



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL AND GAS DOCKET NO. 08-0296538

THE APPLICATION OF BHP BILLINGTON PET. (TXLA OP) CO. FOR A TIGHT FORMATION AREA DESIGNATION IN ACCORDANCE WITH STATEWIDE RULE 101 FOR THE WOLFCAMP AND THIRD BONE SPRING FORMATIONS IN THE PHANTOM (WOLFCAMP) FIELD, REEVES, CULBERSON, WARD AND LOVING COUNTIES, TEXAS

HEARD BY: Richard Eyster, P.G. --Technical Examiner
Randall Collins -- Administrative Law Judge

REVIEWED BY: Jennifer Cook – Administrative Law Judge

HEARING DATE: November 19, 2015

CONFERENCE DATE: August 24, 2016

APPEARANCES:

Doug Dashiell

Dale Miller

REPRESENTING:

BHP Billington Pet (TXLA Op) Co.

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Pursuant to Statewide Rule 101 (16 Tex. Admin. Code §3.101) BHP Billington Pet (TEXLA OP) (BHP) seeks a tight formation area designation for the Wolfcamp and 3rd Bone Springs Formations as defined in the correlative interval for the Phantom (Wolfcamp) Field, in portions of Reeves Culberson, Ward and Loving Counties, Texas. Rule 101 specifies the procedure by which an operator can obtain Commission certification that natural gas from a particular gas well qualifies as high-cost gas under the Texas Tax Code §201.057(a)(2)(A) and that such gas is exempt from or eligible for a reduction of the severance tax imposed by the Texas Tax Code §201.057. Specifically, BHP seeks Commission certification that a portion of the Phantom (Wolfcamp) Field is a "tight formation" area pursuant to Statewide Rule 101(f).

BHP originally applied for an approximately 703,194 -acre area designation within

Reeves County. A representative of Anadarko E&P On Shore LLC (Anadarko) appeared as an Intervenor at the hearing in support of the application and seeks a tight formation area designation for the Wolfcamp and 3rd Bone Springs Formations within the same correlative interval for an additional 390,243 acres to BHP's proposed area designation for a total of 1,093,437 acres.

Notice of the BHP and Anadarko applications were served on all operators in the field and no protest of either proposed tight formation area was received. The Technical Examiner and the Administrative Law Judge, (collectively "Examiners") recommend the application be approved.

APPLICABLE LAW

Statewide Rule 101 specifies the procedure by which an operator can obtain a Railroad Commission of Texas certification that natural gas from a particular gas well qualifies as high-cost natural gas under the Texas Tax Code and that such gas is eligible for a reduction of the severance tax. One of the categories of high-cost gas is gas that is produced from a designated tight formation area. In this application, BHP seeks to designate a portion of the Phantom (Wolfcamp) Field as a tight formation area. To obtain this designation pursuant to Statewide Rule 101(f)(3)(B), BHP must provide specific evidence required by the Rule and demonstrate the following:

- (i) The in situ permeability throughout the proposed formation or specific portion thereof is 0.1 millidarcies or less, as determined by geometric mean or median analysis of available data from all wells that either have been tested or are completed in the proposed formation within the requested area;
- (ii) The pre-stimulation stabilized production rate against atmospheric pressure at the wellhead, as determined by a geometric mean or median analysis of available data from all wells within the requested area that either have been tested and/or are completed in the proposed formation or specific portion thereof, does not exceed the production rate specified in the rule;
- (iii) No well drilled into the formation is expected to produce, without stimulation, more than five barrels of crude oil per day; and,
- (iv) The requested designated area does not extend beyond a two and one-half mile radius drawn from any data point well.

DISCUSSION OF EVIDENCE

The Phantom (Wolfcamp) Field, (the field) is an associated field that was discovered in Ward County on June 32, 1983, at a depth of 11,002 ft. The field is currently developed with oil and gas wells through portions of Ward, Culberson, Loving, Pecos,

Reeves, and Winkler Counties. The field correlative interval is from 9,515 ft., to 12,447 ft., as shown on the Pertohawk Operating Company, Oxy Fee "24" Lease, Well No. 1 (API No. 389-32637). The correlative interval includes the lowest member of the Bone Spring Formation, the third Bone Spring Sand, down through all of the Wolfcamp Formation. Wells drilled into the Phantom (Wolfcamp) Field require fracture stimulation for production. No well can be expected to produce five barrels or more of crude oil per day without fracture stimulation. Currently, the Field is being developed with horizontal wells. Fracture stimulation of wells in the fields penetrates both the Third Bone Spring and Wolfcamp Formations.

The Wolfcamp Formation is continuous across and beyond the proposed tight formation area. A structure map of the top of the Wolfcamp Formation shows the top of the field, the 3rd Bone Spring formation, immediately overlying the Wolfcamp Formation exhibits a smooth and continuous dip to the east-northeast from about 4,200 feet below sea level (bsl) in the western edge of the proposed area to below 8,700 feet bsl in the northeast corner. The average dip is about 1.4 percent. The dip is steeper to the west where the formation is shallowest; the dip is shallower to the east where the basin is deeper. The structure map demonstrates the formation is continuous well beyond the borders of the proposed tight formation area.

