

OIL AND GAS DOCKET NO. 7C-0274561

**THE APPLICATION OF PIONEER NATURAL RES. USA, INC. TO AMEND AND
RENUMBER FIELD RULES FOR THE SPRABERRY (TREND AREA) FIELD, VARIOUS
COUNTIES, TEXAS**

HEARD BY: Richard D. Atkins, P.E. - Technical Examiner
Marshall F. Enquist - Legal Examiner

DATE OF HEARING: April 5, 2012

APPEARANCES:

REPRESENTING:

APPLICANT:

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Pioneer Natural Res. USA, Inc.

INTERESTED PARTIES:

Philip Whitworth
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EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Field Rules for the Spraberry (Trend Area) Field were originally adopted in Final Order No. 7C & 8-25,174, effective December 22, 1952, as amended. The Field Rules currently in effect for the field are summarized as follows:

1. Correlative interval from 6,865 feet to 10,605 feet as shown on the log of the Pioneer Natural Res. USA, Inc. - Houpt Lease, Well No. 1 (API No. 42-329-31029);

2. 467'-660' well spacing with no minimum well spacing between vertical and horizontal drainhole wells;
3. 80 acre density with an 80 acre tolerance per well and special provisions for 20 acre Rule 38 exceptions after notice;
4. Allocation based on 75% acres and 25% per well with an MER top allowable of 515 barrels of oil per day;
5. Permitted gas-oil ratio of 4,000 cubic feet per barrel.
6. Waterflood unit allowable;
7. Well testing requirement.

Pioneer Natural Res. USA, Inc. requests that the Field Rules be amended and renumbered to provide for 467'-0' well spacing with special provisions for "take points", 100' lease line spacing for the first and last take points, a 50' "tolerance box", "off-lease" penetration point and "stacked lateral" provisions for horizontal drainhole wells. Pioneer also requests that proration unit plats not be required for individual wells, but that Form P-15 be filed to designate the number of acres to be assigned to each well with no maximum diagonal limitation.

Since the field operates under an MER allowable of 515 barrels of oil per day, the examiners proposed that Field Rule Nos. 6 and 7 be eliminated, as they appear to be outdated and unnecessary. Pioneer did not consider this recommendation to be adverse. The application is unopposed and the examiners recommend that the Field Rules for the Spraberry (Trend Area) Field be amended and renumbered, as proposed by Pioneer.

DISCUSSION OF EVIDENCE

The Spraberry (Trend Area) Field currently extends over many counties and comprises approximately 1.6 MM acres with a length of 150 miles and a width of 75 miles. The field was originally discovered in 1935, but through the course of time, the field has been enlarged both horizontally and vertically. Currently, there are approximately 15,000 wells and 200 operators carried on the proration schedules. The top allowable in the field is 515 BOPD, with an allowable gas-oil ratio of 4,000 cubic feet per barrel. Cumulative production through March 2012 from the field since 1952 is 1.2 BBO and 3.1 TCFG.

There have been many field consolidations into the Spraberry (Trend Area) Field and the Field Rules have been amended to increase drilling density. The field is located in the Midland Basin and is composed of submarine deposits of sandstones, siltstones,

limestones and shales. The correlative interval is over 3,500 feet thick and includes the Clearfork, Upper Spraberry, Lower Spraberry, Dean and Wolfcamp formations. Though these formations are correlative across the entire area, the sand lenses are lenticular and the porosity and permeability change quickly over short distances due to formation shaliness. The quality of the sandstones are generally characterized as poor with an average porosity of 10% and average permeability of less than 1.0 millidarcy. Additionally, most zones would not be economic to produce as separate completions. Pioneer submitted core data from a number of wells across the field area that confirmed that a vast majority of the pay contained less than 1.0 millidarcy permeability.

Pioneer is proposing to drill vertical and horizontal infill wells and requests Field Rules to promote the efficient and effective development of the remaining hydrocarbons. Pioneer requests 467'-0' well spacing with special provisions for "take points", 100' leaseline spacing for the first and last take points, a 50' "tolerance box" and "off-lease" penetration point for horizontal drainhole wells. Pioneer submitted an EUR versus Horizontal Drainhole Lateral Length graph which shows that hydrocarbon recovery is proportional to the lateral length in a stimulated horizontal well. Each foot of horizontal drainhole length results in an additional recovery of 36 BOE reserves.

Micro-seismic data analyzed from multiple vertical wells suggests that the micro-seismic events are located within a narrow corridor running generally east-west centered on the wellbore. The orientation of hydraulically induced transverse fractures in these low permeability formations within the Spraberry (Trend Area) Field is generally east-west. The orientation of the maximum stress appears to be uniform across the field. Horizontal wells in the field are drilled generally north-south to more effectively stimulate the rock with transverse fractures and therefore maximize recovery. The very low permeability of the formations limits the effective drainage in the north-south direction of individual stages. Consequently, the drainage in a north-south direction from the first and last take points will be minimal. The 100' leaseline spacing for the first and last take points will result in an additional recovery of 26,000 BOE reserves.

Pioneer also requests that a Field Rule be adopted which includes language relevant to the measurement of distances to lease lines for horizontal drainhole wells. Pioneer's proposed rule specifies that, for purposes of lease line spacing, the nearest "take point" in a horizontal well be used. This take-point could be a perforation in a horizontal well that is cased and cemented, an external casing packer in a cased well, or any open-hole section in an uncased well. Similar rules have been adopted in other tight reservoirs, including the Eagle Ford, Wolfcamp, Bone Springs, Cotton Valley and Barnett Shale formations.

Pioneer proposes a "tolerance box" for horizontal drainhole wells that would allow drainholes to deviate 50 feet from either side of their permitted track without the necessity of obtaining a Statewide Rule 37 exception. As drilled wells for which all points are located within the "box" would be considered in compliance with their drilling permits.

