

**STATE OF MICHIGAN  
DEPARTMENT OF ENVIRONMENTAL QUALITY  
SUPERVISOR OF WELLS**

THE VERIFIED PETITION OF JORDAN DEVELOPMENT )  
COMPANY, L.L.C., FOR AN ORDER FROM THE )  
SUPERVISOR OF WELLS APPROVING A PLAN OF )  
UNITIZATION FOR SECONDARY RECOVERY OF OIL, ) ORDER NO. 08-2015  
GAS, AND RELATED HYDROCARBONS, AND )  
ABROGATING EXISTING SPACING AND PRORATION )  
ORDERS AND RULES FOR THE SOUTH LEE UNIT, LEE )  
TOWNSHIP, CALHOUN COUNTY, MICHIGAN. )

**OPINION AND ORDER**

This case involves the Petition of Jordan Development Company, L.L.C. (Petitioner), requesting (i) approval of a plan for unitized operation of the South Lee Unit (proposed Unit Area), pursuant to Part 617, Unitization, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); (ii) approval of a secondary recovery operation in the South Lee Unit pursuant to Section 61506(i), Part 615, Supervisor of Wells, of the NREPA and R 324.612 of the rules promulgated pursuant to Part 615; and (iii) approval to operate the proposed Unit Area as an exception to the applicable spacing provisions of Part 615 of the NREPA, and its administrative rules. The proposed Unit Area consists of approximately 360 acres, and is described as:

T1S, R5W, Lee Township, Calhoun County, Michigan  
Section 27: S 1/2 of NE 1/4 of SW 1/4, N 1/2 of SE 1/4 of SW 1/4, S 1/2 of SE 1/4;  
Section 26: S 1/2 of SW 1/4;  
Section 35: N 1/2 of NW 1/4 of NW 1/4, N 1/2 of NE 1/4 of NW 1/4, N 1/2 of NE 1/4;  
Section 36: S 1/2 of NW 1/4 of NW 1/4, NW 1/4 of NW 1/4 of NW 1/4, NW 1/4 of  
SW 1/4 of NW 1/4

**JURISDICTION**

The development of oil and gas in this state is regulated under Part 615, Supervisor of Wells, MCL 324.61501, *et seq*; and Part 617, Unitization; of the NREPA, MCL 324.61501, *et seq*. and MCL 324.61701, *et seq*. The purpose of Part 615 is to ensure the orderly development and production of the oil and gas resources of this state, with a view to the ultimate recovery of the maximum production of these natural

resources. MCL 324.61502. For the purpose of maximizing recovery, the Supervisor of Wells (Supervisor) regulates secondary recovery methods for oil and gas, including the introduction of substances into producing formations for purposes of enhancing production. MCL 324.61506(i). A person proposing secondary recovery by injection of a fluid into a producing formation must file a petition for a public evidentiary hearing. 1996 MR 9, R 324.612. The evidentiary hearing is governed by the applicable provisions of the Administrative Procedures Act, 1969 PA 306, as amended, MCL 24.201, *et seq.* See 1996 MR 9, R 324.1203. The evidentiary hearing in this matter was held on December 2, 2015.

#### **FINDINGS OF FACT**

The Petitioner specifically requests that the Supervisor issue an Order forming a 360-acre Unit Area (South Lee Unit); and allow the Petitioner to inject produced gas and other approved substances into the productive zone, for purposes of secondary recovery operations and to exempt the proposed Unit Area from the applicable spacing and proration rules and orders. The productive one is identified as:

The stratigraphic equivalent of that portion of the Trenton Black River formation encountered in the interval from 4197 feet measured depth to 4811 feet measured depth as taken from that Baker Atlas Compensated Z-Densilog Compensated Neutron Gamma Ray log run in the Beattie 1-27 well (Permit Number [PN] 59371), or the correlative equivalent of that interval (the Unitized Formation).

In support of its case, the Petitioner offered the testimony of Mr. Benjamin S. Brower, Vice President, Jordan Development Company; and Mr. William C. Quinlan, Authorized Agent of Jordan Development Company. Mr. Quinlan was recognized as an expert in the field of petroleum engineering.

The Administrative Law Judge determined the Notice of Hearing was properly served and published. The Supervisor designated the hearing to be an evidentiary hearing pursuant to R 324.1205(1)(b) and directed evidence be presented in the form of oral testimony.

