

BEFORE THE INDUSTRIAL COMMISSION  
OF THE STATE OF NORTH DAKOTA

CASE NO. 25824  
ORDER NO. 28240

IN THE MATTER OF A HEARING CALLED ON  
A MOTION OF THE COMMISSION TO  
CONSIDER THE APPLICATION OF  
TRENDWELL ENERGY CORP. FOR AN ORDER  
EXTENDING THE FIELD BOUNDARIES AND  
AMENDING THE FIELD RULES FOR THE  
SHORT CREEK-MADISON POOL TO CREATE  
AND ESTABLISH AN 800-ACRE SPACING  
UNIT COMPRISED OF SECTIONS 25 AND 36,  
T.164N., R.93W., BURKE COUNTY, ND,  
AUTHORIZING THE DRILLING OF A  
HORIZONTAL WELL ON SAID 800-ACRE  
SPACING UNIT, REDUCING THE HEEL AND  
TOE SETBACK TO 200 FEET, AND SUCH  
OTHER RELIEF AS IS APPROPRIATE.

ORDER OF THE COMMISSION

THE COMMISSION FINDS:

- (1) This cause came on for hearing at 9:00 a.m. on the 25th day of May, 2017.
- (2) The witnesses for Trendwell Energy Corporation (Trendwell) provided telephonic testimony in this matter pursuant to North Dakota Administrative Code (NDAC) Section 43-02-03-88.2. Telephonic Communication Affidavits were received on May 30, 2017; therefore, such testimony may be considered evidence.
- (3) Trendwell made application to the Commission for an order extending the field boundaries and amending the field rules for the Short Creek-Madison Pool to create and establish an 800-acre spacing unit comprised of Sections 25 and 36, Township 164 North, Range 93 West, Burke County, North Dakota (Sections 25 and 36), authorizing the drilling of a horizontal well on said 800-acre spacing unit, reducing the heel and toe setback to 200 feet, and such other relief as is appropriate.
- (4) Order No. 289 entered in Case No. 261, as amended by Order Nos. 326 and 3340, the most recent spacing order for the Short Creek-Madison Pool, established proper spacing at one well per 160 acres, and required said well to be located in the approximate center of the southeast quarter of each quarter section or governmental lots corresponding thereto.

(5) Section 36 is adjacent to the Short Creek Field. Section 25 is one section removed from the Short Creek Field. There are no wells currently permitted to or producing from Sections 25 and 36.

(6) Trendwell presented evidence the Short Creek-Madison Pool underlies Sections 25 and 36; therefore, the boundary of the Short Creek Field should be extended to include such land.

(7) Section 25 is a short section adjacent to the North Dakota-Canada border containing approximately 147.72 acres.

(8) Trendwell's idealized development plan for the standup 800-acre spacing unit described as Sections 25 and 36 is to drill one horizontal well approximately down the long axis targeting the lower Midale subinterval of the Mission Canyon Formation. Utilization of horizontal drilling technology as proposed would result in the well being completed at a location or locations not in compliance with current applicable spacing orders for the Short Creek-Madison Pool. The horizontal well design proposed may be preliminary and could be changed for various reasons which is permissible as long as the horizontal well design still justifies the spacing unit.

(9) Trendwell plans to complete the horizontal well with a cemented liner and multi-stage fracture stimulation.

(10) Trendwell believes the microseismic data and interpretations presented by Petro Harvester Operating Company, LLC (Petro Harvester) in Case No. 25308 are applicable to this area. In Case No. 25308, Petro Harvester testified the microseismic data gathered during the stimulation of the Petro Harvester #4H Swenson well (File No. 24958), a horizontal well in the Columbus-Madison Pool with a surface location in the SE/4 SW/4 of Section 23, Township 163 North, Range 93 West, Burke County, North Dakota, indicates noise events were recorded at an average maximum distance of 362 feet from the lateral and Petro Harvester believes the effective propped fracture half-length is approximately 103 feet based upon modeling and history matching. Petro Harvester estimated the induced fracture orientation is north 79 degrees east.

(11) Trendwell proposes to set the production casing 50 feet across the setback requirement and terminate the well 50 feet from the setback requirement, and the deepest fracture stimulation perforation is located 50 feet from the total depth of the well and the shallowest fracture stimulation perforation is located 50 feet from the casing shoe.

(12) An induced fracture with an effective propped half-length of 103 feet initiated at 300 feet from the spacing unit boundary on a north 79 degrees east orientation will terminate approximately 280 feet from the spacing unit boundary.

(13) There were no objections to this application.

(14) If Trendwell's activities are successful, greater ultimate recovery of oil and gas from the pool will be achieved which will prevent waste and the drilling of unnecessary wells in a manner which will not have a detrimental effect on correlative rights.

