

BEFORE THE INDUSTRIAL COMMISSION
OF THE STATE OF NORTH DAKOTA

CASE NO. 26101
(CONTINUED)
ORDER NO. 28514

IN THE MATTER OF A HEARING CALLED ON A MOTION OF THE COMMISSION TO CONSIDER THE APPLICATION OF ARMSTRONG OPERATING, INC. FOR AN ORDER AMENDING THE FIELD RULES FOR THE DICKINSON AND/OR ELAND-LODGEPOLE POOL TO CREATE AND ESTABLISH A 320-ACRE SPACING UNIT, OR IN THE ALTERNATIVE, TO CREATE A 320-ACRE DRILLING UNIT COMPRISED OF THE SW/4 OF SECTION 6 AND THE NW/4 OF SECTION 7, T.139N., R.96W., STARK COUNTY, ND, AUTHORIZING THE DRILLING OF A WELL NOT LESS THAN 500 FEET FROM THE SPACING/DRILLING UNIT BOUNDARY ON SAID 320-ACRE SPACING UNIT OR DRILLING UNIT, AND SUCH OTHER RELIEF AS IS APPROPRIATE.

ORDER OF THE COMMISSION

THE COMMISSION FINDS:

(1) This cause originally came on for hearing at 9:00 a.m. on the 21st day of September, 2017. At that time, counsel for Armstrong Operating, Inc. (Armstrong) requested this case be continued to the regularly scheduled hearing in October 2017. There were no objections, the hearing officer granted the request, and this case was scheduled for hearing on October 19, 2017. At that time, counsel for Armstrong requested this case be continued to the regularly scheduled hearing in November 2017. There were no objections, the hearing officer granted the request, and this case was scheduled for hearing on November 16, 2017. At that time, counsel for Armstrong requested this case be continued to the regularly scheduled hearing in December 2017. There were no objections, the hearing officer granted the request, and this case was scheduled for hearing on December 14, 2017.

(2) The witnesses for Armstrong 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 December 29, 2017; therefore, such testimony may be considered evidence.

(3) Armstrong made application to the Commission for an order amending the field rules for the Dickinson and/or Eland-Lodgepole Pool to create and establish a 320-acre spacing unit, or in the alternative, to create a 320-acre drilling unit comprised of the SW/4 of Section 6 and the NW/4 of Section 7, Township 139 North, Range 96 West, Stark County, North Dakota (Sections 6 and 7), authorizing the drilling of a well not less than 500 feet from the spacing/drilling unit boundary on said 320-acre spacing unit or drilling unit, and such other relief as is appropriate.

(4) Order No. 15517 entered in Case No. 13244, the most recent spacing order for the Dickinson-Lodgepole Pool, established proper spacing for the development of Zone I at one well per 320 acres and Zone VI at one well per 250 acres. Zone II consists of the Dickinson-Lodgepole Unit. Zone III consists of the West Dickinson-Lodgepole Unit. Zone IV consists of the Duck Creek-Lodgepole Unit. Zone V consists of the Subdivision-Lodgepole Unit.

(5) Order No. 10397 entered in Case No. 8853, as amended by Order No. 10769 entered in Case No. 9164, the most recent spacing orders for the Eland-Lodgepole Pool, established proper spacing for the development of Zone I at one well per 320 acres. Zone II consists of the Eland East-Lodgepole Unit and Zone III consists of the Eland-Lodgepole Unit.

(6) The S/2 of Section 6 is within the Dickinson Field and is currently a laydown 320-acre spacing unit in Zone I in the Dickinson-Lodgepole Pool. There are no wells currently permitted to or producing from said spacing unit.

(7) The NW/4 and N/2 SW/4 of Section 7 is within the Eland Field and is currently a standup 320-acre spacing unit in Zone I in the Eland-Lodgepole Pool. There are no wells currently permitted to or producing from said spacing unit.

(8) Armstrong believes there is a Lodgepole mound that exists separate from the adjacent Eland-Lodgepole Pool mound and Patterson Lake-Lodgepole Pool mound based upon its interpretation of 3-D and 2-D seismic data. Armstrong estimates the mound covers approximately the SW/4 of Section 6, the NW/4 of Section 7, the SE/4 of Section 1, and the NE/4 NE/4 of Section 12, Township 139 North, Range 97 West, Stark County, North Dakota.

