

OIL & GAS DOCKET NO. 08-0254451

**THE APPLICATION OF ENERGEN RESOURCES CORPORATION FOR BLANKET
RULE 10 AUTHORITY FOR ITS NORTH WESTBROOK UNIT, WESTBROOK AND
WESTBROOK (CLEAR FORK, UPPER) FIELDS, MITCHELL COUNTY, TEXAS**

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**THE APPLICATION OF ENERGEN RESOURCES CORPORATION TO EXPAND THE
UNITIZED INTERVAL FOR THE NORTH WESTBROOK UNIT, WESTBROOK AND
WESTBROOK (CLEAR FORK, UPPER) FIELDS, MITCHELL COUNTY, TEXAS**

HEARD BY: Donna K. Chandler, Technical Examiner
Mark. J. Helmueller, Hearings Examiner

DATE OF HEARING: December 21, 2007

APPEARANCES:

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REPRESENTING:

Energen Resources Corporation

EXAMINER'S REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Energen Resources Corporation is seeking Commission approval to expand the unitized interval in the North Westbrook Unit, Westbrook Field, Mitchell County, Texas. Energen is also seeking a blanket Rule 10 exception for all wells on its North Westbrook Unit to be downhole commingled in the Westbrook and Westbrook (Clear Fork, Upper)

Fields and to retain entity for density authority. Energen is also seeking Commission approval of an allocation formula between the middle Clear Fork and the upper Clear Fork for non-joiners.

DISCUSSION OF THE EVIDENCE

Energen's North Westbrook Unit, along with Energen's Westbrook Southeast Unit, was approved by the Commission in 1968 to waterflood the middle Clear Fork Formation in the Westbrook Field. When the third unit (Westbrook Southwest Unit) was formed in 1969, its unitization agreement included the upper Clear Fork along with the middle Clear Fork. The 1969 examiner's report stated that the upper Clear Fork was of limited areal extent and not recognized by the Commission as a separate field at that time. However, the Commission had approved the Westbrook (Clear Fork, Upper) Field in 1957.

In 2002, in a very similar application, Energen amended the Westbrook Southeast unitization agreement, expanding the unitized interval to include the upper Clear Fork. Now the only unit to not include the upper Clear Fork is the North Westbrook Unit. Currently there are 33 wells on the proration schedule of the Westbrook (Clear Fork, Upper) Field, most which are Energen wells.

The unitization agreement of the North Westbrook Unit has already been revised three times; twice in 1968 and once in 1969. This is the first amendment and fourth revision to the unitization agreement. The previous three revised the exhibits to the unitization agreement. The unit includes 79 tracts covering 8101.99 acres. Over 98% of the working interest owners have signed the proposed amendments to the unit agreement, which will expand the unitized interval to include the upper Clear Fork. There are 650 royalty interest owners in the unit and over 71% of the royalty interest owners signed the proposed amendments. Some of the unsigned royalty interest owners have very small interests and many addresses are out-of-date (approximately 47). For this reason, Energen published notice of this hearing in the *Colorado City Record* on November 22 and 29, 2007, and December 6 and 13, 2007.

The Westbrook Field produces from porous and permeable dolomites, with locally common anhydrite and siltstone/shale, deposited on the eastern edge of the Midland Basin. The Clear Fork is principally a stratigraphic trap with porosity pinch-out. The middle Clear Fork is the principal producing horizon with the upper Clear Fork less continuous than the middle Clear Fork. The North Westbrook Unit has produced 56.3 million barrels of oil since discovery, 40 million barrels of it after injection began. There are 205 producing wells and 61 injectors on this Unit.

The type log for the current unitized interval, the Standard Oil Company of Texas Well No. 1 (S.B. Bone), showed the middle Clear Fork unitized interval between 2855 feet and 3112 feet. The type log for the proposed expanded unitized interval, Energen's North Westbrook Unit Well No. 6216, shows the new unitized interval between 2286 feet and 3125 feet, and now includes the upper Clear Fork.

Energen performed extensive petrophysical and reservoir modeling studies based on 64 wells, 51 of which are recent with NMR (Nuclear Magnetic Resonance) logs, and two cores from the upper and middle Clear Fork. The ongoing secondary recovery project in the middle Clear Fork has matured to the point where the producing water/oil ratio is approximately 15. The studies showed that the original-oil-in-place (OOIP) for the upper Clear Fork and middle Clear Fork is 61,160 MSTB (thousand standard barrels) and 202,099 MSTB, respectively. The calculated hydrocarbon pore volumes for each tract in the unit are in good agreement with the original 1967 unit tract factors for the middle Clear Fork. The calculated hydrocarbon pore thickness (HPT) for the middle Clear Fork ranges from 0 to 9.6 feet. The HPT for the upper Clear Fork ranges from 0 to 5.5 feet.

