

THE APPLICATION OF ENERGEN RESOURCES CORPORATION TO AMEND THE FIELD RULES FOR THE TWO GEORGES (BONE SPRING) FIELD, LOVING, REEVES, WARD AND WINKLER COUNTIES, TEXAS

HEARD BY: Richard D. Atkins, P.E. - Technical Examiner

HEARING DATE: September 27, 2011

APPEARANCES:

REPRESENTING:

APPLICANT:

Michael McElroy
Terry Cook

Energen Resources Corporation

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

The Two Georges (Bone Spring) Field currently operates under Field Rules adopted in Final Order No. 08-0251527, effective July 17, 2007. The Field Rules in effect for the field are summarized as follows:

1. Designated interval from 8,979 feet to 11,600 feet as shown on the log of the Chesapeake Operating, Inc. - University 19-18 Lease, Well No. 1;
2. 467'-933' well spacing;
3. 320 acre oil units with optional 40 acre density;
4. Allocation based on 95% acreage and 5% per well.

Energen Resources Corporation ("Energen") requests that Field Rule Nos. 2, 3 and 4 be amended as shown below:

2. 467'-0' well spacing with 200' lease line spacing for the first and last take points and special provisions for "take points", "off lease" penetration point and a 47 foot "box" rule for horizontal drainhole wells;
3. 320 acre oil units with optional 40 acre density and a special provision for additional acreage assignment to horizontal drainhole wells based on the

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formula $A = (L \times 0.15) + 320$;

4. Allocation based on 95% acreage and 5% per well with an oil allowable based on 3.0 BO per oil unit acre.

The examiner recommends that the multiplier to assign additional acreage for each horizontal lateral well not be approved, as there was no data provided to demonstrate that the additional acreage calculated by the multiplier was required to prevent waste. The examiner recommended that acreage be assigned using the following table that was adopted for the nearby Phantom (Wolfcamp) Field. The table limits the maximum amount of acreage assigned to each horizontal drainhole well to 640 acres plus a 10% tolerance or 704 acres.

Horizontal Drainhole Length, feet	Maximum Proration Unit Size, acres
0' - 1,500'	320
1,500' - 3,000'	480
3,000' - 4,500'	640
> 4,500'	704

Energen did not consider this recommendation to be adverse. The application was unopposed and the examiner recommends that the Field Rules for the Two Georges (Bone Spring) Field be adopted, as proposed by Energen, except for the horizontal drainhole well acreage multiplier.

DISCUSSION OF EVIDENCE

The Two Georges (Bone Spring) Field was discovered in November 1997 at an average depth of 11,600 feet. Field Rules currently provide for 467'-933' well spacing and 320 acre oil units with optional 40 acre density. There are 44 producing oil wells and 10 operators carried on the proration schedule. Cumulative production from the field through August 2011 is 3.3 MMBO and 4.9 BCFG.

The designated interval includes the entire Bone Spring and the Upper Wolfcamp formations, which consists of many separate sand and dolomite members. Energen is developing the Two Georges (Bone Spring) Field by drilling additional horizontal wells and requests horizontal drainhole well Field Rules in order to promote the efficient and effective development of the remaining hydrocarbons. The proposed 467'-0' well spacing with 200' lease line spacing for the first and last take points and special provisions for "take points", "off lease" penetration point and a 47 foot "box" rule for horizontal drainhole wells will allow for future development in the field. Similar horizontal drainhole well rules have been

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adopted in the nearby Phantom (Wolfcamp) Field and other fields with tight reservoirs in the Eagle Ford, Barnett Shale and Granite Wash formations.

Energen also requests that a field rule be adopted which includes language relevant to the measurement of distances to lease lines for horizontal drainhole wells. Energen's proposed rule specifies that, for purposes of lease line and between-well spacing, the nearest "take point" in a horizontal well be used. This take-point could be a perforation, if a horizontal well is cased and cemented, an external casing packer in a cased well, or any open-hole section in an uncased well.