(9) Armstrong believes most if not all the Lodgepole mounds in the area are connected by a common aquifer in the water column underneath the mound structures and the producing oil wells in the individual mounds have drawn down the reservoir pressure. Armstrong also believes each mound structure has its own oil column and oil-water-contact and that oil has not been produced from its interpreted mound by oil wells in adjacent mounds, but the reservoir pressure has been drawn down.

(10) Armstrong anticipates it will need to install an injection well in the mound feature for pressure maintenance.

(11) Armstrong owns 100% of the leasehold estate in the SW/4 of Section 6, approximately 93.24% of the leasehold estate in the NW/4 of Section 7, and approximately 96.65% of the leasehold estate in the proposed spacing or drilling unit described as the SW/4 of Section 6 and the NW/4 of Section 7.

(12) Due to the existing Lodgepole spacing and Armstrong's conjecture that a separate mound exists; the Commission believes establishment of a 320-acre drilling unit is appropriate. NDAC Section 43-02-03-18 requires vertical or directional oil wells projected to a depth deeper than the Mission Canyon Formation to be drilled upon a governmental quarter section or equivalent lots, located not less than 660 feet to the boundary of such governmental quarter section or equivalent lots.

(13) Armstrong proposes to drill a directional well into the Lodgepole Formation from a surface location approximately 1780 feet from the north line and 660 feet from the west line of Section 7 to a bottom hole location 785 feet from the north line and 877 feet from the west line of Section 7. In order to facilitate the drilling of the proposed exploratory well, and also increase the likelihood of success, it is essential that greater flexibility be afforded in locating the well than is allowed under the 160-acre drilling unit pursuant to NDAC Section 43-02-03-18. Drilling of the well as proposed and creation of a 320-acre drilling unit are not in compliance with NDAC Section 43-02-03-18. The well design and location as proposed may be preliminary and could be changed for various reasons which is permissible as long as the well design and location still justify the drilling unit.

(14) Armstrong testified it is important to drill at the maximum height of the mound since the seismic reflections are best from this area, which should lead to better interpretation of the data. Armstrong also testified the reservoir has a strong water drive and intercepting the mound at its maximum height is important to delay water production as long as possible.

(15) Armstrong requested a 500-foot setback requirement from the drilling unit boundary. All Lodgepole Pools in the area have a 660-foot setback requirement. Based upon the location of the proposed well, this relief is not necessary.

(16) If the proposed well is productive, the Commission will establish spacing for the development of the pool as provided by statutes and rules of the Commission.

(17) Evidence presented to the Commission indicates that a well drilled to the Lodgepole Formation at the proposed location will produce oil that might otherwise not be produced.

(18) Due to the geological conditions, the creation of the proposed 320-acre drilling unit is necessary to protect correlative rights and the proposed location is the most advantageous point to drill a test well.

(19) Creation of the proposed drilling unit is necessary to protect correlative rights and avoid the drilling of unnecessary wells.

(20) There were no objections to this application.

(21) In order to prevent waste, and to protect correlative rights this application should be granted with limitations.

(22) Since the West Dickinson-Lodgepole Unit is a Zone in the Dickinson-Lodgepole Pool, and the West Dickinson Field is contained within the Dickinson Field boundary, the field boundary of the West Dickinson Field should be shrunk to mirror the West Dickinson-Lodgepole

Unit and Order No. 8187, which established proper spacing for the development of the West Dickinson-Lodgepole Pool at one well per 320 acres, should be terminated. The 320-acre spacing unit in the West Dickinson-Lodgepole Pool described as the SW/4, the N/2 SE/4, and the N/2 S/2 SE/4 of Section 25, Township 140 North, Range 97 West, Stark County, North Dakota, should be retained in the Dickinson-Lodgepole Pool.

(23) Since the Duck Creek-Lodgepole Pool is a Zone in the Dickinson-Lodgepole Pool, and the Duck Creek Field is contained within the Dickinson Field boundary, Order No. 7740, which established proper spacing for the development of the Duck Creek-Lodgepole Pool at one well per 320 acres, should be terminated.

