



RAILROAD COMMISSION OF TEXAS

OFFICE OF GENERAL COUNSEL

OIL AND GAS DOCKET NO. ~~03~~-0253429

COMMISSION CALLED HEARING TO DETERMINE THE EFFECTIVENESS OF THE
TEMPORARY FIELD RULES FOR THE DOUBLE A WELLS, N. (AUSTIN CHALK) FIELD,
POLK COUNTY, TEXAS

Heard by: Donna K. Chandler on February 1, 2008

Appearances:

John Miller
Mike McElroy

Bob Tierney

George Neale
Matt Telfer

Representing:

Delta Exploration Company, Inc.

Pogo Producing Company

BBX Operating, LLC

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Temporary field rules for the Double A Wells, N. (Austin Chalk) Field were adopted on April 18, 2006 in Docket No. 03-0246301. The rules in effect for the field are summarized as follows:

1. Designation of the field as the correlative interval from 13,370 feet to 13,660 feet as shown on the log of the W. T. Carter Well No. 2;
2. 467'-1,200' well spacing for vertical wells; horizontal rules which provide for 100 feet from lease line for penetration point and terminus and 1,200 feet between horizontal wells on the same lease;
3. 320 acre density, with special provisions for assignment of additional acreage to horizontal wells;
4. Allocation based on 100% acreage.

Delta, Pogo and BBX appeared at the hearing and requested that the rules be amended slightly to clarify circumstances under which a horizontal well is considered legal. These operators also request that all completions in the field be classified as gas wells.

This application was unopposed and the examiner recommends that the field rules be amended as proposed and that all wells in the field be permanently classified as gas wells.

DISCUSSION OF EVIDENCE

The Double A Wells, N. (Austin Chalk) Field was discovered in January 2006 and is classified as non-associated with AOF status. There are six producing wells on the current proration schedule, all of which are horizontal wells. Four additional wells have completion forms pending and 16 additional wells have been permitted for the field. Cumulative production from the field is about 8.3 BCF of gas from the six producing wells.

The discovery well for the field was a re-entry of the Best-Kennesson Willsource Unit No. 1 by Delta Exploration Company. Since that time, development of the field has moved to the west about 15 miles. Most of the wells have horizontal two horizontal laterals, each about 180 degrees of each other. Each lateral is generally about one mile in length.

Wells in this field tend to veer off the projected/permitted course toward the end of the horizontal drainhole. Directional survey data show that some wells drift up to 15 degrees within 100 feet of interval. If directional surveys are only measured every 100 feet, these large variations aren't caught immediately and can't be corrected quickly enough to cause the wellbore path to stay 1,200 feet in a perpendicular direction from the lease line. Several wells in the field have been plugged back and sidetracked to get back on the projected/permitted course.

In order to prevent confusion as to whether as-drilled horizontal drainholes which have significant drift over short distances are in compliance with field rules, operators are requesting that the following language be adopted for the field as part of Rule 2:

A properly permitted horizontal drainhole will be considered to be in compliance with the spacing rules set forth herein if the as-drilled location falls within a rectangle established as follows:

- a) *Two sides of the rectangle are parallel to the permitted drainhole and 120 feet on either side of the drainhole;*
- b) *The other two sides of the rectangle are perpendicular to the sides described in (a) above, with one of those sides passing through the*

permitted terminus and the other passing through the permitted penetration point.

Any point of a horizontal drainhole outside of the described rectangle must conform to the permitted distance to the nearest property line, lease line or subdivision line measured perpendicular from the wellbore.

Provided further that, if the final survey point of the directional survey submitted to the Commission is within the range of 150 degrees to 210 degrees (for a south lateral) or within the range of 330 degrees to 30 degrees (for a north lateral), then the lateral of the as-drilled horizontal drainhole shall be considered to have been drilled perpendicular to the north or south property line, lease line or subdivision line, as the case may be.

It is further requested that all wells in the field be permanently classified as gas wells. Almost every well completed in the field to date has failed the G-5 requirements for gas well classification. However, six wells have been granted permanent gas well classification based on compositional analyses which indicated mole% heptanes plus (C7+) to be less than 11%.