IT IS THEREFORE ORDERED:

(1) Sections 25 and 36, Township 164 North, Range 93 West, Burke County, North Dakota, are hereby established as a standup 800-acre spacing unit for the exclusive purpose of drilling one horizontal well within said spacing unit within the Short Creek-Madison Pool and Zone II is hereby created to include said spacing unit. Existing and future vertical and directional wells drilled within the spacing unit herein established shall conform to the applicable spacing requirements providing for the orderly development of Zone I in the Short Creek-Madison Pool.

(2) The Director is hereby authorized to exercise continuing jurisdiction in this matter to determine whether a horizontal well proposed or drilled upon the 800-acre spacing unit herein established has justified the creation of such unit, to require amendments or modifications to the permit to drill for such horizontal well, and to deny a permit to drill in the event a well is proposed to be drilled in a manner inconsistent with the evidence that justified such spacing unit.

(3) The Short Creek Field is hereby redefined as the following described tracts of land in Burke County, North Dakota:

TOWNSHIP 164 NORTH, RANGE 93 WEST, 5TH PM  
ALL OF SECTIONS 25 AND 36,

TOWNSHIP 163 NORTH, RANGE 93 WEST, 5TH PM  
ALL OF SECTIONS 1, 2, 3, 4, 5, 8, 9, 10, 11 AND 12.

(4) The Short Creek-Madison Pool is hereby redefined as the following described tracts of land in Burke County, North Dakota:

ZONE I (160V-CSE QQ)

TOWNSHIP 164 NORTH, RANGE 93 WEST, 5TH PM  
ALL OF SECTIONS 25 AND 36,

TOWNSHIP 163 NORTH, RANGE 93 WEST, 5TH PM  
ALL OF SECTIONS 1, 2, 3, 4, 5, 8, 9, 10, 11 AND 12.

ZONE II (800H-STANDUP)

TOWNSHIP 164 NORTH, RANGE 93 WEST, 5TH PM  
ALL OF SECTIONS 25 AND 36.

(5) The Short Creek-Madison Pool is hereby defined as that accumulation of oil and gas found in the interval from below the base of the Last Charles Salt to above the top of the Lodgepole Formation within the limits of the field as set forth above.

(6) The proper spacing for the development of Zone I in the Short Creek-Madison Pool is hereby set at one vertical well per 160-acre spacing unit.

(7) All wells in Zone I in the Short Creek-Madison Pool shall be located in the approximate center of the northwest quarter of each quarter section unless granted an exception by the Commission after due notice and hearing.

(8) Spacing units in Zone I in the Short Creek-Madison Pool shall consist of a governmental quarter section or governmental lots corresponding thereto.

(9) Zone I in the Short Creek-Madison Pool shall not be extended except by further order of the Commission after due notice and hearing.

(10) Provisions established herein for Zone II in the Short Creek-Madison Pool are for the exclusive purpose of drilling horizontal wells. Existing and future vertical and directional wells drilled within the area defined as Zone II in paragraph (4) above shall conform to the applicable spacing requirements for the orderly development of Zone I in the Short Creek-Madison Pool.

(11) The proper spacing for the development of Zone II in the Short Creek-Madison Pool is hereby set at one horizontal well per standup 800-acre spacing unit.

(12) All portions of the well bore not isolated by cement of any horizontal well in Zone II in the Short Creek-Madison Pool shall be no closer than 500 feet to the east or west boundary and 200 feet to the north or south boundary of the spacing unit. Measurement inaccuracies in the directional survey equipment need not be considered except when deemed necessary by the Director.

(13) Sections 25 and 36, Township 164 North, Range 93 West, Burke County, North Dakota, are hereby designated a standup 800-acre spacing unit in Zone II in the Short Creek-Madison Pool.

(14) Spacing units hereafter created in Zone II in the Short Creek-Madison Pool shall be standup spacing units designated by the Commission.

(15) Zone II in the Short Creek-Madison Pool shall not be extended except by further order of the Commission after due notice and hearing.

(16) The operator of any horizontally drilled well in the Short Creek-Madison Pool shall cause to be made a directional survey of the well bore. The directional survey contractor shall file a certified survey with the Commission within 30 days after completion of the well in accordance with NDAC Section 43-02-03-25. The survey shall be of sufficient quality to enable the Commission to determine the entire completion location of the well and its terminus.

(17) The Director is hereby authorized to exercise continuing jurisdiction to determine whether any well proposed or drilled upon any spacing unit herein established has justified the creation of such unit, to require amendments or modifications to the permit to drill for such well, and to deny a permit to drill in the event a well is proposed to be drilled in a manner inconsistent with the evidence that justified the spacing requirements in the Short Creek-Madison Pool.

