

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

THE PETITION OF LAMBDA ENERGY RESOURCES, )  
LLC FOR AN ORDER FROM THE SUPERVISOR OF )  
WELLS APPROVING A PLAN OF UNITIZATION FOR )  
RECOVERY OF OIL, GAS, AND RELATED ) ORDER NO. 10-2018  
HYDROCARBONS, AND ABROGATING EXISTING )  
SPACING AND PRORATION ORDERS AND RULES )  
IN BEAR LAKE TOWNSHIP, MANISTEE COUNTY, )  
MICHIGAN. )

**OPINION AND ORDER**

This case involves the Petition of Lambda Energy Resources, LLC (Petitioner), requesting (i) approval of a unitized operation of the Bear Lake 32 Unit (proposed Unit Area), pursuant to Part 617, Unitization, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); and (ii) approval to operate the proposed Unit Area as an exception to Special Order No. 1-73, the applicable spacing provisions of Part 615 of the NREPA, and its administrative rules. The proposed Unit Area consists of approximately 280 acres, and is described as:

Section 32: SW/4 of NE/4, SE/4 of NE/4, NE/4 of SE/4,  
W/2 of SE/4 and SE/4 of SE/4

Section 33: SW/4 of SW/4

Township 23 North, Range 15 West

Bear Lake Township, Manistee County, Michigan

**JURISDICTION**

The development of oil and gas in this state is regulated under Part 615, Supervisor of Wells; 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. To the end of maximizing recovery, the Supervisor of Wells (Supervisor) regulates the various methods for recovery of oil and gas, including unit operation of a

pool and the introduction of substances into producing formations for purposes of enhancing production. MCL 324.61506(i). A person proposing an order for the unit operation of a pool must file a verified petition with the Supervisor. MCL 324.61703. 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 11, 2018.

### **FINDINGS OF FACT**

The Petitioner specifically requests that the Supervisor issue an Order authorizing unit operation of the Bear Lake 32 Field. Petitioner requests that the existing spacing and proration orders be abrogated and that a unit allowable for the Bear Lake 32 Unit be established at 1050 barrels of oil per day (BOPD) and/or 1575 thousand cubic feet (MCF) of gas per day. Petitioner initially plans to sidetrack the original wellbores with lateral drain holes drilled at the base of the oil column. A pump will be run down in the open hole lateral to produce the oil that drains into the lateral.

In support of its case, the Petitioner offered the testimony of Mr. Joseph F. Durio, Land Manager, and Mr. Jason Ewing, Chief Development Officer for Petitioner and Petroleum Engineer. Mr. Ewing was recognized as an expert in petroleum engineering.

The Administrative Law Judge determined the Notice of Hearing was properly served and published. Ms. Janet Haase filed an answer but did not appear at the hearing. Mr. and Mrs. Earl and Beverly LaSarge (landowners in the Unit) appeared at the hearing but did not participate. 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.

#### **I. Unitization**

Mr. Durio testified that three Niagaran wells have been drilled on 80-acre drilling units within the Bear Lake 32 Unit, being the:

Fink LaSarge 2-32 (Permit Number 30164)  
Gauthier *et al* 6-32A (Permit Number 36092)  
Bradford *et al* 5-32 (Permit Number 31639)

These three wells and their 80-acre drilling units make up 240-acres of the proposed 280-acre Unit Area. All mineral owners in the three producing units in the proposed Unit Area, are subject to valid and fully effective oil and gas leases. In addition, an undrilled 40-acre parcel comprising the SW/4 of the NE/4 of Section 32 is part of the proposed Unit Area. Mr. Durio testified that the Petitioner has leased approximately 43 percent of the mineral interests of this parcel, that there is an agreement to lease the owner of another 50 percent, and that leases have been offered to the owners of the remaining 7 percent mineral interest in this tract on the same terms.

Mr. Durio testified that the Plan of Unitization (Exhibit 2) constitutes a Plan of Unit operations that contains all the statutory provisions as set forth in Section 61705(a)-(j) of Part 617.

Mr. Durio testified that Petitioner owns 98.17 percent of all working interest in all oil and gas leases in the Unitized Formation in the Unit Area and is qualified to be Unit Operator under Part 617. Mr. Durio testified that Petitioner has obtained ratifications of the Plan of Unitization in excess of the thresholds set out under MCL 324.61706 subsections (a), (b) and/or (c).

