



RAILROAD COMMISSION OF TEXAS

HEARINGS DIVISION

OIL & GAS DOCKET NO. 06-0295966

THE APPLICATION OF SUNDOWN ENERGY, LP TO CONSIDER UNITIZATION AND SECONDARY RECOVERY AUTHORITY FOR THE PROPOSED ROPER WATERFLOOD UNIT, ROPER (PETTIT) FIELD, RUSK COUNTY, TEXAS

HEARD BY: Richard Eyster, P.G. – Technical Examiner
John Dodson – Hearings Examiner

HEARING DATE: May 08, 2015

CONFERENCE DATE: July 14, 2015

APPEARANCES:

George C. Neale
Rick Johnston, P.E.
Wes Skipwith
Cameron Rice

REPRESENTING:

Sundown Energy, LP

EXAMINERS' REPORT AND RECOMMENDATION

STATEMENT OF THE CASE

Sundown Energy, LP ("Sundown") requests Commission authority for unitization of the proposed Roper Waterflood Unit and approval of secondary recovery operations on the Unit.

This application was unopposed and the Examiners recommend approval.

DISCUSSION OF EVIDENCE

The Roper (Pettit) Field was discovered on August 14, 1981, at a depth of 7,299 feet. Currently, there is only one operator in the field, Sundown, and only one producing well on the proration schedule in the field. Statewide rules apply, which provide for 467' lease line spacing, 1200' between well spacing, and 40 acre density with 20 acre tolerance. The top allowable is 121 BOPD with an allowable gas-oil ratio of 2,000 cubic feet per barrel.

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Cumulative production from the field through December 2014 is 167 MBO and 650 MMCFG. Other wells in the hydrocarbon accumulation are carried in the Henderson (Rusk County Pettit) Field.

The proposed unitized formation consists of the Pettit formation, and the proposed unitized interval is between the logged depths of 7,282 and 7,478 feet as shown on the Welex Compensated Acoustic Velocity log dated October 30, 1977 in the Mewbourne Oil Co. Leon Roper No. 1 Well (API No. 42-401-30612), Thomas T Gammage Survey, A-349, Rusk County, Texas.

The proposed Roper Waterflood Unit consists of fifteen tracts, which contain 328.172 acres. The proposed unitized tracts range in size from approximately .5 acres to approximately 85 acres. The hydrocarbon accumulation within the Pettit formation is a combination trap of structural and stratigraphic. Solution gas drive is the primary natural drive mechanism. The proposed Unit contains the majority of the productive portions of the Roper (Pettit) Field, as demonstrated by the structure map, and isopach map provided by Sundown. The productive portion of the unitized interval has an average porosity of 12%, an average net pay of 6 feet, and permeability ranges from 0 to 500 md.¹

Sundown's petroleum engineering witness presented the cumulative production from the two fields that will constitute the productive horizon within the Roper Waterflood Unit, the Roper (Pettit) Field and the Henderson (Rusk County Pettit) Field. The cumulative production figure was limited to the acreage within the confines of the proposed Roper Waterflood Unit, and was estimated to be 204 MBO. Sundown indicated that a reasonable production amount for secondary recovery will be equal to 100% of the primary recovery, or another 200 MBO. The value of the oil to be recovered as a result of the unitization and secondary recovery is approximately \$10,000,000 based on an oil price of \$50 per barrel. In addition, the estimated cost to implement and operate the secondary recovery project is \$750,000, resulting in a robust economic opportunity. The estimated break even point should occur at approximately 7.5% of the ultimate estimated production.

Sundown's expert witness also presented waterflood project results in a nearby analogous field, the NE Overton (Pettit)² Field, located approximately 8-10 miles to the west of the proposed Unit. A production decline curve showed that the initiation of waterflood activity resulted in increased production of oil. The waterflood activity began in 1990, and its impact can be seen on the production curve. Since then, production has stabilized. The various curves on the chart³ show gas-to-oil ratio, well count, gas

¹ These figures taken from Applicant's Exhibit No. 12.

² While the Commission refers to the field as the Overton, NE (Pettit), other resources, including the East Texas Geological Society, in Applicant's Exhibit No. 12, may refer to it as the Overton Northeast (Pettit) Field.

³ Applicant's Exhibit No. 10.

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production, oil production, produced water amounts, and injected water amounts. The cumulative oil for the NE Overton (Pettit) Field is approximately 9 MMBO. A paper submitted by Sundown⁴ showed that the cumulative amount of oil produced in the Overton, NE (Pettit) Field as of 1986 was 1.8 MMBO.

The participation formula for the Unit is comprised of three factors: the first factor is based 40% on cumulative oil production from the unitized formation in each tract during the calendar year of 2013; the second factor is based 20% on the number of surface acres contained in the qualified tracts; and the third factor is based 40% on the ratio of the number of actual usable wellbores on the qualified tract to the number of total usable wellbores contained in all qualified tracts.

At the time of the hearing, 99.98% of the working interest ownership, and 92.9% of the royalty interest ownership had signed the Unit Agreement. There are no state-owned lands in the proposed Unit. Sundown expects to have nearly 100% sign-up of the working and royalty interest ownership before the secondary recovery project is initiated, and will allocate production from wells on tracts for which 100% sign-up was not achieved.

FINDINGS OF FACT

1. Notice of hearing was sent to all operators and royalty interest owners within and adjacent to the proposed Unit. Notice was published in the *Henderson Daily News*, a newspaper of general circulation in Rusk County, once a week, for four consecutive weeks beginning March 29, 2015.
2. The proposed Roper Waterflood Unit consists of fifteen tracts, which contain 328.172 acres.
3. The unitized formation is the subsurface portion of the Unit area commonly known as the Pettit formation.
4. The unitized interval includes the Pettit formation, and is a combination structural and stratigraphic trap. Solution gas drive is the primary natural drive mechanism.
5. Sundown has 99.98% sign up of the working and royalty interest ownership, and 92.9% of the royalty interest ownership had signed the Unit Agreement.
6. Production will be allocated to wells on tracts for which 100% sign-up was not achieved.

⁴ Applicant's Exhibit No. 12.

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7. Secondary recovery operations are expected to result in the recovery of an estimated 200 MBO, which would otherwise be unrecovered.
8. The total cost to implement and operate the secondary recovery project is expected to be \$750,000. The value of the oil to be recovered as a result of the unitization and secondary recovery is approximately \$10,000,000, based on an oil price of \$50 per barrel. The estimated break even point is approximately 7.5% of the ultimate estimated production. Thus, the cost of the proposed project does not exceed the value of additional reserves to be recovered.
9. The participation formula for the Unit is comprised of three factors: the first factor is based 40% on cumulative oil production from the unitized formation in each tract during the calendar year of 2013; the second factor is based 20% on the number of surface acres contained in the qualified tracts; and the third factor is based 40% on the ratio of the number of actual usable wellbores on the qualified tract to the number of total usable wellbores contained in all qualified tracts.
10. The proposed secondary recovery project will not be successful unless the area is unitized.
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 person 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 Unit 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.

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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 the field rules, nor does it limit the amount of production of oil and 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 secondary recovery project.
23. The Unit Agreement contains only the acreage reasonably necessary to accomplish the proposed secondary recovery project.

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 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.

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EXAMINERS' RECOMMENDATION

Based on the above findings of fact and conclusions of law, the Examiners recommend approval of the proposed Roper Waterflood Unit and secondary recovery operations project as set out in the attached order.

Respectfully submitted,



Richard Eyster, P.G.
Technical Examiner



John Dodson
Legal Examiner