

BEFORE THE INDUSTRIAL COMMISSION  
OF THE STATE OF NORTH DAKOTA

CASE NO. 11616  
ORDER NO. 13751

IN THE MATTER OF A HEARING CALLED ON A MOTION OF THE COMMISSION TO CONSIDER THE APPLICATION OF CONTINENTAL RESOURCES, INC. FOR AN ORDER AUTHORIZING THE DRILLING, COMPLETING AND PRODUCING OF AN INCREASE DENSITY WELL ON A 1280-ACRE SPACING UNIT FOR THE SADLER-BAKKEN POOL DESCRIBED AS SECTIONS 27 AND 34, T.161N., R.95W., DIVIDE COUNTY, ND AND SUCH OTHER RELIEF AS THE IS APPROPRIATE.

ORDER OF THE COMMISSION

THE COMMISSION FINDS:

- (1) This cause came on for hearing at 9:00 a.m. on the 24th day of September, 2009.
- (2) The witnesses for Continental Resources, Inc. (Continental) 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 September 29, 2009, therefore, such testimony may be considered evidence.
- (3) Continental made application to the Commission for an order authorizing the drilling, completing and producing of an increase density well on a 1280-acre spacing unit for the Sadler-Bakken Pool described as Sections 27 and 34, Township 161 North, Range 95 West, Divide County, North Dakota (Sections 27 and 34), and such other relief as the is appropriate.
- (4) Order No. 12224 entered in Case No. 10456, the most recent spacing order for the Sadler-Bakken Pool, established proper spacing for the development of Zone I at one well per 160 acres, Zone II at one horizontal well per 640 acres, and Zones III and IV at one horizontal well per 1280 acres.
- (5) Sections 27 and 34 constitute a 1280-acre spacing unit in Zone III in the Sadler-Bakken Pool.
- (6) Continental drilled and completed their Arvid #1-34H well (File No. 17283) as a single-lateral horizontal producer in the upper Three Forks Formation in the Sadler-Bakken Pool on the spacing unit described as Sections 27 and 34. The well was drilled from a surface

location 375 feet from the south line and 1625 feet from the east line of Section 34. The casing was set horizontally in the Bakken Pool north of the surface location at approximately 868 feet from the south line and 1615 feet from the east line of Section 34 and the lateral was then drilled to a bottom hole location approximately 530 feet from the north line and 1336 feet from the east line of Section 27.

(7) Continental proposes to drill an additional single-lateral horizontal well in the 1280-acre spacing unit described as Sections 27 and 34 in the middle member of the Bakken Formation in the Sadler-Bakken Pool from a surface location 250 feet from the south line and 1980 feet from the east line of Section 34. The casing will be set horizontally in the Bakken Pool north of the surface location at a legal location and the lateral will then be drilled to a bottom hole location approximately 550 feet from the north line and 1700 feet from the east line of Section 27. 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 Sadler-Bakken Pool. The surface and bottom hole locations herein depicted may be preliminary and could be changed for various reasons which is permissible.

(8) Continental presented evidence the proposed additional wells will recover additional reserves and will be economic.

(9) Flexibility with respect to spacing unit size and location of wells in the Sadler-Bakken Pool is essential to efficiently produce as much recoverable oil and gas as economically possible.

(10) Pursuant to North Dakota Century Code Section 38-08-07, spacing units must be of uniform size and shape for the entire pool, except when found necessary to prevent waste, avoid the drilling of unnecessary wells, or to protect correlative rights, the Commission is authorized to divide any pool into zones and establish spacing units for each zone, which units may differ in size and shape from those established in any other zone.

(11) Zones of different spacing within the Sadler-Bakken Pool will allow the flexibility needed for utilization of horizontal drilling.

(12) Granting flexibility in spacing unit size and in locating and drilling additional wells will result in economic and efficient development of the oil and gas resources in a manner that prevents waste and protects correlative rights.

(13) There were no objections to this application.

(14) Approval of this application will prevent waste, avoid the drilling of unnecessary wells, and protect correlative rights.

**IT IS THEREFORE ORDERED:**

(1) Sections 27 and 34, Township 161 North, Range 95 West, Divide County, North Dakota, are hereby established as a 1280-acre spacing unit, allowing up to two horizontal wells within said spacing unit within the Sadler-Bakken Pool, and Zone IV is hereby redefined 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 Sadler-Bakken 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 1280-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 Sadler Field is hereby defined as the following described tracts of land in Divide County, North Dakota:

TOWNSHIP 161 NORTH, RANGE 95 WEST, 5TH PM

ALL OF SECTIONS 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17, 21, 22, 23, 26, 27, 28, 33, 34 AND 35, AND THE N/2 OF SECTION 20,

together with those additional quarter sections or governmental lots corresponding thereto as may be proven productive by wells drilled on lands within one mile of the boundaries of the field as set forth above, provided further that such extensions of the field boundaries shall include only sufficient acreage to form a spacing unit for such wells, and any intervening lands.

(4) The Sadler-Bakken Pool is hereby redefined as the following described tracts of land in Divide County, North Dakota:

ZONE I

TOWNSHIP 161 NORTH, RANGE 95 WEST, 5TH PM

ALL OF SECTIONS 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 17, 21, 22, 23, 26, 27, 28, 33, 34 AND 35, AND THE N/2 OF SECTION 20\*,

together with those additional quarter sections or governmental lots corresponding thereto as may be proven productive by wells drilled on lands within one mile of the boundaries of the field as set forth above, provided further that such extensions of the field boundaries shall include only sufficient acreage to form a spacing unit for such wells, and any intervening lands.