To establish the proposed area as a tight formation, BHP and Anadarko provided permeability data from 107 data point wells analyzed using ONEPT analysis and core analyses from seven additional wells, for a total of 114 data points. BHP and Anadarko also utilized data from additional wells, including core analysis and well logs, for a total of 215 wells from which data was obtained for this application. The wells are listed on BHP Exhibit No.16 and shown on BHP Exhibit No. 17. Pursuant to Statewide Rule 101(f)(3)(B)(I), the in situ permeability throughout the proposed formation must be 0.1 millidarcies (md) or less. Further, the top of the correlative interval for the Phantom (Wolfcamp) Field is 9,515 feet. However, within the proposed tight formation area, the top of the field ranges between 9,500 and 10,000 feet bsl. Pursuant to Statewide Rule 101(f)(3)(B)(ii), the maximum allowable unstimulated production rate for a field interval whose top is from 9,500 feet to 10,000 feet may not exceed 600 thousand cubic feet (MCF) of gas per day.

Anadarko and BHP submitted core sample data to evaluate formation permeability. The core sample data was obtained from the 3rd Bone Spring and Wolfcamp Formations. Flow rates were estimated using the Darcy Radial Flow equation for flow of compressible fluids. Based on data from 114 data point wells, BHP and Anandarko determined the following:

- The geometric mean permeability is 0.00146853 md.
- The geometric mean flow rate is 22 MCF per day.

Statewide Rule 101(f)(3)(B)(iv) requires that the requested designated area does not extend beyond a two and one-half mile radius drawn from any data point well. The Commission has, on occasion and after a hearing on the request, approved tight formation area designations that meet all of the criteria above except Rule 101(f)(3)(B)(iv). In those cases, the Applicants have demonstrated that the subject formation was broadly continuous across a large area, in some cases across one or several counties, and that the available data is representative of the entire requested formation area and sufficiently demonstrates that the entire requested formation area meets requirements of Rule 101(f)(3)(B)(i) through (iii). As shown on "Updated Exhibit 7", the data point wells are not evenly spaced across the proposed area such that all of the proposed area is within 2.5 miles of a data point well. That is, one data point well can represent a circular area of 12,566 acres. The Examiners take note of the following:

- The proposed area consists of 1,093,437 acres, which, at a minimum would require 87 data point wells for full coverage.
- BHP and Resolute have provided 114 data point wells, which are generally but not necessarily evenly located across the proposed area.
- BHP's and Anadarko's analysis of geologic structure, depositional structure and multiple cross-sections extending beyond the proposed tight formation area demonstrate that the Phantom (Wolfcamp) Field is continuous and geologically consistent across the area and that the data point well permeability and flow rate data are representative of other wells in the field.

The Examiners conclude that BHP and Anadarko have met their burden of proof under Statewide Rule 101 and the proposed area should be designated by the Commission as a tight formation area.

FINDINGS OF FACT

1. Notice of the application was provided to all parties entitled to notice at least 21 days prior to the Commission review.
2. All parties entitled to notice were notified of the amended application and given 21 days to file a protest. No protests were filed.
3. Notice of this hearing was given to all parties entitled to notice at least ten days prior to the date of hearing.
4. A December 1, 2015 supplemental notice letter listing three sections that were omitted from the original list of surveys and abstracts, was mailed by BHP to all parties entitled to notice after the hearing concluded.

5. The Phantom (Wolfcamp) Field is defined by the correlative interval from 9,515 feet to 12,447 feet, as shown on the log of the Petrohawk Operating Company, Oxy Fee "24" Lease, Well No. 1 (API No. 42-389-32637).
 - a. The correlative interval includes the lowest member of the Bone Spring Formation—the 3rd Bone Spring Sand—down through all of the Wolfcamp Formation.
 - b. The Phantom (Wolfcamp) Field is continuous across and beyond the proposed tight formation area.
6. The proposed tight formation area consists of approximately 1,093,437 acres in Reeves, Culberson, Ward and Loving Counties.
4. BHP and Anadarko provided data from 114 data point wells for the proposed 1,093,437 acre tight formation area.
 - a. The geometric mean in situ permeability is 0.00146853 md, which is less than the 0.1 md requirement of Statewide Rule 101.
 - b. The geometric mean of the pre-stimulation stabilized production rate against atmospheric pressure is 22 MCF per day, which is below the 600 MCF per day requirement of Statewide Rule 101.
5. Wells drilled into the Phantom (Wolfcamp) Field require fracture stimulation for production.
6. No well drilled into the formation is expected to produce, without stimulation, more than five barrels of crude oil per day.
7. The requested area does extend beyond a two and one-half mile radius drawn from any data point well. However, the evidence in the record demonstrates that the available data is more than sufficient to establish that the requested area meets the permeability and flow rate requirements of the Rule.
8. Anadarko Exhibit No. 4 describes the areal extent of the proposed tight formation area and includes the surveys and abstracts listed on BHP Exhibit No. 14.
9. BHP filed its request for hearing on this application on April 30, 2015.

CONCLUSIONS OF LAW

1. Resolution of the subject application is a matter committed to the jurisdiction of the Railroad Commission of Texas. Tex. Nat. Res. Code § 81.051.
2. All notice requirements have been satisfied. 16 Tex. Admin. Code §101.(f)(2).
3. The requested tight formation area meets the requirements of Statewide Rule 101. 16 Tex. Admin. Code § 3.101(f).

RECOMMENDATION

Based on the above findings of fact and conclusions of law, the Examiners recommend the portions of the Phantom (Wolfcamp) Field in Culberson, Reeves, Ward and Loving Counties, that are within the surveys and abstracts included on BHP Exhibit No. 14, and included as Attachment A to the final order be designated as a tight formation area pursuant to Statewide Rule 101(f).

Respectfully submitted,

Richard Eyster, P.G.
Technical Examiner

Jennifer Cook
Administrative Law Judge