(24) Since the Subdivision-Lodgepole Pool is a Zone in the Dickinson-Lodgepole Pool, and the Subdivision Field is contained within the Dickinson Field boundary, Order No. 8188, which established proper spacing for the development of the Subdivision-Lodgepole Pool at one well per 320 acres, should be terminated.

IT IS THEREFORE ORDERED:

(1) The SW/4 of Section 6 and the NW/4 of Section 7, Township 139 North, Range 96 West, Stark County, North Dakota, is hereby established as a 320-acre drilling unit for the exclusive purpose of drilling one vertical or directional well within said drilling unit within the Lodgepole Pool.

(2) The Director is hereby authorized to exercise continuing jurisdiction in this matter to determine whether a well proposed or drilled upon the 320-acre drilling 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 such drilling unit.

(3) For purposes of this order, the Lodgepole Pool is hereby defined as that accumulation of oil and gas found in the interval from below the base of the Mission Canyon Formation to above the top of the Bakken Formation.

(4) The completion interval in the Lodgepole Pool shall be no closer than 660 feet to the boundary of the drilling unit herein established.

(5) No well shall be drilled or produced in the Lodgepole Pool in the drilling unit herein established, except in conformity with the regulations above, without special order of the Commission after due notice and hearing.

(6) This order as it pertains to the drilling unit herein established shall remain in full force and effect until further order of the Commission.

(7) The 320-acre spacing unit in the Dickinson-Lodgepole Pool described as the S/2 of Section 6, Township 139 North, Range 96 West, Stark County, North Dakota, is hereby terminated.

(8) The 320-acre spacing unit in the Eland-Lodgepole Pool described as the NW/4 and N/2 SW/4 of Section 7, Township 139 North, Range 96 West, Stark County, North Dakota, is hereby terminated.

(9) Order No. 8187, which established proper spacing for the development of the West Dickinson-Lodgepole Pool at one well per 320 acres, is hereby terminated.

(10) Order No. 7740, which established proper spacing for the development of the Duck Creek-Lodgepole Pool at one well per 320 acres, is hereby terminated.

(11) Order No. 8188, which established proper spacing for the development of the Subdivision-Lodgepole Pool at one well per 320 acres, is hereby terminated.

(12) The SW/4, the N/2 SE/4, and the N/2 S/2 SE/4 of Section 25, Township 140 North, Range 97 West, Stark County, North Dakota, is hereby established as a 320-acre spacing unit for the exclusive purpose of drilling one vertical well within said spacing unit within the Dickinson-Lodgepole Pool and Zone VI is hereby redefined to include said spacing unit.

(13) The Dickinson Field is hereby defined as the following described tracts of land in Stark County, North Dakota:

TOWNSHIP 140 NORTH, RANGE 97 WEST, 5TH PM

ALL OF SECTIONS 13, 14, 15, 22, 23, 24, 25, 26, 27, 33, 34, 35 AND 36,

TOWNSHIP 140 NORTH, RANGE 96 WEST, 5TH PM

ALL OF SECTIONS 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, 29, 30, 31, 32, 33 AND 35,

TOWNSHIP 139 NORTH, RANGE 97 WEST, 5TH PM

ALL OF SECTIONS 1, 2*, 3* AND 10*, AND THE NE/4 OF SECTION 4,

*The S/2 SW/4, the SW/4 SE/4, and the S/2 NW/4 SW/4 of Section 2, the E/2 SE/4 of Section 3, and the E/2 E/2 of Section 10 are also within the Eland Field.

TOWNSHIP 139 NORTH, RANGE 96 WEST, 5TH PM

ALL OF SECTIONS 5 AND 6.

(14) The Dickinson-Lodgepole Pool is hereby redefined as the following described tracts of land in Stark County, North Dakota:

ZONE I (Dickinson-Lodgepole Unit)

TOWNSHIP 140 NORTH, RANGE 96 WEST, 5TH PM

ALL OF SECTION 31, THE S/2 S/2 SW/4 OF SECTION 29, THE SE/4 SE/4 SE/4 OF SECTION 30, AND THE W/2, THE W/2 W/2 SE/4, THE W/2 SW/4 NE/4, AND THE SW/4 NW/4 NE/4 OF SECTION 32,

TOWNSHIP 139 NORTH, RANGE 96 WEST, 5TH PM

THE N/2 OF SECTION 5, AND THE N/2 AND SE/4 OF LOT 1, THE N/2 OF LOT 2, AND THE NE/4 OF LOT 3 OF SECTION 6.