One timely answer in opposition to the Petition was filed by Mr. E. Richard Midlam and Mrs. Lisa R. Midlam, Co-Trustees of the Earl R. and Hazel M. Midlam Continuing Trust, which owns three properties adjacent to the proposed Unit Area. The Midlam concerns expressed in their answer were: environmental risk to their cattle operations, possible adverse effects to groundwater and surface water, nuisance noise or odors, impacts to wildlife, and potential for injection wells to cause earthquakes. Mr. Midlam appeared at the hearing on behalf of the trust. A Motion in Limine was granted on behalf of Petitioner, limiting Mr. Midlam's cross examination to issues raised in his answer.

#### I. Unitization

Mr. Brower testified all owners of oil, gas, and minerals in the proposed Unit Area, are known and are subject to valid and fully effective oil and gas leases and 96.449122 percent of royalty and overriding royalty interests and 98.8804 percent of working interest owners had signed or ratified the Unit Agreement (Exhibit A, labeled Plan of Unitization). Mr. Brower testified the Petitioner has obtained sufficient ratifications to meet the thresholds set in MCL 324.61706(a), (b), and (c). The Petitioner is the operator and a working interest owner of oil and gas leases covering the proposed Unit Area.

Mr. Brower stated overriding royalty and royalty owners not ratifying the Unit Agreement were Mr. Howard Phillip Hoyt, Jr., the Kissner Family Trust, and Wondergem Resources, LLC. In addition, White Rock Oil & Gas, LLC was the only working Interest owner to not ratify the Unit Agreement. Mr. Brower testified he had made several attempts to secure ratifications from these parties.

I find that the Petitioner is qualified to be named Unit Operator and has obtained sufficient approval to support entry of a final order approving the Plan of Unitization and approving unit operations pursuant to Part 617 of the NREPA. I further find that the terms of the Petitioner's Plan of Unitization are fair, reasonable, and equitable. The uncommitted parties shall be subject to unitization in conformance with the terms of the Petitioner's Plan of Unitization.

## II. Unit Area, Unitized Formation

The Petitioner identified the Unitized Formation as the stratigraphic equivalent of that portion of the Trenton Black River formation encountered in the interval from 4,197 feet measured depth to 4811 feet measured depth as taken from that Baker Atlas Compensated Z-Densilog Compensated Neutron Gamma Ray log run in the Beattie 1-27 well, PN 59371, or the correlative equivalent of that interval (the Unitized Formation).

Mr. Quinlan reviewed drilling records, seismic data, well completion histories, and actual well production for the four producing wells in the proposed Unit Area to determine the productive limits of the Unitized Zone, and ultimately the boundaries of the 360-acre proposed Unit Area. Mr. Midlam did not object to the boundaries of Petitioner's proposed Unit Area.

I find the Unitized Formation as proposed by the Petitioner is reasonable and appropriate and should be approved. I find the boundaries of the proposed Unit Area are appropriate and all productive portions of the reservoir are within the proposed Unit Area.

## III. Secondary Recovery

Mr. Quinlan testified that four wells have been drilled into the proposed Unit Area: the Jacoby 1-26, PN 60232; Fischhaber 2-35, PN 59268; Marshall 1-35, PN 58966; and Beattie 1-27 HD1, PN 59949.

Mr. Quinlan testified secondary recovery will initially be conducted through re-injection of produced gas. The Petitioner seeks administrative approval from the Supervisor to inject other substances, including produced water, in the future if needed, without the need for a hearing.

The Petitioner plans to initially operate two producing oil wells (Beattie 1-27 HD1 and Jacoby 1-26) and one injection well (Marshall 1-35), while shutting in the Fischhaber 2-35, however, the Petitioner has also applied for an injection permit for the Fischhaber 2-35. Gas would be transported from the existing producing wells via existing pipeline, gathered at the Marshall Central Production Facility, and then

compressed and injected. Mr. Quinlan testified that approximately 88 percent of the currently projected primary reserves have been produced and, without secondary recovery operations, there are only about 10,100 barrels of oil that could be produced from the field. Based on certain economic parameters, the Petitioner expects to recover approximately 95,648 gross barrels of oil from the proposed Unit Area utilizing secondary recovery (Exhibit M). It is Mr. Quinlan's opinion the proposed secondary recovery operations are feasible, will prevent waste, and without these operations substantial quantities of oil would not be produced.

