STATE OF MICHIGAN
DEPARTMENT OF
ENVIRONMENT, GREAT LAKES, AND ENERGY

ORDER OF THE SUPERVISOR OF WELLS

IN THE MATTER OF:

THE PETITION OF JORDAN DEVELOPMENT COMPANY, FOR AN ORDER FROM THE SUPERVISOR OF WELLS FORMING A 120-ACRE NIAGARAN FORMATION DRILLING UNIT BY STATUTORY POOLING ALL INTERESTS INTO THE DRILLING UNIT IN VEVAY TOWNSHIP, INGHAM COUNTY, MICHIGAN.	) ORDER NO. 07-2019

OPINION AND ORDER

This case involves the Petition of Jordan Development Company (Petitioner), to drill and complete the Capex 3-16 well for oil and gas exploration within a drilling unit in the stratigraphic interval known as the Niagaran formation. The Petitioner is requesting a 120-acre drilling unit for the Capex 3-16 well as an exception to the 80-acre drilling unit size established by Special Order 1-73. The proposed unit consists of the SW 1/4 of the NW 1/4 and the W/2 of the SW 1/4 of Section 9, T2N, R1W, Vevay Township, Ingham County, Michigan. Since not all of the mineral owners within the proposed drilling unit have agreed to voluntarily pool their interests, the Petitioner also seeks an Order of the Supervisor of Wells (Supervisor) designating the Petitioner as Operator of the proposed drilling unit and requiring statutory pooling of all tracts and interests within that geographic area that the owners have not agreed to voluntary pooling.

Jurisdiction

The development of oil and gas in this State is regulated under Part 615, Supervisor of Wells, of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, Michigan Complied Laws 324.61501, et seq. The purpose of

Part 615 is to ensure the orderly development and production of the oil and gas resources of this State. MCL 324.61502. To that end, the Supervisor may establish drilling units and statutorily pool mineral interests within said units. MCL 324.61513(2) and (4). However, the formation of drilling units by statutory pooling of interests can only be effectuated after an evidentiary hearing. 2015 AACS, R 324.302 and R 324.304. 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 AACS, R324.1203. The evidentiary hearing in this matter was held on November 21, 2019.

FINDINGS OF FACT

The Petitioner specifically requests that the Supervisor issue an Order that:

1. Grants an exception to the drilling unit size established by Special Order 1-73 by establishing a 120-acre drilling unit for the proposed Capex 3-16 well consisting of the SW 1/4 of the NW 1/4 and the W 1/2 of the SW 1/4 of Section 9, T2N, R1W, Vevay Township, Ingham County, Michigan.

2. Requires statutory pooling of all tracts and mineral interests within the proposed drilling unit that have not agreed to voluntary pooling.

3. Names the Petitioner as operator of the Capex 3-16 well.

4. Authorizes the Petitioner to recover certain costs and other additional compensation from the parties subject to the statutory pooling order.

5. Authorizes the Petitioner to drill the proposed Capex 3-16 well through an unleased tract or tracts in the subsurface subject to obtaining a drilling permit. Petitioner does not propose to conduct any surface operations on the unleased tracts.

The Administrative Law Judge determined that the Notice of Hearing was properly served and published. A timely answer was filed by Mr. Jack B. Carmichael, who is a surface and mineral owner within the proposed 120-acre drilling unit, and who participated as a full party in the hearing. Mr. Carmichael made a statement opposing the

establishment of the proposed 120-acre drilling unit, but offered no witnesses or testimony in support of that position. Mr. Carmichael raised concerns about the possibility of sour gas in the form of hydrogen sulfide being produced, as well as other environmental concerns including potential impacts to wetlands and damages to buildings caused by the oil extraction process. Mr. Carmichael was made aware that the concerns regarding hydrogen sulfide and the potential environmental impacts were not relevant issues at this hearing and that these concerns would be addressed in the permitting process of the proposed well. 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. Mr. Carmichael did not offer any witnesses or exhibits.

In support of its case, the Petitioner offered the testimony of Mr. Timothy L. Baker, as Geoscientist, and Vice President of Engineering & Operations for West Bay Exploration; and Mr. Benjamin Brower, Chief Operating Officer for Jordan Exploration Company. Mr. Baker was recognized as an expert in petroleum geophysics and petroleum engineering.