Energen proposes a tolerance "box rule" for horizontal drainhole wells that would allow drainholes to deviate 47 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. Energen 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 400 feet of additional producing drainhole, resulting in the recovery of additional oil and gas reserves. Similar rules allowing offsite penetration points have been adopted in other fields, after notice to the mineral owners of the off-lease tract on which the penetration point is to be located and if no protest is received.

For purposes of the assignment of additional acreage to horizontal drainhole wells, it is proposed that the distance between the first and last take-point in a horizontal well be used and that acreage be assigned using the following table that limits the maximum amount of acreage assigned to each horizontal lateral well to 640 acres plus a 10% tolerance or 704 acres.

Horizontal Drainhole Length, feet	Maximum Proration Unit Size, acres
0' - 1,500'	320
1,500' - 3,000'	480
3,000' - 4,500'	640

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> 4,500'	704
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There is no yardstick allowable for wells on 320 acre oil units. To account for the high initial production rates while drilling and eliminate future cancellation of overproduction hearings, Energen requests a Top Allowable of 3.0 BO per oil unit acre or 960 BOPD for wells on 320 acre density be approved for the Two Georges (Bone Spring) Field.

FINDINGS OF FACT

1. Notice of this hearing was given to all persons entitled to notice and no protests were received.
2. The Two Georges (Bone Spring) Field was discovered in November 1997 at an average depth of 11,600 feet.
 - a. Field Rules currently provide for 467'-933' well spacing and 320 acre oil units with optional 40 acre density.
 - b. There are 44 producing oil wells and 10 operators carried on the proration schedule.
 - c. The designated interval includes the entire Bone Spring and the Upper Wolfcamp formations, which consists of many separate sand and dolomite members.
3. Energen is developing the Two Georges (Bone Spring) Field by drilling additional horizontal wells.
4. Field Rules that provide for 467'-0' well spacing with 200' lease line spacing for the first and last take points and special provisions for "take points", "off lease" penetration point and a 47 foot "box" rule for horizontal drainhole wells will provide consistency in developing the field and will allow greater flexibility in selecting future drilling locations.
5. A spacing rule which utilizes "take-points" in a horizontal well for the determination of well spacing will not harm correlative rights.
 - a. The Bone Spring and Wolfcamp formations are tight formations and are not commercially productive unless fracture-stimulated.
 - b. A "take-point" in a horizontal drainhole well in this field may be a perforation, if a horizontal well is cased and cemented, an external casing packer in a cased well, or any open-hole section in an uncased

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portion of the wellbore.

- c. "Take points" will allow the horizontal drainhole length on a lease to be maximized.
 - d. For purposes of assignment of additional acreage to horizontal drainhole wells pursuant to the table shown in the Final Order, the distance between the first and last take-points in a horizontal well should be used.
6. The proposed 47 foot "box rule" 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. The proposed rule will allow approximately an additional 400 feet of producing drainhole. To protect correlative rights, prior notice and opportunity to object should be given to the mineral owners of offsite surface locations.
 8. Similar horizontal drainhole well rules have been adopted in the nearby Phantom (Wolfcamp) Field and other fields with tight reservoirs in the Eagle Ford, Barnett Shale and Granite Wash formations.
 9. Producing wells in the Two Georges (Bone Spring) Field at rates up to 3.0 BO per oil unit acre will not cause waste.

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 Two Georges (Bone Spring) Field is necessary to prevent waste, protect correlative rights and promote development of the field.
4. Approval of a Top Allowable of 3.0 BO per oil unit acre in the Two Georges (Bone Spring) Field will not cause waste and will not harm correlative rights.

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RECOMMENDATION

Based on the above findings of fact and conclusions of law, the examiner recommends that the Commission amend the Field Rules for the Two Georges (Bone Spring) Field and approve a Top Allowable of 3.0 BO per oil unit acre, as requested by Energen.

Respectfully submitted,

Richard D. Atkins, P.E.
Technical Examiner