Cumulative production from the middle Clear Fork is 56,317,000 stock tank barrels (STB). Cumulative production from the upper Clear Fork is 824,823 STB. The studies showed that the remaining proven developed producing (PDP) reserves for the middle Clear Fork and upper Clear Fork are 3,535 MBO and 256 MBO, respectively. The proven undeveloped (PUD) reserves for the middle Clear Fork and upper Clear Fork are 17,148 MBO and 3,398 MBO, respectively. Using a reserve risk factor of 0.75 for the middle Clear Fork PUD reserves, the calculated reserves are 12,861 MBO. Using a reserve risk factor of 0.5 for the upper Clear Fork PUD reserves, the calculated reserves are 1,699 MBO. A reserve risk factor of 1.00 was used for the PDP in the upper and middle Clear Fork. Based on these values, Energen calculated production allocation factors for non-joiners in the upper and middle Clear Fork. Unless Rule 10 authority is granted for the Unit, secondary reserves from the upper Clear Fork will not be recovered.

Energen proposes a two phase allocation period. The first phase will cover the period up until the upper Clear Fork and middle Clear Fork produce all the remaining PDP reserves (3,791 MSTB). The first phase allocation factor for the upper Clear Fork is 6.75%. The first phase allocation factor for the middle Clear Fork is 93.25%. These numbers represent the ratio of each reservoir's PDP reserves to the total PDP reserves in both reservoirs. The second phase will begin when the upper Clear Fork and middle Clear Fork have produced all of the remaining PDP. The second phase allocation factor for the upper Clear Fork is 11.67%. The second phase allocation factor for the middle Clear Fork is 88.33%.

The interests of all owners in the field, whether or not they sign the amended unit agreement, will be protected. It is necessary to unitize the acreage in order to conduct an effective middle Clear Fork waterflood and produce the upper Clear Fork. The persons entering into the amended unit own interests in the unit and the unit agreement is voluntarily entered into to establish pooled units for a secondary recovery operation. The amended unit agreement does not bind any interest owner who does not execute it. No one was compelled to enter into the amended unit agreement. The owners of interests in the oil and gas under each tract within the area reasonably defined by development have been given the opportunity to enter into this agreement on the same yardstick basis as owners of interests in oil and gas in other tracts in the unit.

The unit agreement, as amended, is subject to all valid rules, orders and regulations of the Railroad Commission. This agreement does not provide for the location of wells nor does the agreement relieve Energen from its obligation to develop reasonably the leases in the unit. The amended unit agreement does not limit the amount of production nor provide for cooperative refining or marketing of crude petroleum or its by-products. The amended agreement does not restrict any of the rights which persons now have to pool or unitize, nor does it attempt to set field rules.

FINDINGS OF FACT

1. Notice of this hearing was mailed to all interest owners within the unit and to offset operators on November 19, 2007.
2. Notice of this hearing was published in the *Colorado City Record* on November 22 and 29, 2007, and December 6 and 13, 2007.
3. The existing and proposed amended unit includes 79 tracts, and is sufficiently large to operate an efficient secondary recovery project.
4. Only acreage that has been reasonably defined by development is included in the amended unit agreement.
5. The North Westbrook Unit was formed in 1968 to waterflood the middle Clear Fork Formation in the Westbrook Field and has recovered 56.3 million barrels of oil.
6. The upper Clear Fork is recognized as a separate field from the Westbrook Field but has already been included within the waterflood of Cimarex's Westbrook Southwest Unit and Energen's Westbrook Southeast Unit in the Westbrook Field.
7. Only 33 wells have been completed on Energen's unit in the Westbrook (Clear Fork, Upper) Field, and the quality of the upper Clear Fork reservoir is too poor to support its own primary or secondary recovery project. Rule 10 authority for all wells on the Unit will result in the recovery of additional oil from the upper Clear Fork.
8. The type log for the current unitized interval, the Standard Oil Company of Texas Well No. 1 (S.B. Bone), showed the middle Clear Fork unitized interval between 2855 feet and 3122 feet. The new unitized interval will include the upper Clear Fork and is found between 2286 feet and 3125 feet, as shown on the type log from Energen's North Westbrook Unit Well No. 6216.
9. The estimated future secondary recovery from the subject unit, without including the upper Clear Fork is 16,396 MBO (risked), and an incremental 1,699 MBO (risked) barrels could be recovered by adding perforations in the upper Clear Fork.