I. Drilling Unit

The spacing of wells in Ingham County targeting the Niagaran formation is governed by Special Order 1-73. This Rule establishes drilling units of Eighty (80) acres, more or less, formed by combining two governmental surveyed quarter-quarter sections of land. The Petitioner's proposed drilling unit is described as the SW 1/4 of the NW 1/4 and the W 1/2 of the SW 1/4 of Section 9, T2N, R1W, Vevay Township, Ingham County, Michigan.

Mr. Baker testified that based on his review of subsurface control and seismic data, it is his opinion that there are anomalous conditions in the Niagaran interval traversing the proposed 120-acre unit that are indicative of a Niagaran reservoir.

It is Mr. Baker's opinion that the proposed drilling unit is reasonably underlain by the interpreted structure. The Seismic data which was reviewed involves lines WBE-

14MI-02N01W-S8B, WBE-14MI-02N01W-S4 and WBE-15MI-02N01W-S4. By Stipulation between Petitioner and Mr. Carmichael, these three seismic lines were distributed to the Supervisor, Staff and Mr. Carmichael for review; however, the seismic sections were not made formal exhibits nor made a part of the hearing file. Mr. Baker reviewed the above referenced seismic lines which were evaluated in order to form an opinion regarding the inferred reef. Mr. Baker testified that seismic, coupled with area well penetrations were the basis for the prospect and the proposed well. Mr. Baker stated that well penetrations in the area allow identification and correlation of specific geologic horizons to seismic responses, the result of which is a cross section or layer cake view of the geology and anomalous events. Mr. Baker testified that in this case a Niagaran reef shows up as an anomalous feature in the proposed drilling unit.

Based on Mr. Baker's review of the geology of existing reefs and upon his interpretation of the above three seismic lines, Mr. Baker prepared a map (Exhibit D) which depicts his interpretation of the postulated Niagaran reef. Exhibit D reflects that, in Mr. Baker's opinion, the inferred reef does reasonably underlie the proposed 120-acre drilling unit. It is Mr. Baker's opinion that the proposed 120-acre drilling unit should be established, that the proposed unit is reasonably underlain by the inferred structure and that the establishment of the 120-acre unit results in the elimination of waste as it eliminates the drilling of an unnecessary well and minimizes surface waste.

I find that formation of the proposed 120-acre drilling unit, as an exception to Special Order 1-73, will prevent waste and protect correlative rights and, as such, is approved for the proposed Capex 3-16 well.

II. Drilling Unit Operator

Mr. Brower stated that the Petitioner owns or controls oil and gas leases in the proposed drilling unit covering 92.03 acres. There are approximately 27.97 net acres that are unleased. Given this, the Petitioner seeks to be designated as the operator of

the Capex 3-16 well. I find, as a Matter of Fact, the Petitioner is eligible to be designated operator of the Capex 3-16 well.

III. Statutory Pooling

The Petitioner was unable to obtain the agreement of all mineral owners to gain full control of the proposed unit. The Petitioner may not produce a well on the drilling unit without first obtaining control of all the oil and gas interests. In cases like this, it is necessary for the Petitioner to request statutory pooling from the Supervisor. As discussed, a mineral owner who does not agree to voluntarily pool his or her interest in a drilling unit may be subject to statutory pooling. 2015 AACS, R 324.304. The statutory pooling of an interest must be effectuated in a manner that ensures "each owner of an interest within a drilling unit is afforded the opportunity to receive his or her just and equitable share of the production from the unit." *Id.* In addition to protecting correlative rights, the statutory pooling must prevent waste. MCL 324.61502. An operator must first seek voluntary pooling of mineral interests within a proposed drilling unit prior to obtaining statutory pooling through an order of the Supervisor.

Mr. Brower testified the Petitioner controls oil and gas interests covering 92.03 acres within the proposed drilling unit. Mr. Brower prepared a Plat (Exhibit A) that reflects the location of the leased tracts within the proposed drilling unit. The unleased acreage in the proposed drilling unit is owned by those parties identified in Exhibit B offered by Mr. Brower. Jordan made attempts to acquire leases from the unleased owners and the summary of those efforts was documented as part of Exhibit B.

Mr. Brower testified the surface location of Petitioner's proposed Capex 3-16 well is not located on the surface of an unleased tract. The proposed well is located within an existing industrial area, outside of the drilling unit, which will minimize Petitioner's impact on the surface and will also minimize traffic noise and other impacts on the surface owners within the proposed drilling unit. Mr. Brower testified that the wellbore as it is drilled from the surface to the bottom hole location may transect several unleased tracts. Mr. Brower stated that the well is not projected to be completed under an unleased tract.

