

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY

ORDER OF THE SUPERVISOR OF WELLS

IN THE MATTER OF

THE PETITION OF TRENDWELL ENERGY)
CORPORATION FOR AN ORDER FROM THE)
SUPERVISOR OF WELLS ALLOWING MULTIPLE)
LATERAL DRAINHOLES IN THE SAME WELL) ORDER NO. (A) 20-12-98
BORE AS AN EXCEPTION TO ORDER NO. (A))
14-9-94. THE WELL IS LOCATED IN THE)
SW 1/4 OF SECTION 17, T29N, R2E,)
ALBERT TOWNSHIP, MONTMORENCY COUNTY,
MICHIGAN.

OPINION AND ORDER

On December 11, 1998, a contested case hearing was held before the Supervisor of wells (Supervisor) pursuant to Part 615, Supervisor of wells, Natural Resources and Environmental Protection Act, 1994 PA 451, as amended (NREPA); MCL 324.61501 et seq., the administrative rules, 1996 AACS, R 324.101 et seq., and the Administrative Procedures Act, 1969 PA 306, as amended, MCL 24.201 et seq.; MSA 3.560 (101) et seq. The purpose of the hearing was to consider the Petition of Trendwell Energy Corporation (Petitioner). The Oil and Gas Advisory Committee was present at the Supervisor's request to give advice regarding this matter.

By Petition dated October 5, 1998, Petitioner requested an exception to Order No. (A) 14-9-94 in the form of an Order allowing multiple lateral drainholes in the same well bore, in order to effectively drain the Antrim Shale Formation. The well to be utilized is the State Albert #3-17, located in the NW 1/4 of SE 1/4 of SW 1/4, Section 17, T29N, R2E, Albert Township, Montmorency County, Michigan. The Supervisor voluntarily expanded the scope of the hearing pursuant to R 324.1204(5) to include those counties covered by Order No. (A) 14-9-94:

Alcona, Alpena, Antrim, Arenac, Bay, Benzie,
Charlevoix, Crawford, Grand Traverse, Iosco, Kalkaska,
Lake, Leelanau, Mason, Manistee, Missaukee,
Montmorency, Ogemaw, Oscoda, Otsego, Roscommon, and
Wexford.

Timely answers to the Petition were filed by Shell western E & P, Inc. (SWEPI), Muskegon Development Company and Ward Lake

Energy. Ward Lake Energy did not participate in the hearing but submitted a statement in support of the Petition provided each drainhole honors a 330 foot setback from the drilling unit or Uniform Spacing Plan (USP) boundary. Muskegon Development Company participated as a full party, making a statement in opposition of the Petition as an operator of wells adjacent to the State Albert #3-17, and cross-examining Petitioner's witnesses, but did not present any witnesses. SWEPI also participated as a full party, making a statement in support of the Petition, but did not present or cross-examine witnesses.

FINDINGS OF FACT

1. Petitioner presented the testimony of Mr. Larry Keelean, consultant for Petitioner. Upon being sworn in, Mr. Keelean testified:

a. Petitioner seeks to drill four lateral drainholes (LDHs) from the well bore of the State Albert #3-17 well. The well currently is not in sufficient communication with the fracture system and is therefore, a poor producer. Initially, Petitioner will drill two LDHs in northwest and southeast directions in the Norwood section of the Antrim and two LDHs in the Lachine section of the Antrim, also in northwest and southeast directions, using the hydrojet drilling technology. Petitioner intends to evaluate the results of completing four LDHs to determine whether additional LDHs will be necessary to adequately and efficiently drain the Antrim Formation.

b. The well is located at the center of the 40-acre drilling unit and none of the four lateral drainholes will be longer than 325 feet from the location of the existing vertical well bore of the State Albert #3-17 well. The exact depth of the four drainholes will be determined after a tracer survey has been run to determine the best permeable zones along the well bore.

c. Petitioner is requesting an exception to Order No. (A) 14-9-94 to drill more than two LDHs from a standard vertical or conventional directionally drilled well. Petitioner believes drilling more than two LDHs will more efficiently drain the gas within the unit and leave less gas within the formation.

d. Petitioner also requests the Supervisor eliminate the restriction on the number of LDHs, which can be drilled in the Antrim formation throughout the counties included in this proceeding. Petitioner intends to drill more than two LDHs from other vertical well bores and believes, based on experience with Antrim wells in other counties, that drilling more than two LDHs will enhance production of

Antrim gas within units located throughout the Antrim in northern Michigan.

e. Supervisor's Order No. (A) 14-9-94 provided that a directional survey must be submitted for each LDH. In a letter dated September 11, 1998, the Assistant Supervisor of wells recognized that it is not possible at this time to conduct such a survey for LDHs drilled with the hydrojet drilling technology. The letter stated LDHs could be drilled with this technology and without a directional survey if certain specific conditions were met, satisfying the Geological Survey Division that the proposed laterals would not violate spacing requirements and would protect correlative rights.

f. The Order should not restrict the type of LDHs which may be drilled to those where a directional survey can be completed and that issues relating to the use of the hydrojet drilling technology and other methods used to drill LDHs be addressed at the administrative level.