ZONE II (Duck Creek-Lodgepole Unit)

TOWNSHIP 140 NORTH, RANGE 97 WEST, 5TH PM

THE SW/4, THE SW/4 SE/4, AND THE SW/4 NW/4 SE/4 OF SECTION 35,

TOWNSHIP 139 NORTH, RANGE 97 WEST, 5TH PM

THE N/2 AND THE N/2 N/2 SW/4 OF SECTION 2.

ZONE III (West Dickinson-Lodgepole Unit)

TOWNSHIP 140 NORTH, RANGE 97 WEST, 5TH PM

ALL OF SECTION 36, THE S/2 S/2 SE/4 OF SECTION 25, AND THE NE/4, THE E/2 SE/4, THE N/2 NW/4 SE/4, AND THE SE/4 NW/4 SE/4 OF SECTION 35.

ZONE IV (Subdivision-Lodgepole Unit)

TOWNSHIP 139 NORTH, RANGE 96 WEST, 5TH PM

THE S/2 OF SECTION 5.

ZONE V (250)

TOWNSHIP 139 NORTH, RANGE 96 WEST, 5TH PM

THE S/2 N/2, LOT 4, THE S/2 AND NW/4 OF LOT 3, THE S/2 OF LOT 2, AND THE SW/4 OF LOT 1 IN SECTION 6.

ZONE VI (320)

TOWNSHIP 140 NORTH, RANGE 97 WEST, 5TH PM

ALL OF SECTIONS 13, 14, 15, 22, 23, 24, 26, 27, 33 AND 34, AND THE N/2, SW/4, N/2 SE/4, AND N/2 S/2 SE/4 OF SECTION 25,

TOWNSHIP 140 NORTH, RANGE 96 WEST, 5TH PM

ALL OF SECTIONS 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 26, 27, 28, AND 35, THE N/2 AND SE/4 OF SECTION 29, THE N/2 AND SW/4 OF SECTION 30, AND THE N/2 OF SECTION 33,

TOWNSHIP 139 NORTH, RANGE 97 WEST, 5TH PM

ALL OF SECTION 1, THE N/2 AND SW/4 OF SECTION 3, AND THE W/2 OF SECTION 10.

(15) The Dickinson-Lodgepole Pool is hereby defined as that accumulation of oil and gas found in the interval from below the base of the Mission Canyon Formation to above the top of the Bakken Formation within the limits of the field as set forth above.

(16) Zone I consists of the Dickinson-Lodgepole Unit. Unit operations shall be conducted pursuant to Order No. 6861.

(17) The unitized formation in Zone I in the Dickinson-Lodgepole Unit shall mean the Lodgepole Formation as identified by Order No. 6607, being that accumulation of oil and gas found in the interval from below the base of the Mission Canyon Formation to above the top of the Bakken Formation.

(18) The unit operator in Zone I shall be permitted to drill additional wells at any location within the Dickinson-Lodgepole Unit area no closer than 660 feet to the boundary of the unit.

(19) Water injection into the Dickinson-Lodgepole Unit will constitute injection into the West Dickinson-Lodgepole Unit and the Commission will deem that the West Dickinson-Lodgepole Unit is continuing to be operated as an enhanced recovery project.

(20) Zone I in the Dickinson-Lodgepole Pool shall not be extended except by further order of the Commission after due notice and hearing.

(21) Zone II consists of the Duck Creek-Lodgepole Unit. Unit operations shall be conducted pursuant to Order No. 7411.

(22) The unitized formation in Zone II in the Duck Creek-Lodgepole Unit shall mean the accumulation of oil and gas found in the interval from below the base of the Mission Canyon Formation to above the top of the Bakken Formation.

(23) The unit operator in Zone II shall be permitted to drill additional wells at any location within the Duck Creek-Lodgepole Unit area no closer than 660 feet to the boundary of the unit.

