

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES AND ENVIRONMENT

ORDER OF THE SUPERVISOR OF WELLS

IN THE MATTER OF

THE PETITION OF SCHMUDE OIL, INC. FOR AN ORDER)
FROM THE SUPERVISOR OF WELLS APPROVING AN)
EXCEPTION TO THE BOTTOM HOLE LOCATION) ORDER NO. 18-2010
REQUIREMENTS ESTABLISHED BY SPECIAL ORDER)
NO. 1-73 FOR GUELPH DOLOMITE/RUFF FORMATION)
WELLS IN PART OF GRAND TRAVERSE COUNTY,)
MICHIGAN.)

OPINION AND ORDER

This case involves the Petition of Schmude oil, Inc. (Petitioner). The Petitioner requests an exception to Special Order No. 1-73 to drill and complete the Parcels 1-9B well in the stratigraphic interval known as the Guelph Dolomite/Ruff Formation, less than 330 feet from the drilling unit boundary. The drilling unit for the proposed Parcels 1-9B well is the S 1/2 of SW 1/4 of Section 9, T25N, R12W, Grant Township, Grand Traverse County, Michigan.

Jurisdiction

The development of oil and gas in this state is regulated under Part 615, Supervisor of Wells (Supervisor), of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended MCL 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 well spacing. MCL 324.61513(2) and (5) The spacing and location of Guelph Dolomite/Ruff Formation wells in Grand Traverse County is subject to Special Order No 1-73. Under that order, permits may be granted for the drilling of exploratory and development wells for oil and gas, without a proration penalty, provided the location is not less than 460 feet from an adjoining drilling unit. Permits may be granted at locations less than 460 feet, but not less than 330 feet, from an adjoining drilling unit subject to a 50 percent proration penalty. Exceptions to the Order may be granted by the Supervisor in accordance with Part 615.

The evidentiary hearing is governed by the applicable provisions of the Administrative Procedures Act, 1969 PA 306, as amended, MCL 24.201 *et seq.* 1996 MR 9, R 324.1203. The evidentiary hearing in this matter was held December 2, 2010.

FINDINGS OF FACT

Petitioner specifically requests that the Supervisor issue an order that authorizes the issuance of a drilling permit with a bottom hole location 200 feet from the south drilling unit line and 1,017 feet from the east drilling unit line, as an exception to the spacing pattern for wells set by Special Order No. 1-73. The Petitioner also requests that the Supervisor set a production allowable for the proposed well based upon a distance based logarithmic formula as set out in previous sub-330 hearings, such as Order No. 7-4-89.

The Administrative Law Judge determined the Notice of Hearing was properly served and published. No answers to the Petition were filed and Petitioner is the only party in this matter. The Supervisor designated the hearing to be an evidentiary hearing pursuant to R 324.1205(1)(b) and directed substantive evidence be presented in the form of oral testimony.

In support of its case, the Petitioner offered the testimony of Mr. Paul Schmude, Geologist, and Mr. Ronald Suckle, Petroleum Engineer. Messrs. Schmude and Suckle were recognized as experts in the areas of their expertise.

Mr. Schmude testified the legal description of the proposed drilling unit is the S 1/2 of SW 1/4 of Section 9, T25N, R12W, Grant Township, Grand Traverse County, Michigan (Exhibit A). He stated Petitioner has a pending drilling permit application for the proposed Parcels 1-9B well. It is Mr. Schmude's opinion that Petitioner's proposed bottom hole location is necessary because the prospective reservoir, the Grant 16 Reef, underlies a portion of the proposed drilling unit, but previous wells drilled by Petitioner at 330-foot locations have been uneconomic. He testified the Parcels 1-9 well, drilled by Petitioner at the 330-foot line, was in the water zone of the Reef and the Parcels 1-9A well, drilled at a 330-foot location, was drilled into a limited noncommercial section of the Reef that was not connected to the better portion of the Reef.