I find that 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. Unit Area

Mr. Ewing offered Exhibit 5, a structure map of the reservoir showing contours on the top of the Brown Niagaran formation, based on well control. Mr. Ewing indicated the oil water contact is at -3888 feet subsea true vertical depth. The Gauthier et al 6-32A well (Permit Number 36092) is the highest on the structure with the top of the Brown Niagaran at -3559 feet subsea true vertical depth. Mr. Ewing offered Exhibit 6, a Porosity-Height Map, which represents the pore space above the original oil water contact. Mr. Ewing's Exhibit 5 and 6 were used to compute the tract factors attributed to each tract in the Unit Area.

The Petitioner plans to conduct unitized operations within a Unitized Formation described as the stratigraphic equivalent of that portion of the Brown Niagaran formation encountered in the interval from 4382 feet measured depth (MD) to 4755 feet MD in the Schlumberger Gamma Ray/Sidewall Neutron Porosity Log Run on March 16, 1975 in the Fink LaSarge 2-32 well (Permit Number 30164) for a total interval of 373 feet.

In her written answer, Ms. Janet Haase requested that her land be included in the proposed development but did not provide any evidence to substantiate her position.

I find the Unitized Formation as proposed by the Petitioner is reasonable and appropriate and should be approved. I find the Petitioner's characterization of the outline and contours of the reservoir to be reasonable. Review of the evidence submitted indicates portions of the reservoir underlie each tract within the proposed Unit Area and the Unit Area. Therefore, I find the boundaries of the proposed Unit Area as proposed by the Petitioner are appropriate.

### III. Unit Operations

Mr. Ewing testified that the Bear Lake 32 Field was originally developed in the mid-1970's. The field currently produces approximately 31 BOPD at very low reservoir pressure (less than 150 psig). Total primary recovery from the field has been 4,470 thousand barrels of oil (MBO) and 9,727 million cubic feet (MMCF) of natural gas (Exhibit 8). Petitioner calculated original oil in place to be 9.32 MMBO (Exhibit 13) and believes significantly more oil will be recovered as a result of drilling three lateral drain holes by sidetracking existing wellbores. Mr. Ewing testified that Petitioner plans to inject gas into the top of the reservoir at a future time in development of the Unit Area.

Mr. Ewing testified that in the absence of further development, the decline curve analysis indicates that the estimated ultimate recovery from the field is anticipated to be 4,516 MBO, with only 47 MBO of economic oil potential left to be recovered (Exhibit 10). Mr. Ewing testified that the Bear Lake 32 project will recover approximately 607 MBO of recoverable oil, and that the proposed sidetracking of wells in 2019 will

increase production by six-fold (Exhibit 11). Based on Petitioner's analysis, there is evidence of significant amounts of oil remaining in the reservoir.

I find the testimony indicates the proposed Unit Area contains an accumulation of hydrocarbons that will not be recovered without drilling the wells proposed by Petitioner. I find the unitization requested is reasonably necessary to substantially increase the ultimate recovery of oil and gas from the Unit Area as required by MCL 324.61704(4)(a). I further find that Petitioner's plans for drilling three lateral drain holes by sidetracking existing wellbores are feasible, will prevent waste, and protect correlative rights as required by MCL 324.61704(4)(b).

Mr. Ewing testified that in calculating the allocation of production, he reviewed Porosity-Height maps, well files, and production data. Petitioner's tract factors, as set forth in Exhibit A of the Plan of Unitization (Exhibit 2) are weighted as follows:

- 1) Fifty percent on original hydrocarbon pore volume under the tract;
- 2) Thirty percent on gross lease revenue from the tract;
- 3) Twenty percent on available well bores to sidetrack from the tract.

Mr. Ewing's testimony indicates that the Bradford et al 5-32 well (Permit Number 31639), Fink LaSarge 2-32 well (Permit Number 30164), and Gauthier et al 6-32A well (Permit Number 36092) produce marginal amounts of oil (14 BOPD, 6 BOPD, and 11 BOPD, respectively). The evidence also indicates that over 98% of the working interests and over 72% of the royalty interests in the Unit Area have ratified the Plan. Of the 28% of royalty owners who have not ratified, most are in non-producing tracts.

