



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL & GAS DOCKET NO. 08-0284852

THE APPLICATION OF BURNETT OIL CO., INC. TO CONSIDER UNITIZATION AND SECONDARY RECOVERY AUTHORITY FOR THE MCKNIGHT SAND HILLS WATERFLOOD UNIT, SAND HILLS (MCKNIGHT) FIELD, CRANE COUNTY, TEXAS

HEARD BY: Richard D. Atkins, P.E. - Technical Examiner
Laura Miles-Valdez - Legal Examiner

DATE OF HEARING: November 20, 2013

APPEARANCES:

REPRESENTING:

APPLICANT:

Robert Grable
Elizabeth Babb
Becky Tupman
David Rhodes
Coley Means

Burnett Oil Co., Inc.

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Burnett Oil Co., Inc. ("Burnett") requests Commission authority for unitization of the McKnight Sand Hills Waterflood Unit and approval of secondary recovery operations on the Unit. Since there were returned hearing notices, Burnett published notice of the subject application in the *Crane News*, a newspaper of general circulation in Crane County, for four consecutive weeks beginning on October 10, 2013.

The application is unopposed and the examiners recommend approval of the authority for unitization of the McKnight Sand Hills Waterflood Unit and approval of secondary recovery operations on the Unit.



DISCUSSION OF THE EVIDENCE

The Sand Hills (McKnight) Field was discovered in 1944 at an average depth of 3,400 feet. The field is classified as associated- 49b and there are 483 producing oil wells and 32 producing gas wells carried on the proration schedules. Field Rules provide for 330'-660' well spacing and 40 acre units with optional 10 acre density. Cumulative production from the field through November 2013 is 136.5 MMBO and 545.9 BCFG.

The unitized formation is the subsurface portion of the Unit Area commonly known as the Upper and Lower McKnight members of the San Andres formation between the subsurface depths of 3,090 feet and 3,600 feet as shown on the log of the Burnett Oil Co., Inc. - M. B. McKnight -A- Lease, Well No. 6 (API No. 42-103-04514), Section 10, Block B21, PSL Survey, A-1114, Crane County, Texas.

The proposed McKnight Sand Hills Waterflood Unit consists of ten tracts, which contain 1,150 acres. The productive interval is located in the Permian Basin on the Central Basin Platform and is a dolomitic stratigraphic trap that has a solution gas drive as the primary drive mechanism. The proposed unit contains the Upper and Lower McKnight members of the San Andres formation, as demonstrated by a cross section, structure map and net pay isopach map submitted by Burnett.

Burnett proposes to downspace the unit to 10 acre density and implement a 5-spot waterflood injection pattern in three phases by drilling 49 injection wells and 19 producing wells. At full development, Burnett plans on having 57 injection wells and 43 producing wells on the Unit. Burnett will inject all of the produced saltwater and use up to 18,000 barrels per day of makeup produced saltwater that will be gathered from offset leases and units.

Primary recovery from the Unit is expected to be 7.9 MMBO or approximately 9% of the original oil in place, which is 87.1 MMBO. Based on other offset San Andres formation waterfloods, Burnett estimates that secondary recovery will be 11.3% of the original oil in place or about 9.9 MMBO. The total cost to implement the secondary recovery project is expected to be \$75.4 million and the gross revenue is estimated to be \$841.5 million, with a projected return on investment of 11.2 to 1. This calculation is based on an average oil price of \$85 per barrel.

The participation formula during Phase 1 for each tract is based on 10% gross acres and 90% on current oil production. After the unitized cumulative oil production reaches 300 MBO, the participation formula during Phase 2 for each tract is based on 50% gross acres and 50% on cumulative oil production. At the time of the hearing, 100% of the working interest ownership and 84% of the mineral interest ownership had signed the unit agreement. By unit implementation, Burnett expects to have 99% of the mineral interest ownership that has signed the unit agreement. There are no state lands in the Unit and Burnett will conduct monthly well tests to allocate production to wells on tracts for which 100% sign-up was not achieved.

FINDINGS OF FACT

1. Notice of this hearing was sent to all operators and royalty interest owners within and adjacent to the proposed unit and no protests were received. The subject application was published in the *Crane News*, a newspaper of general circulation in Crane County, for four consecutive weeks beginning on October 10, 2013.
2. The proposed McKnight Sand Hills Waterflood Unit consists of ten tracts, which contain 1,150 acres.
3. The unitized formation is the subsurface portion of the Unit Area commonly known as the Upper and Lower McKnight members of the San Andres formation between the subsurface depths of 3,090 feet and 3,600 feet as shown on the log of the Burnett Oil Co., Inc. - M. B. McKnight -A- Lease, Well No. 6 (API No. 42-103-04514), Section 10, Block B21, PSL Survey, A-1114, Crane County, Texas.
4. The productive interval is located in the Permian Basin on the Central Basin Platform and is a dolomitic stratigraphic trap that has a solution gas drive as the primary drive mechanism.
5. At the time of the hearing, 100% of the working interest ownership and 84% of the mineral interest ownership had signed the unit agreement.
6. Secondary recovery operations are expected to result in the recovery of an estimated 9.9 MMBO, which would otherwise go unrecovered.
7. The total cost to implement the secondary recovery project is expected to be \$75.4 million and the gross revenue is estimated to be \$841.5 million, with a projected return on investment of 11.2 to 1. The cost does not exceed the value of additional reserves to be recovered.
8. The participation formula during Phase 1 for each tract is based on 10% gross acres and 90% on current oil production. After the unitized cumulative oil production reaches 300 MBO, the participation formula during Phase 2 for each tract is based on 50% gross acres and 50% on cumulative oil production.
9. The secondary recovery project will not be successful unless the area is unitized.
10. Burnett Oil Co., Inc. ("Burnett") proposes to downspace the unit to 10 acre density and implement a 5-spot waterflood injection pattern in three phases by drilling 49 injection wells and 19 producing wells. At full development,

Burnett plans on having 57 injection wells and 43 producing wells on the Unit. Burnett will inject all of the produced saltwater and use up to 18,000 barrels per day of makeup produced saltwater that will be gathered from offset leases and units.

11. The unit 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 interests 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 interests 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.
14. The unitization agreement is necessary to accomplish the purposes of establishing a unit to effect secondary recovery operations for water injection and operating 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 owned lands in 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.
3. Applicant's proposed secondary recovery project satisfies all of the requirements set out in Tex. Nat. Res. Code Ann. §§101.001-052.
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 examiners recommend that the Commission approve the proposed McKnight Sand Hills Waterflood Unit and secondary recovery operations, as set out in the attached order.

Respectfully submitted,



Richard D. Atkins, P.E.
Technical Examiner

Laura Miles-Valdez
Legal Examiner