The Petition indicates that the proposed well may be drilled through the subsurface of the unleased lands. The Petitioner submits it is necessary to drill directionally through the subsurface of certain unleased tracts in order to minimize the surface impacts in the drilling unit. Furthermore, with respect to the wellbore path and an unleased tract, Mr. Baker provided testimony that doglegs in the directional wellbore around an unleased tract would be impractical because it would increase the risk of mechanical problems. Mr. Brower testified that the proposed surface location for the Capex 3-16 is within an area operated as an asphalt plant.

I find the proposed unit will help assure that all owners in the unit receive their just and equitable share of the oil and gas and that a fair and reasonable order should not unduly or unnecessarily hamper the opportunity of those owners who have leased to have their natural resources developed. I find that the proposed bottom hole location of the Capex 3-16 well is reasonable to avoid waste or the potential for waste to occur and, therefore, should be approved.

Based on the foregoing, I find, as a Matter of Fact:

1. The Petitioner was able to voluntarily pool all the mineral interests in the proposed 120-acre Niagaran formation drilling unit except for the interests described above.

2. Statutory pooling is necessary to form a full drilling unit, to protect correlative rights of unpooled lease owners, and to prevent waste by preventing the drilling of unnecessary wells.

3. The bottom hole location and path of the wellbore of the proposed Capex 3-16 well is reasonable and should be approved, subject to issuance of a drilling permit.

Now that it has been determined statutory pooling is necessary and proper in this case, the terms of such pooling must be addressed. When pooling is ordered, the owner of the statutory pooled lands (Pooled Owner) is provided an election on how he or she wishes to share in the costs of the project. 2015 AACS, R 324.1206(4). A Pooled Owner may participate in the project, or, in the alternative, be "carried" by the operator.

If the Pooled Owner elects to participate, he or she assumes the economic risks of the project, specifically, by paying his or her proportionate share of the costs or giving bond for the payment. Whether the well drilled is ultimately a producer or dry hole is immaterial to this obligation. Conversely, if a Pooled Owner elects not to participate, the Pooled Owner is, from an economic perspective, "carried" by the operator. Under this option, if the well is a dry hole, the Pooled Owner has no financial obligation because they did not assume any risk. If the well is a producer, the Supervisor considers the risks associated with the proposal and awards the Operator compensation, out of production, for assuming all of the economic risks.

In order for a Pooled Owner to decide whether he or she will "participate" in the well or be "carried" by the Operator, it is necessary to provide reliable cost estimates. In this regard, the Petitioner must present proofs on the estimated costs involved in drilling, completing and equipping the proposed well. The Petitioner's Exhibit C itemizes the estimated costs to be incurred in the drilling, completing, equipping and plugging of the well. The estimated costs are $919,878.50 for drilling, $329,800.00 for completion, and $1,009,157.00 for equipping. The total estimated producing well cost for the Capex 3-16 well is $2,258,736.00 There is no evidence on this record refuting these estimated costs.

I find, as a Matter of Fact, the estimated costs in Exhibit C are reasonable for the purpose of providing the pooled owners a basis on which to elect to participate or be carried. However, I find actual costs shall be used in determining the final share of costs and additional compensation assessed against a Pooled Owner.

The next issue is the allocation of these costs. Part 615 requires the allocation be just and equitable. MCL 324.61513(4). Mr. Baker testified that, in his opinion, allocation of drilling and production costs on a surface acreage basis is fair and equitable. Established practices and industry standards suggest this to be a fair and equitable method of allocation of production and costs. Therefore, I find, as a Matter of Fact, utilizing net mineral acreage is a fair and equitable method to allocate to the various tracts

in the proposed drilling unit and each tract's just and equitable share of unit production and costs. I find that an owner's share in production and costs should be in proportion to their net mineral acreage.

The final issue is the additional compensation for risk to be assessed against a Pooled Owner who elects to be carried. The administrative rules under Part 615 provide for the Supervisor to assess appropriate compensation for the risks associated with drilling a dry hole and the mechanical and engineering risks associated with the completion and equipping of wells. 2015 AACS, R 324.1206(4)(b). The Petitioner requests additional compensation of four hundred percent (400%) for the costs of drilling, two hundred percent (200%) of the cost of completing and one hundred fifty percent (150%) of the cost of equipping the Capex 3-16 well.

