company-Tyler for its Reed GU #4, Well No. 4 in the Reed (Haynesville) Field, Freestone County.

Respectfully submitted,

Thomas H. Richter, P.E.  
Technical Examiner  
Legal Division

Colin K. Lineberry  
Hearings Examiner  
Legal Division

Date of Commission Action \_\_\_\_\_