

**THE APPLICATION OF CANAN MOWREY OPERATING, LLC TO CONSIDER
UNITIZATION AND SECONDARY RECOVERY AUTHORITY FOR THE IRON BRIDGE
CROTON UNIT, IRON BRIDGE (CROTON LIME) FIELD, DICKENS COUNTY, TEXAS**

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

DATE OF HEARING: January 13, 2010

APPEARANCES:

Doug Dashiell
Robert Key
Pat Canan

REPRESENTING:

Canan Mowrey Operating, LLC

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Canan Mowrey Operating, LLC ("Canan") requests Commission authority for unitization of the Iron Bridge Croton Unit and approval of secondary recovery operations on the Unit.

This application was unopposed and the examiner recommends approval.

DISCUSSION OF THE EVIDENCE

The Iron Bridge (Croton Lime) Field was discovered in January 2002 at an average depth of 4,700 feet. There are eight producing wells carried on the proration schedule for the proposed unit. Field Rules provide for 660'-1,320' well spacing, 80 acre density and allocation based on 100% acres. The top allowable is 93 BOPD with a casinghead gas limit of 186 MCFGPD. Cumulative production from the proposed unit through September 2009 is 550.2 MBO.

The unitized formation is the subsurface portion of the Unit Area commonly known as the Croton Lime Formation between the subsurface depths of 4,697 feet and 4,716 feet as shown on the log of the Hollis R. Sullivan - Bell Lease, Well No. 5, located 1,334 feet from the south line and 259 feet from the west line of Section 206, Block 1, H&GN RR Co. Survey, Dickens County, Texas.

The proposed Iron Bridge Croton Unit consists of five tracts which contain 800 acres.

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The productive interval is a porosity development within the Croton Lime Formation that trends east to west with only fifty feet of structural relief. The field has a solution gas drive with a limited water drive as the primary drive mechanisms. The proposed unit contains all of the productive portions of the porosity development, as demonstrated by a net pay isopach map provided by Canan. The productive interval has an average porosity of 14.3%, an average water saturation of 24% and an average net pay thickness of 5 feet.

Canan proposes to implement a waterflood initially by converting one producing well to injection. Canan will inject produced salt water from the proposed unit and other nearby properties which it operates.

Canan calculated the original oil in place to be 1.3 MMBO. Primary recovery from the field is projected to be 567.8 MBO or 44% of the original oil in place. Canan estimates that secondary recovery will be approximately 165.0 MBO or 29% of the primary recovery. The project will result in an ultimate recovery for the field of 56% of the original oil in place. The total cost to implement and operate the secondary recovery project is expected to be \$400,000. The estimated value of the additional production over the life of the secondary recovery project is \$11.6 million. This estimate is based on an oil price of \$70 per barrel.

The participation formula for each tract on the Unit is based 10% on cumulative oil production and 90% on total reservoir volume which is then weighted by the current producing water cut to reflect the amount of water encroachment on each tract. At the time of the hearing, 100% of the working interest ownership and 99% of the royalty interest ownership had signed the unit agreement. Canan anticipates 100% sign up of the royalty interest ownership by the time the project is initiated but will conduct monthly well tests to allocate production to wells on tracts for which 100% sign-up was not achieved. There are no state lands contained within the proposed unit.

FINDINGS OF FACT

1. Notice of this hearing was sent to all operators and royalty interest owners within the proposed unit. Notice was published in *The Texas Spur*, a newspaper of general circulation in Dickens County, for four consecutive weeks beginning December 3, 2009.
2. The proposed Iron Bridge Croton Unit consists of five tracts which contain 800 acres.
3. The unitized formation is the subsurface portion of the Unit Area commonly known as the Croton Lime Formation between the subsurface depths of 4,697 feet and 4,716 feet as shown on the log of the Hollis R. Sullivan - Bell Lease, Well No. 5, located 1,334 feet from the south line and 259 feet from the west line of Section 206, Block 1, H&GN RR Co. Survey, Dickens County, Texas.