\*Note Section 20, Township 161 North, Range 95 West, Divide County, North Dakota, is a 640-acre spacing unit in the Dolphin-Bakken Pool.

ZONE II (Exclusively for horizontal wells)

TOWNSHIP 161 NORTH, RANGE 95 WEST, 5TH PM

ALL OF SECTION 17.

ZONE III (Exclusively for horizontal wells)

TOWNSHIP 161 NORTH, RANGE 95 WEST, 5TH PM

ALL OF SECTIONS 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 14, 15, 16, 21, 22, 23, 26, 28, 33, AND 35.

ZONE IV (Exclusively for horizontal wells)

TOWNSHIP 161 NORTH, RANGE 95 WEST, 5TH PM  
ALL OF SECTIONS 27 AND 34.

(5) The Sadler-Bakken Pool is hereby redefined as that accumulation of oil and gas found in the interval from 50 feet above the top of the Bakken Formation to 50 feet below the top of the Three Forks Formation within the limits of the field as set forth above.

(6) The proper spacing for the development of Zone I in the Sadler-Bakken Pool is hereby set at one well per 160 acres.

(7) All wells hereafter drilled in Zone I in the Sadler-Bakken Pool shall be located not less than 500 feet from a spacing unit boundary. Wells presently permitted to or producing from the pool that do not conform to this spacing pattern shall be considered exceptions.

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

(9) Provisions established herein for Zone II in the Sadler-Bakken 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 Sadler-Bakken Pool.

(10) The proper spacing for the development of Zone II in the Sadler-Bakken Pool is hereby set at one horizontal well per 640 acres.

(11) All portions of the well bore not isolated by cement of any horizontal well hereafter drilled in Zone II in the Sadler-Bakken Pool shall be no closer than 500 feet to the boundary of the spacing unit. Measurement inaccuracies in the directional survey equipment need not be considered except when determined necessary by the Director.

(12) Spacing units in Zone II in the Sadler-Bakken Pool shall consist of a governmental section or governmental lots corresponding thereto.

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

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

(15) The proper spacing for the development of Zone III in the Sadler-Bakken Pool is hereby set at one horizontal well per 1280 acres.

(16) All portions of the well bore not isolated by cement of any horizontal well hereafter drilled in Zone III in the Sadler-Bakken Pool shall be no closer than 500 feet to the boundary of

the spacing unit. Measurement inaccuracies in the directional survey equipment need not be considered except when determined necessary by the Director.

(17) Sections 2 and 11; Sections 3 and 10; Sections 4 and 9; Sections 5 and 8; Sections 6 and 7; Sections 14 and 23; Sections 15 and 22, Sections 16 and 21; Sections 26 and 35; and Sections 28 and 33, Township 161 North, Range 95 West, Divide County, North Dakota, are hereby designated 1280-acre spacing units in Zone III in the Sadler-Bakken Pool.

(18) Spacing units hereafter created in Zone III in the Sadler-Bakken Pool shall be standup spacing units consisting of two adjacent governmental sections or governmental lots corresponding thereto.

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

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

(21) The proper spacing for the development of Zone IV in the Sadler-Bakken Pool is hereby set at up to two horizontal wells per 1280 acres.

(22) All portions of the well bore not isolated by cement of any horizontal well hereafter drilled in Zone IV in the Sadler-Bakken Pool shall be no closer than 500 feet to the boundary of the spacing unit. Measurement inaccuracies in the directional survey equipment need not be considered except when deemed necessary by the Director.

(23) Sections 27 and 34, Township 161 North, Range 95 West, Divide County, North Dakota, are hereby designated a 1280-acre spacing unit in Zone IV in the Sadler-Bakken Pool.

(24) Spacing units hereafter created in Zone IV in the Sadler-Bakken Pool shall be standup spacing units consisting of two adjacent governmental sections.

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

(26) The operator of any horizontally drilled well in the Sadler-Bakken 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.

(27) 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 Sadler-Bakken Pool.

(28) 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 Sadler-Bakken 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 Sadler-Bakken Pool as the Commission deems appropriate.

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

(30) The following rules concerning the casing, tubing and equipping of wells shall apply to the subsequent drilling and operation of wells in the Sadler-Bakken 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;
- (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 shall have 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.

(31) 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 Sadler-Bakken 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 6280 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 therefore can be demonstrated to his satisfaction. All additional gas-oil ratio and reservoir pressure determinations conducted on any well, but not specially required herein, shall be reported to the Director within 15 days following the end of the month in which they are determined.

(32) 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.

(33) All wells in the Sadler-Bakken 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. The Director is authorized to issue an administrative order allowing unrestricted production at a maximum efficient rate for a period not to exceed 90 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 his satisfaction.

(34) If the flaring of gas produced with crude oil from the Sadler-Bakken Pool causes, or threatens to cause, degradation of ambient air quality, production from the pool shall be further restricted.

(35) This order shall cover all of the Sadler-Bakken Pool common source of supply of crude oil and/or natural gas as herein defined, and all provisions of the pool shall continue 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 2nd day of October, 2009.

INDUSTRIAL COMMISSION  
STATE OF NORTH DAKOTA

By the Director, on behalf of the Commission

/s/ Lynn D. Helms, Director