The Petitioner estimates that secondary recovery operations would have a capital cost of \$78,000 and operation costs of \$25,000 per month. The Petitioner expects to generate approximately \$1,300,000 in working interest net revenue over the expected life of the project, resulting in a discounted return on investment of approximately 15.2 percent.

I find the Petitioner's testimony indicates the proposed Unit Area contains accumulation of hydrocarbons that will not be recovered by further primary production of the wells in the field, but may be recovered by secondary recovery operations conducted as a part of the unitized operation. I find the estimated additional cost of unitized operations will not exceed the value of the additional hydrocarbons recovered and the unitization requested is reasonably necessary to substantially increase recovery of oil from the proposed Unit Area.

The Plan of Unitization allocates unit production among the various tracts comprising the proposed Unit Area. Mr. Quinlan sponsored Exhibit J, showing tract participation in the proposed Unit Area is in proportion to the calculation of the economic remaining primary recoverable reserves for each tract, converted to remaining barrels of oil equivalent for each producing well, as well as a 5 percent allocation to the undeveloped tract. The Petitioner believes the allocation of tract participation in this manner is fair, reasonable, and equitable. It is the Petitioner's opinion that the Plan of Unitization fairly allocates production among the mineral owners to the proposed Unit Area and the proposed secondary recovery operations are

protective of correlative rights. The correlative rights of adjacent mineral owners are not affected by the proposed operations since an adjacent mineral owner can produce his or her own minerals.

I find the allocation of production to the separately owned tracts is fair, reasonable, and equitable as required by MCL 324.61705.

In response to concerns raised by Mr. Midlam, Mr. Brower testified there would be no adverse effects to any property in the area of the Petitioner's proposed secondary recovery operations since all wells, pipelines, and facilities are already in place and the Petitioner does not plan to make any significant changes to its current operations. Mr. Brower testified that the proposed operations will be consistent with the existing rules governing noise and odor. In addition, Mr. Brower stated the Petitioner does not intend to conduct any hydraulic fracturing operations and based on historical data regarding injection wells in Michigan, does not believe the proposed injection activities will result in earthquakes.

Mr. Quinlan testified the Petitioner's injection well will meet all requirements of the Department of Environmental Quality (DEQ) and the United States Environmental Protection Agency. Pursuant to DEQ rules, casing will be set below groundwater, which will be sufficient to protect it from contamination. Mr. Midlam did not offer any evidence indicating the proposed secondary recovery operations would harm the groundwater.

After review of all testimony and evidence on the record, I find the Petitioner's secondary recovery operations, as proposed, are not expected to adversely affect the groundwater on the Midlam property or cause a nuisance or environmental hazard. Part 615 and its administrative rules are designed to prevent adverse environmental impacts.

I find there is no feasible and prudent alternative to the secondary recovery and unitized operations proposed by the Petitioner. I further find the type of operations contemplated by the Petitioner are feasible, will prevent underground waste by recovering oil not otherwise recoverable, and will protect correlative rights. I find abrogation of the existing spacing and proration rules and orders is necessary to

implement the Plan of Unitization and to proceed with secondary recovery operations, except no well shall be completed in the Unitized Formation at a location closer than 330 feet from the outside boundary of the proposed Unit Area.

### **CONCLUSIONS OF LAW**

Based on the findings of fact, I conclude, as a matter of law:

1. The applicable spacing, well location, and proration requirements for the proposed Unit Area were established by Order No. 18-2007.

2. The Supervisor shall issue an order providing for the unit operation of a unit area if he or she finds all of the following:

(a) That the unitization requested is reasonably necessary to substantially increase the ultimate recovery of oil and gas from the unit area.

(b) That the type of operations contemplated by the plan are feasible, will prevent waste, and will protect correlative rights.

(c) That the estimated additional cost of conducting such operations will not exceed the value of the additional oil and gas so recovered. MCL 324.61704(4).

3. The Supervisor's Order may be declared effective if the Plan of Unitization has been approved in writing by one of the three ways specified in MCL 324.61706.

4. The Supervisor may regulate the secondary recovery methods of oil and gas, including pulling or creating a vacuum and the introduction of gas, air, water, and other substances into the producing formations. MCL 324.61506(i).