2. Petitioner presented the testimony of Mr. Richard Redmond, Manager of Operations at CMS Oil & Gas. Upon being sworn in, Mr. Redmond testified:

a. The Antrim Shale is an unconventional reservoir that is tight, exhibiting low porosity and permeability. Extensive fracturing is required to: (i) allow gas to desorb from the rock; and (ii) provide the necessary pathways for gas migration to the well bore. Economic production of gas is contingent on encountering such fracturing. If natural fracturing is absent or insufficiently developed, commercial production may require increased exposure of the formation to a well bore. Antrim fractures are not found consistently or uniformly throughout a drilling unit or USP. Current geological and geophysical means cannot identify the more densely fractured areas.

b. A LDH provides the opportunity to expose much more of the Antrim Shale to a well bore than either a vertical well or conventional directionally drilled well. Multiple LDHs provide an opportunity to better access fracturing within the same strata, and also in each of the multiple productive sections within the Antrim Shale formation.

c. Allowing multiple LDHs per well gives an operator a way to access fracturing within the productive sections of the Antrim, and to adequately and efficiently access and develop the randomly located fracturing within a drilling unit or USP. This makes Antrim gas wells more productive, leaves less gas in the formation and is a prudent completion technique using drilling methods to maximize gas recovery and prevent waste.

d. Allowing more than two LDHs will not result in waste and will not interfere with the correlative rights of adjoining property owners, as all LDHs are required to comply with setback requirements which require that no well bore, conventional or lateral drainhole, be located any closer than 330 feet from a drilling unit or USP line. Compliance with the setback requirement of 330 feet will adequately protect correlative rights. Moreover, each operator will have the opportunity to use the same completion techniques in developing their own properties.

e. Allowing multiple LDHs per well should reduce the need for drilling of additional vertical well bores, which is beneficial in that it reduces the number of wells and related surface facilities.

f. Lateral drainholes are a completion technique using various drilling methods, such as conventional coil tubing, hydraulic (mud) motor and jetting drilling, and hydrojet borehole drilling. Currently available drilling methods are continuously being improved, and emerging technology may offer yet additional alternatives.

3. Under cross-examination Mr. Redmond testified that:

a. Petitioner is requesting an Order allowing multiple lateral drainholes per well bore with no limit.

b. The number of lateral drainholes per well bore would be limited by economics.

4. I find that the drilling of LDHs as proposed by the Petitioner is a continuation of drilling pursuant to R 324.206(5). I further find that LDHs as proposed by the Petitioner are intended to improve efficiency of recovery of reserves in the Antrim Shale Formation.

5. I find that allowing more than two LDHs to be drilled from the same well bore will not result in wasteful communication between wells and will not interfere with correlative rights of adjoining property owners. Order No. (A) 14-9-94 allows wells drilled on adjoining drilling units to be a minimum of 660 feet apart between all portions of wells open and in communication with the Antrim Shale Formation.

6. Order No. (A) 14-9-94 found the course or end point of a well bore or lateral drainhole within the Antrim Shale Formation shall be no closer than 330 feet from a drilling unit or USP boundary.

7. I find the use of any or all of the available methods to drill LDHs shall be subject to the requirement that the method

of drilling be described to the Supervisor in an Application for Permit to Drill and Operate (for new wells) or Application to Change Well Status (for existing wells), to be filed with and approved by the Supervisor prior to the commencement of operations, and that the Supervisor shall be satisfied that no LDH will extend closer than 330 feet to the drilling unit or USP boundary. I find correlative rights will be adequately protected so long as assurances exist that the course and distance of the LDHs will not extend closer than 330 feet to a drilling unit or USP boundary.

8. I find, for the purposes of this Order, the Antrim Shale Formation comprises the rock interval from the base of the Berea-Bedford sequence to the top of the Traverse Group and includes all formations correlative to that interval including the Ellsworth Shale of Western Michigan.

9. I find the evidence set forth above is to be applicable to the Antrim Shale Formation found throughout the 22 counties included in this matter.