Mr. Schmude testified his review of a Niagaran Reef Structure Map (Exhibit B) shows the Grant 16 Reef to be approximately 80 acres in size and 400 feet tall, with approximately 20 acres lying beneath the proposed drilling unit. The Reef has produced approximately 440,000 barrels of oil; however, no wells have been drilled on the top of the Reef. This production has caused the oil/water contact to rise over time, thereby limiting the amount of reef area to develop. Mr. Schmude indicated that by drilling the proposed well at a sub-330 foot location, the well should encounter more reef above the rising oil/water contact and be better connected to the most productive portions of the reservoir, allowing Petitioner an opportunity to produce oil that lies beneath the drilling unit.

Mr. Schmude testified that; based on his seismic interpretations, the proposed

Parcels 1-9B well will be structurally higher on the reef and be better located in the reservoir (Exhibits D, E, and F). It is his opinion that the proposed drilling unit is being drained by adjacent wells associated with the rising oil/water contact, and it is necessary to drill the 1-9B well at a sub-330 location to capture a share of the oil and gas. Mr. Schmude indicated the proposed allowable is consistent with the logarithmic formula adopted in Order No. 7-4-89. He stated that with a bottom hole location 200 feet from the south line of the unit, the logarithmic formula would result in an allowable of 60 barrels of oil per day.

Mr. Suckle testified that based on his review of completion attempts for the Parcel 1-9 well and production and bottom hole pressure data for the reservoir (Exhibit G), Petitioner's proposal is the best option for an economic well. It is his opinion that hydraulic fracturing, another possible option, would likely produce all water due to this being a high water level reef. Mr. Suckle believes, based on the current estimated bottom hole pressure of 500 PSI, a well at a sub-330 location will not result in harmful interference or violate correlative rights. It is his opinion that the proposed well will protect the correlative rights of the mineral owners in the drilling unit. Mr. Suckle testified that Petitioner would run a directional survey to determine the exact bottom hole location of the well.

Special Order No. 1-73 recognizes the difficulty of predicting reserves in Guelph Dolomite/Ruff Formation reef reservoirs, the heterogeneous nature of those reservoirs, and the non-uniform shapes and sizes of the reservoirs. Thus, Special Order No. 1-73 allocates production on the basis of distance from unit boundaries. In instances where an exception to Special Order No. 1-73 has been granted, production continues to be allocated on the basis of distance of the exception well from the unit line. In order to take into account the possibility that an exception well will cause drainage from adjoining tracts, the Supervisor has used a logarithmic based scale to penalize such exception wells in establishing the appropriate production levels. I find that distance-based proration is fair and equitable for Guelph Dolomite/Ruff Formation reef reservoirs and has worked well in the past. The concept of equal opportunity to capture a fair share of reservoir products and energy is maintained by distance-based proration.

I find as a matter of fact that a sub-330 foot bottom hole location for the Parcel 1-9B well allows for reasonable development, avoids waste and the potential for waste, and protects correlative rights.

CONCLUSIONS OF LAW

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

1. An exception to the bottom hole location requirements established by Special Order No 1-73 is appropriate for the Parcels 1-9B well. Exceptions to this order may be granted by the Supervisor after notice and hearing.

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

3. 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 that a bottom hole location exception is necessary for the proposed Parcels 1-9B well to prevent waste and protect correlative rights.

NOW, THEREFORE, IT IS ORDERED:

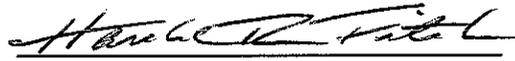
1 A bottom hole location exception in the Guelph Dolomite/Ruff Formation is granted as an exception to Special Order No 1-73 for the Parcels 1-9B well

2 In the event the Parcels 1-9B well achieves an actual bottom hole location different than the projected 200 feet from the south drilling unit line and 1,017 feet from the east drilling unit line, the allowable will be based on the actual location and depth of the open interval of the well. Petitioner shall file a directional survey with the Office of Geological Survey to verify the trajectory of the well