5. A person desiring to inject water, gas, or other fluids into a producing formation or use other technology for the purpose of increasing the ultimate recovery of hydrocarbons from a reservoir shall file a petition for hearing. 1996 MR 9, R 324.612(1).

6. The operator of a secondary recovery project shall keep accurate records of all oil, gas, and brine produced, volumes of fluids injected, and injection pressures. The operator shall file reports of the data and other data as may be required with the Supervisor at regular intervals, as specified. 1996 MR 9, R 324.612(2).

7. The Supervisor has jurisdiction over the subject matter and the persons interested therein.

8. Due notice of the time, place, and purpose of the hearing was given as required by law, and all interested persons were afforded an opportunity to be heard. 1996 AACCS, R 324.1204.

#### **DETERMINATION AND ORDER**

Based on the Findings of Fact and Conclusions of Law, the Supervisor determines the proposed unitization for secondary recovery project will prevent waste and maximize the recovery of hydrocarbons from the proposed Unit Area.

NOW, THEREFORE, IT IS ORDERED:

1. The Petition of Jordan Development Company, L.L.C. is granted, and the proposed Unit Area is created in accordance with, and subject to, this Order and the provisions of the Plan of Unitization, which is incorporated by reference. The proposed Unit Area shall hereafter be known as the South Lee Unit.

2. Jordan Development Company, LLC is appointed Unit Operator.

3. The South Lee Unit is described as:

T1S, R5W, Lee Township, Calhoun County, Michigan

Section 27: S 1/2 of NE 1/4 of SW 1/4, N 1/2 of SE 1/4 of SW 1/4, 1/2 of SE 1/4;

Section 26: S 1/2 of SW 1/4;

Section 35: N 1/2 of NW 1/4 of NW 1/4, N 1/2 of NE 1/4 of NW 1/4, N 1/2 of NE 1/4;

Section 36: S 1/2 of NW 1/4 of NW 1/4, NW 1/4 of NW 1/4 of NW 1/4, NW 1/4 of SW 1/4 of NW 1/4.

4. The Unitized Formation is described as:

The stratigraphic equivalent of that portion of the Trenton Black River formation encountered in the interval from 4197 feet measured depth to 4811 feet measured depth as taken from that Baker Atlas Compensated Z-Densilog Compensated Neutron Gamma Ray log run in the Beattie 1-27 well (PN 59371), or the correlative equivalent of that interval.

5. Jordan Development Company, LLC shall notify the Supervisor between 30 and 60 days prior to the commencement of injection operations, and between 30 and 60 days prior to the anticipated date of permanent cessation of injection operations. The Petitioner shall comply with all applicable requirements of Part 615 of the NREPA and its administrative rules and shall obtain such approvals as are necessary from the DEQ.

6. Each tract within the South Lee Unit shall participate in the unit production and other benefits and burdens of unit operations in accordance with the Plan of Unitization. Pursuant to MCL 324.61718, such person's share of income and cost shall be subject to the Allocation of Unitized Substances (Article 5) and Unit Expense (Article 17) of the Plan of Unitization.

7. Operation of the South Lee Unit shall be conducted exclusive of and as an exception to all applicable spacing orders and rules, except no well may be completed in the Unitized Formation at a location closer than 330 feet from the outside boundaries of the South Lee Unit Area. Jordan Development Company, LLC is authorized to produce wells on the Unit Area at rates that result in the maximum efficient recovery of hydrocarbons. All other parts of Order No. 18-2007 and the administrative rules of Part 615 of the NREPA shall be adhered to.

8. The unitized operations shall be accomplished by the injection of produced natural gas into the Unitized Formation. Other substances may be injected only upon written approval from the Supervisor.

9. The Plan of Unitization, which constitutes the plan for unit operations, is hereby approved; and unit operations thereunder may be commenced after the effective date of this Order, subject to the provisions of Article 24 of the Plan of Unitization. The Unit Operator shall notify the Supervisor in writing within 30 days after the termination of the Plan of Unitization.

10. The Supervisor retains continuing jurisdiction over the South Lee Unit in order that the Supervisor may exercise such administrative control as is consistent with the powers and duties of the Supervisor, as established by Part 615 of the NREPA.

11. This Order shall be effective immediately.

Dated: Jan. 19, 2016



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