A change in the allocation of production for a well on primary production through a Plan of Unitization will be closely examined by the Supervisor. Petitioner's proposed allocation of production based on the factors discussed above meets the requirement of Part 617 which provides that the allocation be fair, reasonable and equitable. There are no absolute factors that must be used to determine the relative value each tract contributes, but the factors used by Petitioner are of sufficient relevance that a participation formula using such factors is found to be reasonable. In addition, no objections to Petitioner's proposed allocation of production were filed. I find that the

percentages of ratifications obtained by Petitioner, along with the high percentage of ratifications in the lands presently productive, support the allocation of production provided for in the Plan. Therefore, I find that the allocation of production set out in the Plan of Unitization is fair, reasonable, and equitable as required by Section 61705 of Part 617.

#### Economics

Mr. Ewing testified the Bear Lake 32 project is economic with a net present value at a 10 percent discount rate of \$2.5 million (Exhibit 12). Mr. Ewing testified that the project will meet the Section 61704(4)(c) requirement that the cost of the project will not exceed the value of oil recovered.

I find the estimated additional cost of unitized operations will not exceed the value of the additional oil recovered, and therefore, Section 61704(4)(c) of Part 617 has been met.

#### Abrogation of Spacing

Mr. Durio and Mr. Ewing testified that drilling lateral wells across the existing 80-acre unit boundaries was necessary and critical to produce the oil that would not otherwise be recovered from the existing wells.

I find an exception to the spacing, well location, and proration requirements of Special Order No. 1-73 is necessary to implement the Plan of Unitization and the unitized operations, except that 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.

I find the competent, material, and substantial evidence on the record as a whole, in this case, supports the request of Petitioner and satisfies the Part 617 prerequisites.

### **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 are established by Special Order No. 1-73. Exceptions to this order may be granted by the Supervisor.

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 methods specified in MCL 324.61706.

4. A person desiring to request an order for the unit operation of a pool, or parts of a pool, may file a Petition for hearing. MCL 324.61703.

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

6. 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 MR 9, R 324.1204.

**DETERMINATION AND ORDER**

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

**NOW, THEREFORE, IT IS ORDERED:**

1. The Petition of Lambda Energy Resources, LLC 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 hereby incorporated by reference. The proposed Unit Area shall hereafter be known as the Bear Lake 32 Unit.

2. Lambda Energy Resources, LLC is appointed Unit Operator.

3. The Bear Lake 32 Unit is described as:

Section 32: SW/4 of NE/4, SE/4 of NE/4, NE/4 of SE/4,  
W/2 of SE/4 and SE/4 of SE/4

Section 33: SW/4 of SW/4

Township 23 North, Range 15 West

Bear Lake Township, Manistee County, Michigan.

4. The Unitized Formation is described as:

All formations lying between the stratigraphic equivalent of that portion of the Guelph Dolomite/Ruff formation (formerly referred to as the Salina and Niagaran Groups) encountered in the interval from 4382 feet measured depth (MD) to 4755 feet MD in the Schlumberger Gamma Ray/Sidewall Neutron Porosity Log Run on March 16, 1975 in the Fink LaSarge 2-32 well (Permit Number 30164) for a total interval of 373 feet or the correlative equivalent of that interval.

5. Each tract within the Bear Lake 32 Unit shall participate in the unit production and other benefits and burdens of unit operations in accordance with the Plan of Unitization.

6. Operation of the Bear Lake 32 Unit shall be conducted exclusive of and as an exception to Special Order No. 1-73, except no well may be completed in the Unitized Formation at a location closer than 330 feet from the outside boundaries of the Bear Lake 32 Unit Area. Lambda Energy Resources, LLC is authorized to produce wells in the Unit Area at a unit allowable of 1050 BOPD and/or 1575 MCF of gas per day.

7. The Plan of Unitization, which constitutes the plan for unit operations, is hereby approved. Unit operations thereunder may be commenced as of the effective date determined by the Unit Operator consistent with the Plan of Unitization. Cessation of the unit operations shall be in accordance with the Plan of Unitization, and with the written approval of the Supervisor.

8. The Supervisor retains continuing jurisdiction over the Bear Lake 32 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 and Part 617 of the NREPA.

9. This order is effective immediately.

Dated:

January 25, 2019

Harold R. Fitch

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