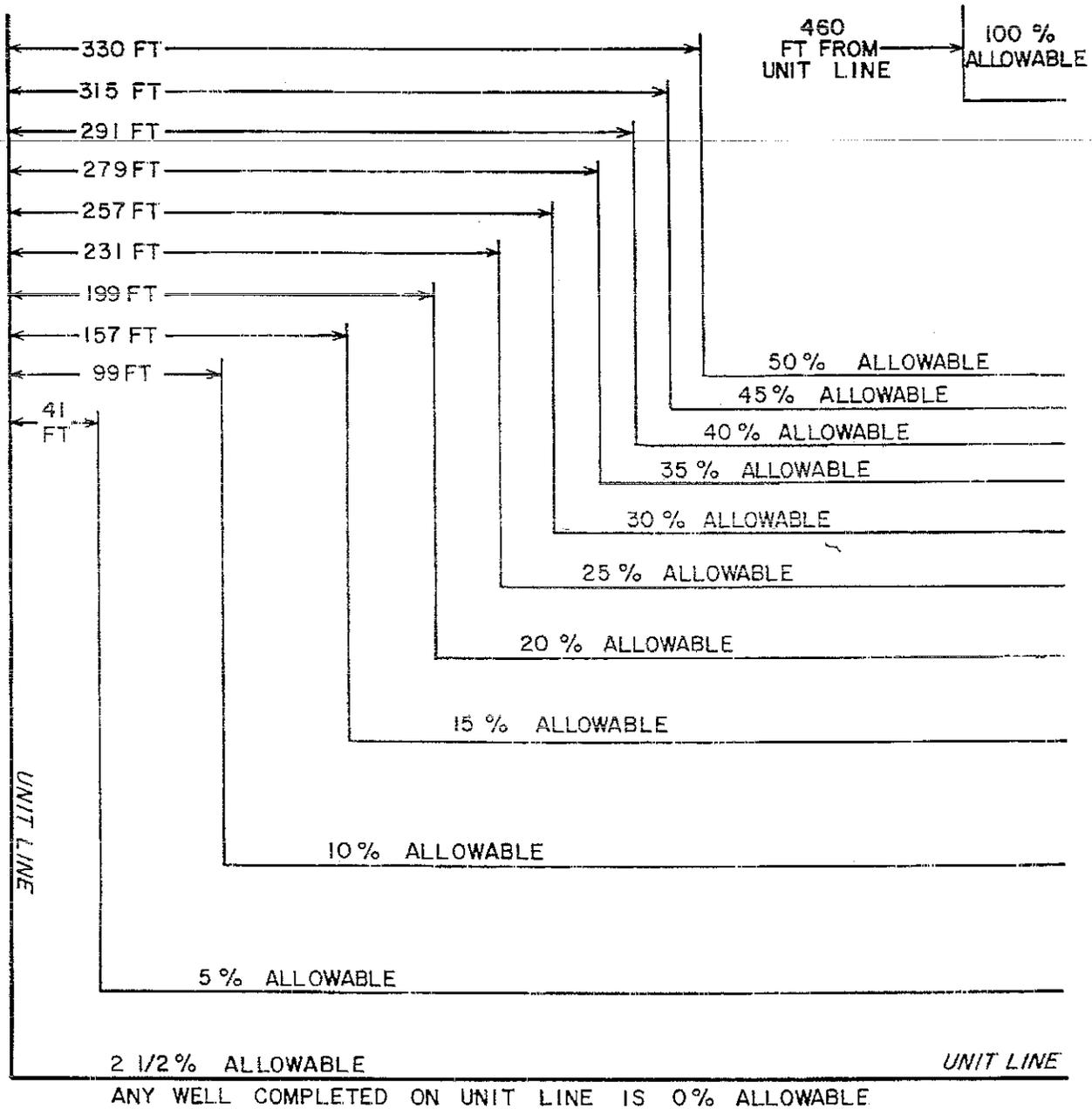
3. In the event the Parcels 1-9B well is commercially productive, the allowable for the well is hereby established as being that level of production which is determined by applying the logarithmic formula used in the attached Schedule A from Order No. 7-4-89. At the proposed location of 200 feet from the drilling unit line, the allowable would be 60 barrels of oil per day and/or 90 thousand cubic feet of gas per day.

4. The Supervisor retains jurisdiction in this matter.
5. This Order shall be effective immediately.

DATED: *Jan 11, 2011*



HAROLD R. FITCH
ASSISTANT SUPERVISOR OF WELLS
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PRORATION PENALTY FOR PETROLEUM WELLS
 COMPLETED BETWEEN THE UNIT LINE AND
 THE 330 FOOT LINE

SCHEDULE A
 ORDER NO. 7-4-89