10. On average, 11.67% of the future recovery of an individual commingled well will come from the upper Clear Fork and 88.33% from the middle Clear Fork.
11. Energen will utilize a two phase allocation factor to allocate production of a downhole-commingled well to non-joiners.
12. The State of Texas owns no royalty interest in any tract.
13. It is necessary to unitize the acreage in order to conduct an effective middle Clear Fork waterflood and produce the upper Clear Fork.
14. The value of the anticipated additional recovery from the unit by amending the secondary recovery program will more than offset the cost of the proposed increments to the secondary recovery operation.
15. The rights of the owners of all interests in the field whether or not they join the unit will be protected under the operation of this unit.
16. To date, 98% of the working interest ownership has ratified the amended unit agreement. There are 650 royalty interest owners in the unit and over 71% have ratified the amended unit agreement.
17. The amended unit agreement does not bind any interest owner who does not execute the agreement.
18. No one was compelled to enter into the amended unit agreement; the owners of interests not desiring to enter the unit on the same yardstick basis may continue to participate in production from the field on an independent basis governed by Commission rules and by the provision of the individual lease contract.
19. The persons entering into the amended unit own or control production, leases, royalty or other interest in the Westbrook or Westbrook (Clear Fork, Upper) Fields.
20. The amended unit agreement is subject to all valid rules, orders and regulations of the Railroad Commission.
21. The amended unit agreement does not attempt to contain the field rules for the area or field.
22. The amended unit agreement does not limit the amount of production.
23. The amended unit agreement does not provide for cooperative refining or marketing of crude petroleum or its by-products.

24. The amended agreement was voluntarily entered into to establish pooled units to conduct secondary recovery operations.
25. The amended unit agreement does not restrict the rights which persons now have to make and enter into unitization and pooling agreements.
26. The amended agreement does not provide for the location of wells.
27. The amended unit agreement does not relieve Energen Resources Corporation from its obligation to develop reasonably its leases committed to the unit.
28. There are no other existing alternate methods or facilities available that are adequate for the purpose of secondary recovery; the unitization agreement is necessary to accomplish the purposes set forth in Section 101.011 of the Texas Natural Resources Code, specifically the establishment of pooled units necessary to effect secondary recovery operations for oil or gas.
29. The amended unit agreement is in the interest of public welfare as reasonably necessary to prevent waste and promote conservation.
30. Monthly testing will allow allocation of production to tracts that have unsigned interest.

CONCLUSIONS OF LAW

1. Proper notice of this application and hearing was provided in accordance with all applicable regulatory statutes and rules.
2. All things have occurred or have been accomplished to afford the Commission the opportunity to consider and decide this matter.
3. Consideration of a secondary recovery program that will prevent the waste of otherwise recoverable hydrocarbon resources is a matter properly within the statutory jurisdiction of the Commission.
4. Approval of the proposed amended secondary waterflood injection program will foster conservation and prevent waste by providing for the recovery of hydrocarbons that would not otherwise be recovered.
5. The application complies with Chapter 101 of the Texas Natural Resources Code.
6. Because waterflood operations will sweep hydrocarbons across lease lines, a unit agreement is necessary to protect the correlative rights of working interest owners and royalty interest owners.

7. Approval of Rule 10 exceptions for all wells on the North Westbrook Unit in the Westbrook and Westbrook (Clear Fork, Upper) Fields is necessary to prevent waste.
8. Energen's proposed method of allocation of production to the Westbrook and Westbrook (Clear Fork, Upper) Field is reasonable and will protect correlative rights.

EXAMINER'S RECOMMENDATION

Based on the above findings of fact and conclusions of law, the examiner recommends the approval of the amended unitization and secondary recovery project in the North Westbrook Unit, Westbrook Field. The examiner recommends Rule 10 exceptions for all wells in the North Westbrook Unit to allow the commingling downhole of production from the Westbrook and Westbrook (Clear Fork, Upper) Fields, with allocation of production between the middle Clear Fork and upper Clear Fork based on the proposed two phase allocation factor. The examiner also recommends that the Energen North Westbrook Unit retain its entity for density authority.

Respectfully submitted,

Donna K. Chandler
Technical Examiner