In some cases, it is beneficial to penetrate the reservoir off lease, while still having “take points” no closer to lease lines than allowed under the field rules. Pioneer requests that Field Rules for the subject field provide for an “off-lease” penetration point. Statewide Rule 86 requires that the penetration point of a horizontal drainhole be on the lease. In this field, a well generally requires approximately 600 feet of horizontal displacement to make the 90 degree turn from vertical to horizontal. If the penetration point is required to be on the lease, then the first point of production would be about 600 feet from the lease line. The proposed rule will allow approximately 500 feet of additional producing drainhole, which will result in the recovery of additional reserves. The Commission has adopted similar rules allowing offsite penetration points in other fields, after the operator has given notice to the mineral owners of the off-lease tract on which the penetration point is to be located and received no protest. For purposes of the assignment of additional acreage pursuant to Statewide Rule 86, it is proposed that the distance between the first and last take-point in a horizontal drainhole well be used.

Pioneer also requests that a Field Rule be adopted to accommodate the drilling of stacked horizontal lateral wells. The gross thickness of the field interval is over 3,500 feet. Pioneer believes that several separate laterals may be necessary to effectively develop the reservoir with horizontal wells. The rule would allow stacked horizontal laterals within the correlative interval that are drilled from different surface locations to be considered a single well for regulatory purposes. It is proposed that a stacked lateral be defined to be multiple horizontal drainholes which are drilled from different surface locations. Additionally, Pioneer requests that proration unit plats not be required for individual wells, but that Form P-15 be filed to designate the number of acres to be assigned to each well.

FINDINGS OF FACT

1. Notice of this hearing was given to all parties entitled to notice at least ten days prior to the date of hearing.
2. The Spraberry (Trend Area) Field currently extends over many counties and comprises approximately 1.6 MM acres with a length of 150 miles and a width of 75 miles.
 - a. The field was originally discovered in 1935, but through the course of time, the field has been enlarged both horizontally and vertically.
 - b. There are approximately 15,000 wells and 200 operators carried on the proration schedules.
 - c. The top allowable in the field is 515 BOPD, with an allowable gas-oil ratio of 4,000 cubic feet per barrel.
 - d. The correlative interval is over 3,500 feet thick and includes the

Clearfork, Upper Spraberry, Lower Spraberry, Dean and Wolfcamp formations.

- e. The quality of the sandstones are generally characterized as poor with an average porosity of 10% and average permeability of less than 1.0 millidarcy.
3. The Spraberry (Trend Area) Field is actively being developed with vertical and horizontal drainhole wells.
 4. Field Rules providing for 467'-0' well spacing with special provisions for "take points", 100' leaseline spacing for the first and last take points, a 50' "tolerance box" and "off-lease" penetration point for horizontal drainhole wells will provide consistency in developing the field and will allow greater flexibility in selecting future drilling locations.
 - a. Micro-seismic data analyzed from multiple vertical wells suggests that the micro-seismic events are located within a narrow corridor running generally east-west centered on the wellbore.
 - b. The orientation of hydraulically induced transverse fractures in these low permeability formations within the Spraberry (Trend Area) Field is generally east-west.
 - c. The orientation of the maximum stress appears to be uniform across the field.
 - d. Horizontal wells in the field are drilled generally north-south to more effectively stimulate the rock with transverse fractures and therefore maximize recovery.
 - e. The very low permeability of the formations limits the effective drainage in the north-south direction of individual stages.
 - f. The 100' leaseline spacing for the first and last take points will result in an additional recovery of 26,000 BOE reserves.
 5. A spacing rule which utilizes "take-points" in a horizontal well for determination of distances to lease lines will prevent waste and will not harm correlative rights.
 - a. A take-point in a horizontal well in this field may be a perforation in a horizontal well that is cased and cemented, an external casing packer in a cased well, or any open-hole section in an uncased portion of the wellbore.

- b. Adoption of the proposed rule will allow the horizontal drainhole length on a lease to be maximized.
 - c. For purposes of assignment of additional acreage pursuant to Statewide Rule 86, the distance between the first and last take-point in a horizontal well should be used.
6. The proposed 50' "tolerance box" is necessary to allow operators reasonable minor deviations from the wellbore track that has been permitted.
 7. Allowing an "off-lease" penetration point will result in maximum producing drainhole length, thereby increasing ultimate recovery from horizontal drainhole wells. To protect correlative rights, prior notice and opportunity to object should be given to the mineral owners of "off-lease" surface locations.
 8. The proposed "stacked lateral" rule will allow stacked horizontal laterals within the field correlative interval that are drilled from different surface locations to be considered a single well for regulatory purposes, which will facilitate the additional recovery of oil and gas reserves.
 9. Similar rules have been adopted in other tight reservoirs, including the Eagle Ford, Wolfcamp, Bone Springs, Cotton Valley and Barnett Shale formations.
 10. The filing of Form P-15 to designate the number of acres to be assigned to each well for proration purposes with no proration plats will eliminate unnecessary paperwork.

CONCLUSIONS OF LAW

1. Notice of this hearing was given as specified in the provisions of all regulatory codes.
2. All things have occurred or been accomplished to give the Commission jurisdiction in this matter.
3. Amending the Field Rules for the Spraberry (Trend Area) Field is necessary to prevent waste, protect correlative rights and promote development of the field.

RECOMMENDATION

Based on the above findings of fact and conclusions of law, the examiners recommend that the Commission amend and renumber the Field Rules for the Spraberry (Trend Area) Field, as proposed by Pioneer Natural Res. USA, Inc.

Respectfully submitted,

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