(24) Zone II in the Dickinson-Lodgepole Pool shall not be extended except by further order of the Commission after due notice and hearing.

(25) Zone III consists of the West Dickinson-Lodgepole Unit. Unit operations shall be conducted pursuant to Order No. 8092.

(26) The unitized formation in Zone III in the West Dickinson-Lodgepole Unit shall mean the Lodgepole Formation as identified by Order No. 7557, being that accumulation of oil and gas found in the interval from below the base of the Mission Canyon Formation to above the top of the Bakken Formation.

(27) The unit operator in Zone III shall be permitted to drill additional wells at any location within the West Dickinson-Lodgepole Unit area no closer than 660 feet to the boundary of the unit.

(28) Water injection into the Dickinson-Lodgepole Unit will constitute injection into the West Dickinson-Lodgepole Unit and the Commission will deem that the West Dickinson-Lodgepole Unit is continuing to be operated as an enhanced recovery project.

(29) Zone III in the Dickinson-Lodgepole Pool shall not be extended except by further order of the Commission after due notice and hearing.

(30) Zone IV consists of the Subdivision-Lodgepole Unit. Unit operations shall be conducted pursuant to Order No. 8402.

(31) The unitized formation in the Subdivision-Lodgepole Unit is the common source of supply of hydrocarbons underlying the unit area described as the Lodgepole Formation and identified by the Compensated Neutron Litho-Density Log run in the State Addition 5 #1 well (File No. 13973), located in the NW/4 SE/4 (1410 feet from the south line and 1700 feet from the east line) of Section 5, Township 139 North, Range 96 West, Stark County, North Dakota, with the top of the Lodgepole Formation being found at a depth of 9654 feet below the surface (-7188 subsea) and the base of the Lodgepole Formation being found at a depth of 9927 feet below the surface (-7461 subsea) or to the stratigraphic equivalent thereto.

(32) The unit operator in Zone IV shall be permitted to drill additional wells at any location within the Subdivision-Lodgepole Unit area no closer than 660 feet to the boundary of the unit.

(33) Zone IV in the Dickinson-Lodgepole Pool shall not be extended except by further order of the Commission after due notice and hearing.

(34) The proper spacing for the development of Zone V in the Dickinson-Lodgepole Pool is hereby set at one well per 250-acre spacing unit.

(35) All wells in Zone V in the Dickinson-Lodgepole Pool shall be located not less than 660 feet from a spacing unit boundary unless granted an exception by the Commission after due notice and hearing.

(36) The S/2 N/2, Lot 4, the S/2 and NW/4 of Lot 3, the S/2 of Lot 2 and the SW/4 of Lot 1 in Section 6, Township 139 North, Range 96 West, Stark County, North Dakota, are hereby designated a 250-acre spacing unit in Zone V in the Dickinson-Lodgepole Pool.

(37) Spacing units hereafter created in Zone V in the Dickinson-Lodgepole Pool shall be designated by the Commission after due notice and hearing.

(38) Zone V in the Dickinson-Lodgepole Pool shall not be extended except by further order of the Commission after due notice and hearing.

(39) The proper spacing for the development of Zone VI in the Dickinson-Lodgepole Pool is hereby set at one well per 320-acre spacing unit.

(40) All wells in Zone VI in the Dickinson-Lodgepole Pool shall be located not less than 660 feet from a spacing unit boundary unless granted an exception by the Commission after due notice and hearing.

(41) The SW/4, the N/2 SE/4, and the N/2 S/2 SE/4 of Section 25, Township 140 North, Range 97 West, Stark County, North Dakota, is hereby designated a 320-acre spacing unit in Zone VI in the Dickinson-Lodgepole Pool.

(42) Spacing units hereafter created in Zone VI in the Dickinson-Lodgepole Pool shall consist of two adjacent quarter sections, or governmental lots corresponding thereto within the same section. The configuration of spacing units, either standup or laydown, shall be determined by the location of the first well in the section, such that the aforesaid well will be nearest to the center of the spacing unit. Spacing units for wells being equi-distant from the center of each spacing unit shall be designated by the operator; however, the Commission shall have continuing jurisdiction, and in the event that spacing units hereafter formed by this policy do not coincide with the geological and physical nature of the reservoir, the Commission may alter specific spacing units upon application by any interested party, after due notice and hearing.