(18) The Commission shall have continuing jurisdiction in this matter and specifically reserves the authority, upon its own motion or the motion of any interested party, to: (1) review

the spacing requirements for the Short Creek-Madison Pool; (2) determine whether the separate zones of spacing established herein are warranted; and, (3) make such further amendments or modifications to the spacing requirements for the Short Creek-Madison Pool as the Commission deems appropriate.

(19) No well shall be hereafter drilled or produced in the Short Creek-Madison Pool, as defined herein, except in conformity with the regulations above without special order of the Commission after due notice and hearing.

(20) The following rules concerning the casing, tubing and equipping of wells shall apply to the subsequent drilling and operation of wells in the Short Creek-Madison Pool:

- (a) The surface casing shall consist of new or reconditioned pipe that has been previously tested to 1000 pounds per square inch. The casing shall be set and cemented at a point not less than 50 feet below the base of the Fox Hills Formation. Sufficient cement shall be used to fill the annular space outside the pipe to the surface of the ground, or the bottom of the cellar, and sufficient scratchers and centralizers shall be used to assure a good cement job. Cement shall be allowed to stand a minimum of 12 hours before drilling the plug or initiating tests. The quality of cement shall conform to the standards provided under NDAC Section 43-02-03-21. After cementing, the casing shall be tested by application of pump pressure of at least 1000 pounds per square inch. If, at the end of 30 minutes this pressure has dropped 100 pounds per square inch or more, the casing shall be repaired. Thereafter, the casing shall again be tested in the same manner. Further work shall not proceed until a satisfactory test has been obtained;
- (b) The producing or oil string shall consist of new or reconditioned pipe that has been previously tested to 2000 pounds per square inch. Casing shall be set and cemented at a point not higher than the top of the producing formation, or at a point approved by the Director. Sufficient cement shall be used and applied in such manner to protect and isolate all formations containing oil and/or gas, protect the pipe through salt sections encountered, and to isolate the Dakota-Lakota Series. The cement shall be allowed to stand a minimum of 15 hours before drilling the plug or initiating tests. The quality of cement shall conform to the standards provided under NDAC Section 43-02-03-21. After cementing, the casing shall be tested by application of pump pressure of at least 1500 pounds per square inch. If, at the end of 30 minutes this pressure has dropped 150 pounds per square inch or more, the casing shall be repaired. Thereafter, the casing shall again be tested in the same manner. Further work shall not proceed until a satisfactory test has been obtained;
- (c) All well-head fittings and connections shall have a working pressure in excess of that to which they are expected to be subjected; and,
- (d) All wells shall be equipped with tubing; a tubing packer must also be utilized in flowing wells unless a waiver is obtained from the Director after demonstrating the casing will not be subjected to excessive pressure or corrosion; all tubing shall

be of sufficient internal diameter to allow the passage of a bottom hole pressure gauge for the purpose of obtaining bottom hole pressure measurements.

(21) The gas-oil ratio of all wells not connected to a gas gathering system shall be measured annually during the month of May. The reservoir pressure shall be measured in any well completed in the Short Creek-Madison Pool if deemed necessary by the Director. Drill stem test pressures are acceptable for determining reservoir pressure. Pressure measurements shall be made at or adjusted to a subsea datum of 4000 feet. All gas-oil ratio and reservoir pressure determinations shall be made by methods approved by the Director and reported to the Director within 15 days following the end of the month in which they are determined. The Director is authorized to waive these requirements if the necessity therefor can be demonstrated to his satisfaction. All additional gas-oil ratio and reservoir pressure determinations conducted on any well but not specifically required herein, shall be reported to the Director within 15 days following the end of the month in which they are determined.

(22) No saltwater, drilling mud, crude oil, or waste oil shall be stored in pits in this field, except in an emergency, and approved by the Director.

(23) All wells in the Short Creek-Madison Pool shall be allowed to produce at a maximum efficient rate.

(24) If the flaring of gas produced with crude oil from the Short Creek-Madison Pool is determined by the North Dakota Department of Health as causing a violation of the North Dakota Air Pollution Control Rules (NDAC Article 33-15), production from the pool may be restricted.

(25) This order shall cover all of the Short Creek-Madison Pool, common source of supply of crude oil and natural gas, as herein defined, and continues in full force and effect until further order of the Commission or until the last well in the pool has been plugged and abandoned.

Dated this 30th day of June, 2017.

INDUSTRIAL COMMISSION  
STATE OF NORTH DAKOTA

By the Director, on behalf of the Commission

/s/ Lynn D. Helms, Director