Two of the six wells approved under the C7+ criteria had PVT analyses run. For the Katherine Leary No. 1, a sample was recombined at a reservoir temperature of 290°F and reservoir pressure of 6,515 psia. The recombined fluid was evaluated during a Constant Composition Expansion at pressures ranging from 7,500 psi down to 500 psi. The reservoir fluid is single phase gas until the reservoir pressure reaches 5,211 psia, the retrograde dew point pressure. The PVT analysis confirms that the well produced from a retrograde condensate reservoir. The well stream contained 1.8 mole% heptanes plus and 81.1 mole% methane. Typical retrograde gases contain less than 12.5 mole% heptanes plus and at least 70 mole% methane according to published literature. The volume of liquid in the reservoir below 5,211 psia is not mobile and will not be recovered as liquid. The PVT analysis shows that the maximum percentage of hydrocarbon pore space occupied by retrograde liquid is 2%, when the reservoir pressure reached 1,500 psia. Published literature indicates that liquid hydrocarbons in a reservoir are essentially immobile until saturations of up to 35% are reached.

For the Blackstone Minerals No. 4, a sample was recombined at a reservoir temperature of 348°F and reservoir pressure of 4,715 psia. The recombined fluid was evaluated during a Constant Composition Expansion at pressures ranging from 10,000 psi down to 500 psi. The reservoir fluid is single phase gas until the reservoir pressure reaches 5,604 psia, the retrograde dew point pressure. The volume of liquid in the reservoir below 5,604 psia is not mobile and will not be recovered as liquid. The PVT analysis shows that the maximum percentage of hydrocarbon pore space occupied by retrograde liquid is 17.5%, when the reservoir pressure reached 2,500 psia.

With the amount of reservoir fluid data available for wells covering an area over 15 miles wide, it is appropriate to classify the field as non-associated. There is no evidence

of the existence of a gas cap/oil column in the Austin Chalk. The Commission has taken similar action in the Brookleland (Austin Chalk 8800) Field, classifying all wells in Tyler County as permanent gas wells based on the significant amount of reservoir fluid data available. The Double A Wells, N. (Austin Chalk) Field borders Tyler County to the east.

FINDINGS OF FACT

1. Notice of this hearing was given to all affected persons at least ten days prior to the date of hearing. No protests were received.
2. The Double A Wells, N. (Austin Chalk) Field was discovered in January 2006 and is classified as non-associated with AOF status.
3. There are six producing wells on the current proration schedule, all of which are horizontal wells. Four additional wells have completion forms pending and 16 additional wells have been permitted for the field.
4. Temporary field rules for the Double A Wells, N. (Austin Chalk) FIELD were adopted on April 18, 2006 in Docket No. 03-0246301. The rules provide for a designated interval, 467'-1,200' well spacing for vertical wells, horizontal rules which provide for 100 feet from lease line for penetration point and terminus and 1,200 feet between horizontal wells on the same lease, 320 acre density, with special provisions for assignment of additional acreage to horizontal wells, and 100% acreage allocation.
5. The proposed rule defining a properly drilled horizontal drainhole is necessary in this field because wells typically veer significantly near the end of the horizontal drainhole.
6. Wells in the field are gas wells, as defined by Statewide Rule 79.
 - a. Almost every well completed in the field to date has failed the G-5 requirements for gas well classification.
 - b. Six wells have been granted permanent gas well classification based on compositional analyses which indicated mole% heptanes plus (C7+) to be less than 11%.
 - c. Two of the six wells approved under the C7+ criteria had PVT analyses which indicate that the wells produce from a retrograde condensate reservoir. Liquids produced at the surface are the result of condensation because the liquid hydrocarbons in the reservoir are essentially immobile at the saturations which exist in the reservoir.
 - d. There is no evidence of the existence of a gas cap/oil column in the Austin Chalk.

- e. Wells in the Brookleland (Austin Chalk 8800) Field in Tyler County have been permanently classified as gas wells in a prior Commission docket.

CONCLUSIONS OF LAW

1. Proper notice of this hearing was issued.
2. All things have been accomplished or have occurred to give the Commission jurisdiction in this matter.
3. Amending the field rules for the Double A Wells, N. (Austin Chalk) Field is necessary to prevent waste, protect correlative rights and promote development of the field.
4. Wells in the Double A Wells, N. (Austin Chalk) Field are gas wells based on the definition of a gas well pursuant to Statewide Rule 79 (a) (11) (C).

RECOMMENDATION

Based on the above findings and conclusions of law, the examiner recommends that the field rules for the Double A Wells, N. (Austin Chalk) Field be amended as proposed by Delta, Pogo and BBX and that all wells in the field be permanently classified as gas wells.

Respectfully submitted,



Donna K. Chandler
Technical Examiner