(43) Zone VI in the Dickinson-Lodgepole Pool shall not be extended except by further order of the Commission after due notice and hearing.

(44) The operator of any horizontally drilled well in the Dickinson-Lodgepole 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.

(45) 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 Dickinson-Lodgepole Pool.

(46) 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 Dickinson-Lodgepole 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 Dickinson-Lodgepole Pool as the Commission deems appropriate.

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

(48) The following rules concerning the casing, tubing and equipping of the wells shall apply to the subsequent drilling and operation of wells in the Dickinson-Lodgepole 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 a manner as to protect and isolate all formations containing oil and/or gas, protect the pipe through salt sections encountered, and 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.

(49) 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 Dickinson-Lodgepole 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 7271 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.

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

(51) All wells in the Dickinson-Lodgepole Pool connected to a gas gathering and processing facility shall be allowed to produce at a maximum efficient rate for a period of 60

days commencing on the first day oil is produced through well-head equipment into tanks from the ultimate producing interval after casing has been run; after that, oil production from such wells shall not exceed an average of 200 barrels per day for a period of 60 days; after that, oil production from such wells shall not exceed an average of 150 barrels per day for a period of 60 days; thereafter, oil production from such wells shall not exceed an average of 100 barrels of oil per day. Immediately after the completion of any well in the Dickinson-Lodgepole Pool, the operator shall file with the Director a Completion Report (Form 6). Within 30 days, or a reasonable time thereafter, following the filing of a Completion Report, a hearing shall be docketed to have the operator show cause why the production restriction imposed herein should not remain in place until such time a plan of unitization and secondary recovery operations for the reservoir is submitted and considered by the Commission.

(52) All wells in the Dickinson-Lodgepole Pool not connected to a gas gathering and processing facility shall be allowed to produce at a maximum efficient rate for a period of 30 days commencing on the first day oil is produced through well-head equipment into tanks from the ultimate producing interval after casing has been run; thereafter, oil production from such wells shall not exceed an average of 100 barrels of oil per day; if and when such wells are connected to a gas gathering and processing facility the foregoing restrictions shall be removed, and the production rates of wells shall be in accordance with paragraph (51) above. The Director is hereby authorized to issue an administrative order allowing unrestricted production at a maximum efficient rate for a period not to exceed 60 days, commencing on the first day oil is produced through well-head equipment into tanks from the ultimate producing interval after casing has been run, if the necessity therefor can be demonstrated to the Director's satisfaction.

(53) All wells in the Duck Creek-Lodgepole Unit connected to a gas gathering and processing facility shall be allowed to produce at a maximum efficient rate. Wells not connected to a gas gathering and processing facility shall be allowed to produce at an average rate of 1000 barrels of oil per day for a period of 30 days commencing on the first day oil is produced through well-head equipment into tanks from the ultimate producing interval after casing has been run; thereafter, oil production from such wells shall not exceed an average of 100 barrels of oil per day; if and when such wells are connected to a gas gathering and processing facility the foregoing restrictions shall be removed, and the wells shall be allowed to produce at a maximum efficient rate. The Director is hereby authorized to permit the flaring of gas produced with an average production rate of 1000 barrels of oil per day for an additional 60 days from wells not connected to a gas gathering and processing facility, if the necessity therefor can be demonstrated to the Director's satisfaction.

(54) If the flaring of gas produced with crude oil from the Dickinson-Lodgepole 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 further restricted.

(55) This portion of this order shall cover all of the Dickinson-Lodgepole Pool common source of supply of crude oil and/or 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.