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4. The productive interval is a porosity development within the Croton Lime Formation that trends east to west with only fifty feet of structural relief. The field has a solution gas drive with a limited water drive as the primary drive mechanisms.
5. At the time of the hearing, 100% of the working interest ownership and 99% of the royalty interest ownership had signed the unit agreement. Canan anticipates 100% sign up of the royalty interest ownership by the time the project is initiated
6. Secondary recovery operations will result in the recovery of an estimated 165.0 MBO which would otherwise go unrecovered.
7. The total cost to implement and operate the secondary recovery project is expected to be \$400,000. The estimated value of the additional production over the life of the secondary recovery project is \$11.6 million. The cost does not exceed the value of additional reserves to be recovered.
8. The participation formula for each tract on the Unit is based 10% on cumulative oil production and 90% on total reservoir volume which is then weighted by the current producing water cut to reflect the amount of water encroachment on each tract.
9. The secondary recovery project will not be successful unless the area is unitized.
10. The secondary recovery project will be a waterflood initially by converting one producing well to injection. Canan will inject produced salt water from the proposed unit and other nearby properties which it operates.
11. The agreement was voluntarily executed by all parties affixing their signatures thereto and no person has been compelled or required to enter into the agreement. The unit agreement binds only those persons who have executed it, their heirs, successors, assigns and legal representatives. The rights of all owners of interests in the field will be protected under the operation of the unit, regardless of whether an owner signed the unit agreement.
12. The owners of interest in the oil and gas under each tract of land within the area reasonably defined by development have been given an opportunity to enter into the unit on the same yardstick basis as owners of interest in the oil and gas under the other tracts in the unit.
13. The proposed injection program will move hydrocarbons across lease lines, and unitization is necessary in order to protect the correlative rights of the various interest owners.

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14. The unitization agreement is necessary to accomplish the purposes of establishing a unit to effect secondary recovery operations for water injection and to operate cooperative facilities necessary thereto. Other available or existing methods or facilities for secondary recovery operations are inadequate for the purpose of secondary recovery.
15. The unit agreement does not provide, either directly or indirectly, for the cooperative refining or marketing of crude petroleum, distillate, condensate, or gas, or any by-product thereof.
16. The unit agreement is subject to all valid orders, rules and regulations of the Railroad Commission.
17. The unit agreement contains no provision regarding field rules, nor does it limit the amount of production of oil or gas from the unitized area. The unit agreement does not release the operator from his obligation to reasonably develop lands or leases as a whole.
18. The unit agreement is a voluntary agreement entered into for the purpose of conducting secondary recovery operations.
19. The unit agreement does not provide for the location of wells.
20. There are no state lands contained within the proposed unit.
21. The unit agreement is in the interest of public welfare as being reasonably necessary to prevent waste and to promote conservation.
22. The reservoir described in the unit agreement is identified as a single reservoir for Commission purposes and is a suitable reservoir for a water injection secondary recovery operation.
23. The unit agreement contains only the acreage reasonably necessary to accomplish the proposed secondary recovery project.
24. Monthly well tests will be conducted to allocate production to wells on tracts for which 100% sign-up was not achieved.

CONCLUSIONS OF LAW

1. Proper notice was given to all persons legally entitled to notice.
2. All things have occurred or have been accomplished that are necessary to give the Commission jurisdiction in this matter.

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3. Applicant's proposed secondary recovery project satisfies all of the requirements set out in TEX. NAT. RES. CODE ANN. §§101.001 et seq.
4. Approval of the proposed unit agreement for secondary recovery operations is in the public interest and is necessary to prevent waste and to promote the conservation of oil or gas or both.

EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the examiner recommends approval of the proposed Iron Bridge Croton Unit and the secondary recovery operations project as set out in the attached order.

Respectfully submitted,

Richard D. Atkins, P.E.
Technical Examiner