

STATE OF MICHIGAN
DEPARTMENT OF NATURAL RESOURCES

ORDER OF THE SUPERVISOR OF WELLS

IN THE MATTER OF

THE PETITION OF TRENDWELL OIL CORPORATION)
FOR EXCEPTIONS TO WELL LOCATION REQUIREMENTS)
OF RULE 201 (R 299.1201) FOR WELLS DRILLED)
IN THE ANTRIM FORMATION IN PORTIONS OF) ORDER NO. 10-12-87
CHARLTON TOWNSHIP, OTSEGO COUNTY, MICHIGAN,) Effective: January 25, 1988
AND THE PETITION OF SUPERVISOR OF WELLS TO)
CONSIDER A SPECIAL ORDER FOR LOCATION OF)
ANTRIM FORMATION GAS WELLS.)

OPINION AND ORDER

On December 15, 1987 a public hearing was held before the Supervisor of Wells and the Advisory Board. The hearing was conducted pursuant to 1939 PA 61, as amended, and the promulgated rules. The purpose of the hearing was to consider the petitions of Trendwell Oil Corporation and the Supervisor of Wells to consider well location exceptions and completion techniques for wells drilled for gas into the Antrim Formation.

FINDINGS OF FACT

1. The Petitioner, Trendwell Oil Corporation, is the operator of Antrim Formation gas wells in Otsego County. The Petitioner proposes that they be allowed to drill directional or horizontal drain holes in order to encounter as many fractures as possible in the Antrim Formation and that they be granted an exception to Rule 299.1201 in order to accomplish this. R 299.1201 requires drilling units consisting of a quarter-quarter section and that all wells be similarly located if they are completed in the same objective formation. The Antrim Formation, particularly in Otsego County, has produced gas for a number of years. The wells typically encounter low porosity and low permeability with production dependent on encountering natural fracture zones or the successful fracturing of the formation. The wells typically produce fairly low volumes of gas, less than 100 Mcf per day and substantial amounts of brine. The availability of alternative completion techniques has caused an increased interest in Antrim development. These completion techniques do not and cannot meet the requirements of the rigid pattern inherent in Rule 201. One of those techniques is to directionally drill with the well encountering as much of the productive area of the Antrim as can be reasonably done with directional drilling. A second technique is the drilling of a short radius lateral drain hole commonly referred to as a horizontal drain hole. Both of these techniques are believed to increase production so as to make the

Antrim much more attractive and may prevent waste. In order to utilize these techniques, the Petitioner has requested location exceptions and provision for a variety of completion techniques for Antrim Formation gas wells so long as the producing portion of the well bore is no closer than 330 feet from the unit boundary. They further asked that there be no limitation on the completion techniques including the potential to drill multiple drain holes from the same well.

2. Several operators testified as to their current operations developing Antrim Formation gas. They testified that these differing completion techniques would increase the recovery of the gas reserves present in the Antrim. The Antrim is relatively flat throughout the lower peninsula of Michigan and is believed to be productive throughout the State. The primary limitation on its development has been economic. The availability of alternative completion techniques allows the development of the reserves present in the Antrim Formation which otherwise might not be developed. The nature of the Antrim Formation is such that use of these techniques will not interfere with the correlative rights of adjoining property owners. Each operator will be free to use the same techniques in developing their own reserves. The flexibility in terms of well location also prevents surface waste; that is, the wells can be located so as to minimize the effect on surface values. I find that location exceptions and allowing various completion techniques and well bore locations anywhere on the unit, not closer than 330 feet from the unit boundary, are necessary to prevent waste and assure the orderly development of the Antrim Formation. I further find that these provisions should apply to the Antrim Formation north of Towlne 20 North in the lower peninsula of Michigan for those wells subject to the General rules and specific spacing orders.

CONCLUSIONS OF LAW

1939 PA 61, as amended, provides in Section 6 that the Supervisor shall prevent waste and to that end is empowered to fix spacing of wells. 1939 PA 61, as amended, provides at Section 13 that the Supervisor may provide for well locations in the approximate center of the drilling unit or at such other locations thereon as are necessary to conform to a uniform well spacing pattern as adopted after notice and hearing.

DETERMINATION AND ORDER

Based on the evidence and in accordance with the recommendation of the Advisory Board, it is the opinion of the Supervisor that location exceptions and various completion techniques are necessary to prevent waste and assure the orderly development of the Antrim Formation.

Now, therefore, it is Ordered:

(1) For purposes of this order the Antrim Formation is defined to include those rocks commonly referred to as "light Antrim" and "dark Antrim".

(2) A well location exception to the applicable general rules and Antrim spacing orders is granted for the Antrim Formation in the lower peninsula of Michigan north of Towlne 20 North.

(3) Wells in the Antrim Formation shall be completed by any appropriate technique provided that the producing well bore or short radius lateral drain, at any point in the Antrim Formation, is no closer than 330 feet from a unit boundary.

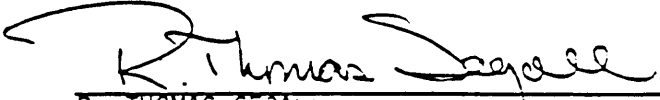
(4) Appropriate techniques for developing the Antrim Formation gas production are as follows:

- a. Drill a standard vertical test well.
- b. Drill a test well by conventional directional drilling.
- c. Drill one or more short radius lateral drains within the productive interval in conjunction with a standard vertical well or a conventional directional well. The drilling of such drains shall not require an additional drilling permit. However, a well bore survey shall be filed that identifies, to the satisfaction of the Supervisor of Wells, the course and end point of the drains.

(5) This order shall apply to gas producing wells only.

(6) The operator shall file such additional reports as are required by the supervisor.

Dated: 1/25/88


R. THOMAS SEGALL
ASSISTANT SUPERVISOR OF WELLS