(56) The Eland Field is hereby defined as the following described tracts of land in Stark County, North Dakota:

TOWNSHIP 139 NORTH, RANGE 97 WEST, 5TH PM

ALL OF SECTIONS 11, 12 AND 13, THE S/2 SW/4, THE SW/4 SE/4, AND THE S/2 NW/4 SW/4 OF SECTION 2*, THE E/2 SE/4 OF SECTION 3*, THE E/2 E/2 OF SECTION 10*, THE S/2, THE NE/4, THE E/2 NW/4, AND THE SW/4 NW/4 OF SECTION 14, THE NE/4 AND THE NE/4 NW/4 OF SECTION 23, AND THE N/2, THE N/2 SW/4, THE N/2 SE/4, AND THE SE/4 SE/4 OF SECTION 24,

*The S/2 SW/4, the SW/4 SE/4, and the S/2 NW/4 SW/4 of Section 2, the E/2 SE/4 of Section 3, and the E/2 E/2 of Section 10 are also within the Dickinson Field.

TOWNSHIP 139 NORTH, RANGE 96 WEST, 5TH PM

ALL OF SECTIONS 18 AND 19, AND THE W/2 OF SECTION 7.

(57) The Eland-Lodgepole Pool is hereby redefined as the following described tracts of land in Stark County, North Dakota:

ZONE I (Eland-Lodgepole Unit)

TOWNSHIP 139 NORTH, RANGE 97 WEST, 5TH PM

ALL OF SECTION 13, THE S/2 SW/4, THE SW/4 SE/4, AND THE S/2 NW/4 SW/4 OF SECTION 2*, THE E/2 SE/4 OF SECTION 3*, THE E/2 E/2 OF SECTION 10*, ALL OF SECTION 11 EXCEPT A TRACT OF LAND IN THE SW/4 SW/4 BEGINNING AT THE SOUTHWEST CORNER OF SECTION 11, THENCE DUE NORTH 183 FEET ALONG THE WEST SECTION LINE TO A POINT, THENCE 123 FEET DUE EAST TO A POINT, THENCE 183 FEET DUE SOUTH TO A POINT ON THE SOUTH SECTION LINE, THENCE 123 FEET DUE WEST ALONG SAID SECTION LINE TO THE POINT OF BEGINNING, THE S/2 NW/4, THE NW/4 NW/4, THE SW/4 NE/4, AND THE S/2 OF SECTION 12 EXCEPT THAT PORTION OF THE NE/4 NW/4 SE/4 AND THE NE/4 SE/4, LYING NORTH OF THE NORTHERN BOUNDARY OF THE NORTHERN PACIFIC RAILWAY COMPANY (NOW BURLINGTON NORTHERN) RAILROAD RIGHT OF WAY, THE S/2, THE NE/4, THE E/2 NW/4, AND THE SW/4 NW/4 OF SECTION 14, THE NE/4 AND THE NE/4 NW/4 OF SECTION 23, AND THE N/2, THE N/2 SW/4, THE N/2 SE/4, AND THE SE/4 SE/4 OF SECTION 24,

*The S/2 SW/4, the SW/4 SE/4, and the S/2 NW/4 SW/4 of Section 2, the E/2 SE/4 of Section 3, and the E/2 E/2 of Section 10 are also within the Dickinson Field.

TOWNSHIP 139 NORTH, RANGE 96 WEST, 5TH PM

ALL OF SECTION 19, THE S/2 SW/4 OF SECTION 7, AND THE W/2 AND THE SW/4 SE/4 OF SECTION 18.

ZONE II (Eland East-Lodgepole Unit)

TOWNSHIP 139 NORTH, RANGE 96 WEST, 5TH PM

THE NE/4, THE N/2 SE/4, AND THE SE/4 SE/4 OF SECTION 18.

(58) The Eland-Lodgepole Pool is hereby defined as that accumulation of oil and gas found in the interval from below the base of the Mission Canyon Formation to above the top of the Bakken Formation within the limits of the field as set forth above.

(59) Zone I consists of the Eland-Lodgepole Unit. Unit operations shall be conducted pursuant to Order No. 7774, as amended.

(60) The unitized formation in Zone I in the Eland-Lodgepole Unit shall mean the Lodgepole Formation for the reservoir or common pool as now recognized by the Compensated Neutron Litho-Density Log run in the Knopik 1-11 well (File No. 13715)on December 4, 1994, located in the NW/4 NW/4 (755 feet from the north line and 735 feet from the west line) of Section 11, Township 139 North, Range 97 West, Stark County, North Dakota, with the top of the Lodgepole Formation being found at a depth of 9713 feet below the surface (-7203 subsea) and the base of the Unitized Formation being found at a depth of 9967 below the surface (-7462 subsea) or to the stratigraphic equivalent thereto.