Mr. Baker described the proposed Capex 3-16 well and indicated there is substantial risk of drilling a dry hole. Mr. Baker testified there is a risk that the Niagaran may not be sufficiently dolomitized leading to limited porosity and poor reservoir quality. Mr. Baker also testified that since the proposed well is a directional well, there is a high degree of risk in the form of increased wear and potential loss of downhole tools. In addition, Mr. Baker noted the unique geometry results in increased torque and drag on the drill string, sometimes resulting in parted drill strings. Parted strings in directional wells can be expensive and difficult to recover, resulting in sidetracking and drilling a new hole. Mr. Baker testified that there is a risk associated with seismic interpretation since near surface conditions can produce anomalous seismic signatures which may be mistaken for potential reservoir. Mr. Baker noted that due to the high density of homes, it was not feasible to shoot a conventional seismic program, and Petitioner was not able to shoot a three-dimensional program. Mr. Baker indicated that the inability to shoot a three-dimensional program increased the risk associated with the proposed well.

Mr. Baker testified the risks associated with completion costs are due to the geometry of a directional well, specialized tools must be employed to provide offset when cementing. A successful cement job decreases the chance the well will produce water

from penetrated water producing intervals. Water production remediation is cost intensive, sometimes requiring a cement squeeze and new completion. Mr. Baker testified regarding the risks associated with surface equipping costs, indicating that there are significant costs associated with equipping a well with the necessary surface facilities that are required to bring oil and gas production to market. Although these costs are generally attributed to "tangible" equipment, a large portion of surface equipping costs are the costs of labor and services to construct the surface facilities. These labor and service costs are unrecoverable and have no salvage value in the event commercial production is not established. Also, in the event commercial production is not established, the same equipment must be de-constructed and removed and the location restored to its original condition, resulting in other costs that are "at-risk" of being unrecoverable through the benefits of production.

I find, as a Matter of Fact, the risk of the proposed Capex 3-16 well being a dry hole supports additional compensation from the Pooled Owners of three hundred percent (300%) of the actual drilling costs incurred. I find the mechanical and engineering risks associated with the well support additional compensation of two hundred percent (200%) of the actual completing costs and one hundred fifty percent (150%) of the actual equipping costs incurred. Operating costs are not subject to additional compensation for risk.

CONCLUSIONS OF LAW

Based on the Findings of Fact, I conclude, as a matter of law:

1. The Petitioner was unable to voluntarily pool all mineral interests within the proposed drilling unit. The Supervisor may statutorily pool properties when pooling cannot be agreed upon. Statutory pooling is necessary to prevent waste and protect the correlative rights of the Pooled Owners in the proposed drilling unit.

2. This Order is necessary to provide for conditions under which each mineral owner who has not voluntarily agreed to pool all of their interest in the pooled unit may share in the working interest share of production. 2015 AACS, R324.1206(4).

3. The Petitioner is an owner within the drilling unit and, therefore, is eligible to drill and operate the Capex 3-16 well. 2015 AACS, R324.1206(4).

4. The Petitioner is authorized to take from each nonparticipating interest's share of production, the cost of drilling, completing, equipping, and operating the well, plus an additional percentage of the costs as identified in the Determination and Order section of this Order for the risks associated with drilling a dry hole, and the mechanical and engineering risks associated with the completion and equipping of the well. 2015 AACS, R324.1206(4).

5. Spacing for wells drilled in Ingham County to the Niagaran formation is eighty (80) acres as set by Special Order 1-73. Exceptions to Special Order 1-73 may be granted by the Supervisor after a hearing.

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

7. 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. 2015 AACS, R 324.1204.

DETERMINATION AND ORDER

Based on the Findings of Fact and Conclusions of Law, the Supervisor determines that statutory pooling to form a 120-acre Niagaran formation drilling unit is necessary to protect correlative rights and prevent waste by the drilling of unnecessary wells.

NOW, THEREFORE, IT IS ORDERED:

1. A 120-acre Niagaran formation drilling unit is established, as an exception to Special Order 1-73 for the Capex 3-16 well comprising the following area: SW 1/4 of the NW 1/4 and the W 1/2 of the SW 1/4 of Section 9, T2N, R1W, Vevay Township, Ingham County, Michigan. All properties, parts of properties and interests in this area are pooled into the drilling unit. This pooling is for the purpose of forming a drilling unit only.