CONCLUSIONS OF LAW

1. Section 61506 of Part 615 of the NREPA provides that the Supervisor shall prevent waste. To accomplish this purpose, the Supervisor is empowered:

"To promulgate and enforce rules, issue orders and instructions necessary to enforce the rules and to do whatever may be necessary with respect to the subject matter stated in this part to implement this part, whether or not indicated, specified, or enumerated in this or any other section of this part."
MCL 324.61506(a)

2. Section 61513(3) of Part 615 of the NREPA states:

"The drilling of unnecessary wells is hereby declared waste because unnecessary wells create fire and other hazards conducive to waste, and unnecessarily increase the production cost of oil and gas to the operator, and therefore also unnecessarily increase the cost of the products to the ultimate consumer."
MCL 324.61513(3)

3. Section 5, Determination and Order, Order No. (A) 14-9-94 states:

"Two (2) lateral drainholes within the Antrim may be completed from any well bore without permit or hearing provided the drainhole does not extend closer than 330 feet of the drilling unit or USP boundary. . . . A

survey identifying the course and end point of the drainhole accompanied by all wireline, strata evaluation and other logs shall be filed with the Supervisor within 60 days of completion of a lateral drainhole. In accordance with existing rule, a well shall not be produced until these records have been filed with the Supervisor."

4. R 324.206(5) of the administrative rules of Part 615 of the NREPA states in part:

"A permittee of a well who desires to continue the drilling of a well below the permitted depth, but within the permitted stratigraphic or producing horizon where drilling completion or well completion has occurred, shall file an application for change of well status pursuant to R 324.511."
1996 AACS,
R 324.206(5)

5. R 324.303(1) of the administrative rules of Part 615 of the NREPA provides in part:

"The lessees or lessors, or both, of separate tracts or mineral interests that lie partially or wholly within an established drilling unit or larger area may pool or communitize the tracts or interests to form full drilling units or multiples of full drilling units . . ." 1996 AACS, R 324.303(1)

6. The Supervisor has jurisdiction over the subject matter and the persons interested therein. Due notice of the time, place, and purpose of the hearing was given as required by law and all interested persons were afforded the opportunity to be heard.

DETERMINATION AND ORDER

Based on the evidence presented, the Supervisor of wells finds that an exception to Supervisor's Order No. (A) 14-9-94 is necessary and desirable to

prevent waste and prevent the drilling of unnecessary wells. The Supervisor of wells further determines that an amendment to Order No. (A) 14-9-94 is necessary and desirable.

NOW, THEREFORE, IT IS ORDERED:

1. Petitioner's request to drill multiple lateral drainholes at the State Albert #3-17 well is granted.

2. Section 5, Determination and Order, Order No. (A) 14-9-94 is hereby amended in its entirety to provide as follows:

5. Multiple lateral drainholes within the Antrim Shale Formation may be completed from any well bore, without obtaining an additional drilling permit, provided no lateral drainhole shall extend closer than 330 feet to the drilling unit or USP boundary, and each additional lateral drainhole shall receive "change of well status" approval prior to beginning lateral drainhole operations. Except as provided below, a survey identifying the course and end point of the drainhole, all wire line logs, strata evaluation logs, and other logs shall be filed with the Supervisor within 60 days of completion of a lateral drainhole. In accordance with the existing rules, a well shall not be produced until these records have been filed with the Supervisor. The Supervisor shall allow a lateral drainhole to be drilled and utilized without requiring a directional survey if the Supervisor or his authorized representative of the Supervisor grants an exemption in the Application to Change Well Status, and the operator or his agent certifies that the length of the lateral drainhole does not exceed the distance from the vertical well bore to the closest point which is 330 feet from the nearest drilling unit or USP boundary.

3. The amendment to Section 5, Determination and Order, Order No. (A) 14-9-94 shall apply to the following counties covered by Order No. (A) 14-9-94:

Alcona, Alpena, Antrim, Arenac, Bay, Benzie, Charlevoix, Crawford, Grand Traverse, Iosco, Kalkaska, Lake, Leelanau, Mason, Manistee, Missaukee, Montmorency, Ogemaw, Oscoda, Otsego, Roscommon and Wexford.

4. Petitioner shall meter individual wells and report all well production data to the Supervisor for six (6) months following drilling of the wells.

5. The Supervisor retains jurisdiction and any amendments to the provisions of this Order shall be by Order of the Supervisor after notice to all interested parties.

Dated:

HAROLD R. FITCH
ASSISTANT SUPERVISOR OF WELLS

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