(61) The unit operator in Zone I shall be permitted to drill additional wells at any location within the Eland-Lodgepole Unit area no closer than 660 feet to the boundary of the unit.

(62) Zone I in the Eland-Lodgepole Pool shall not be extended except by further order of the Commission after due notice and hearing.

(63) Zone II consists of the Eland East-Lodgepole Unit. Unit operations shall be conducted pursuant to Order No. 10769.

(64) The unitized formation in Zone II in the Eland East-Lodgepole Unit shall mean the common source of supply of hydrocarbons as identified by the Compensated Neutron Litho-Density Log dated March 16, 1996 run in the Gruman FL 18 #1 well (File No. 14141), located in the NE/4 SE/4 of Section 18, Township 139 North, Range 96 West, Stark County, North Dakota, with the top of the Unitized Formation being found at a depth of 9776 feet below the surface (-7314 feet subsea) and the base of the Unitized Formation being found at a depth of 9878 feet below the surface (-7416 feet subsea) or to the stratigraphic equivalent thereto within the limits of the Unit area.

(61) The unit operator in Zone II shall be permitted to drill additional wells at any location within the Eland East-Lodgepole Unit area no closer than 660 feet to the boundary of the unit. All portions of the well bore not isolated by cement of any horizontal well hereafter drilled shall be no closer than 660 feet to the boundary of the Unit. Wells presently permitted to or producing from the pool that do not conform to this spacing pattern shall be considered exceptions.

(62) Zone II in the Eland-Lodgepole Pool shall not be extended except by further order of the Commission after due notice and hearing.

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

(64) The operator of any directionally or horizontally drilled well in the Eland-Lodgepole 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.

(65) 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 Eland-Lodgepole Pool.

(66) 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 Eland-Lodgepole 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 Eland-Lodgepole Pool as the Commission deems appropriate.

(67) The following rules concerning the casing, tubing and equipping of wells shall apply to the subsequent drilling and operation of wells in the Eland-Lodgepole 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 a manner as to protect and isolate all formations containing oil and/or gas, protect the pipe through salt sections encountered, and 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. The Petrox Conoco-Gruman 18 #1 well (File No. 14141), located in the NE/4 SE/4 of Section 18, Township 139 North, Range 96 West, Stark County, North Dakota, is hereby allowed to produce without a tubing packer as an exception to the provisions of NDAC Section 43-02-03-21.

(68) 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 Eland-Lodgepole 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 7192 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.

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

(70) All wells in the Eland-Lodgepole Pool shall be allowed to produce at a maximum efficient rate for a period of 30 days commencing on the first day oil is produced through well-head equipment into tanks from the ultimate producing interval after casing has been run; thereafter, oil production from such wells shall not exceed an average of 100 barrels of oil per day; if and when such wells are connected to a gas gathering and processing facility the foregoing restrictions shall be removed, and the wells shall be allowed to produce at a maximum efficient rate.

(71) If the flaring of gas produced with crude oil from the Eland-Lodgepole 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 further restricted.

(72) The lease road to the Ranchos #1 well (File No. 13755), located in the SW/4 NW/4 of Section 24, Township 139 North, Range 97 West, Stark County, North Dakota, must come off

the east-west road south of the site approximately 1900 feet from the west boundary line of Section 24. Only a submersible pump or equivalent equipment approved by the Director may be used to pump the well.

(73) The operator shall maintain trees and a fence constructed to screen the Klein #1-23 well site (File No. 13745), located in the NE/4 NE/4 of Section 23, Township 139 North, Range 97 West, Stark County, North Dakota, including all production and related facilities located on the site, from homes in the NW/4 of Section 24, Township 139 North, Range 97 West. The operator shall maintain the fence and trees so long as the Klein #1-23 site is used in any way related to the production of oil or gas.

(74) This portion of this order shall cover all of the Eland-Lodgepole Pool common source of supply of crude oil and/or 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 9th day of February, 2018.

INDUSTRIAL COMMISSION
STATE OF NORTH DAKOTA

By the Director, on behalf of the Commission

/s/ Lynn D. Helms, Director