2. Each Pooled Owner shall share in production and costs in the proportion that their net mineral acreage in the drilling unit bears to the total acreage in the drilling unit.

3. The Petitioner is named Operator of the Capex 3-16 well. The Operator shall commence the drilling of the Capex 3-16 well within one hundred eighty (180) days of the effective date of this Order, or the statutory pooling authorized in this Order shall be null and void as to all parties and interests. This Pooling Order applies to the drilling of the Capex 3-16 well and any directional wells re-drilled within the proposed drilling unit.

4. A Pooled Owner shall be treated as a working interest owner to the extent of one hundred percent (100%) of the interest owned in the drilling unit. The Pooled Owner is considered to hold a one-eighth (1/8th) royalty interest, which shall be free of any charge for costs of drilling, completing, or equipping the well, or for compensation for the risks of the well or operating the proposed well including post-production costs.

5. A Pooled Owner shall have ten (10) days from the effective date of this Order to select one of the following alternatives and advise the Supervisor and the Petitioner, in writing, accordingly:

a. To participate, then within ten (10) days of making the election (or within a later date as approved by the Supervisor), pay to the Operator the Pooled Owner's share of the estimated costs for drilling, completing and equipping the well, or give bond to the Operator for the payment of the Pooled Owner's share of such costs promptly upon completion, and authorize the Operator to take from the Pooled Owner's remaining 7/8ths share of production, the Pooled Owner's share of the actual costs of operating the well; or

b. To be carried, then if the well is put on production, authorize the Operator to take from the Pooled Owner's remaining 7/8ths share of production:

(i) The Pooled Owner's share of the actual cost of drilling, completing and equipping the well;

(ii) An additional three hundred percent (300%) of the actual drilling costs, two hundred percent (200%) of the actual completion costs,

and one hundred fifty percent (150%) of the actual equipping costs attributable to the Pooled Owner's share of production, as compensation to the Operator for the risk of a dry hole;

(iii) The Pooled Owner's share of the actual cost of operating the well.

6. In the event the Pooled Owner does not notify the Supervisor, in writing, of the decision within ten (10) days from the effective date of this Order, the Pooled Owner will be deemed to have elected the alternative described in Paragraph 5(b). If a Pooled Owner who elects the alternative in Paragraph 5(a) does not, within ten (10) days of making their election (or within any alternate date approved by the Supervisor), pay their proportionate share of costs or give bond for the payment of such share of such costs, the Pooled Owner shall be deemed to have elected the alternative described in Paragraph 5(b), and the Operator may proceed to withhold and allocate proceeds for costs from the Pooled Owner's 7/8ths share of production as described in Paragraph 5(b)(i)(ii) and (iii).

7. For purposes of the Pooled Owners electing alternatives, the amounts of $919,878.50 for estimated drilling costs (dry hole costs), $329,800.00 for estimated completion costs, and $1,009,157.00 for estimated equipping costs are fixed as well costs. Actual costs shall be used in determining the Pooled Owner's final share of well costs and in determining additional compensation for the risk of a dry hole. If a Pooled Owner has elected the alternative in Paragraph 5(a) and the actual cost exceeds the estimated cost, the Operator may recover the additional cost from the Pooled Owner's 7/8ths share of production. Within sixty (60) days after commencing drilling of the well, and every thirty (30) days thereafter, until all costs of drilling, completing and equipping the well are accounted for, the Operator shall provide to the Pooled Owner a detailed statement of actual costs incurred as of the date of the statement and all costs and production proceeds allocated to that Pooled Owner.

8. The Operator shall certify to the Supervisor that the following information was supplied to each pooled owner no later than the effective date of the Order:

a. The Order

b. The Authorization for Expenditure (AFE)

c. Each Pooled Owner's percent of charges from the AFE if the Pooled Owner were to choose option "a" in Paragraph 5, above.

9. A Pooled Owner shall remain a Pooled Owner only until such time as a lease or operating agreement is entered into with the Operator. At that time, terms of the lease or operating agreement shall prevail over terms of this Order.

10. This Order shall terminate immediately after the Capex 3-16 well and all subsequent re-drills have been plugged and abandoned.

11. The Supervisor retains jurisdiction in this matter.

12. The effective date of this Order is March 19, 2020.

DATED: March 9, 2020

ADAM W. WYGANT
Assistant Supervisor of Wells
Oil, Gas, and Minerals Division
P.O. Box 30256
Lansing, MI 48909-7756