

BEFORE THE INDUSTRIAL COMMISSION  
OF THE STATE OF NORTH DAKOTA

CASE NO. 10133  
ORDER NO. 11968

IN THE MATTER OF A HEARING CALLED ON A MOTION OF THE COMMISSION TO CONSIDER THE APPLICATION OF CONTINENTAL RESOURCES, INC. FOR AN ORDER EXTENDING THE FIELD BOUNDARIES AND AMENDING THE FIELD RULES FOR THE SADLER-BAKKEN POOL TO CREATE AND ESTABLISH THREE 1280-ACRE SPACING UNITS COMPRISED OF SECTIONS 3 AND 10; SECTIONS 4 AND 9; AND SECTIONS 5 AND 8, T.161N., R.95W., DIVIDE COUNTY, ND, AUTHORIZING THE DRILLING OF ONE HORIZONTAL WELL ON EACH SPACING UNIT 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 29th day of May, 2008.
- (2) The geology and engineering 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 June 4, 2008, therefore, such testimony may be considered evidence.
- (3) Continental made application to the Commission for an order extending the field boundaries and amending the field rules for the Sadler-Bakken Pool to create and establish three 1280-acre spacing units comprised of Sections 3 and 10; Sections 4 and 9; and Sections 5 and 8, Township 161 North, Range 95 West, Divide County, North Dakota (Sections 3, 10, 4, 9, 5, and 8), authorizing the drilling of one horizontal well on each spacing unit and such other relief as is appropriate.
- (4) Order No. 11625 entered in Case No. 9876, 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 Zone III at one horizontal well per 1280 acres.

(5) The SW/4 of Section 4, the SE/4 of Section 5, the S/2 of Section 8, and the S/2 and NW/4 of Section 9 are within the Sadler Field and within Zone I in the Sadler-Bakken Pool. Sections 3 and 10, the N/2 and SE/4 of Section 4, the N/2 and SW/4 of Section 5, the N/2 of Section 8, and the NE/4 of Section 9 are adjacent to the Sadler Field and within the buffer zone of Zone I in the Sadler-Bakken Pool.

(6) Continental presented evidence that the Sadler-Bakken Pool underlies Sections 3 and 10, the N/2 and SE/4 of Section 4, the N/2 and SW/4 of Section 5, the N/2 of Section 8, and the NE/4 of Section 9; therefore, the boundary of the Sadler Field should be extended to include such lands.

(7) The Citation Oil & Gas Corporation #2-4 Johnson well, located 600 feet from the south line and 500 feet from the west line of Section 4, is currently completed directionally in the Sadler-Bakken Pool on a spacing unit described as the SW/4 of Section 4. The Citation Oil & Gas Corporation #1-5 Nelson well, located 500 feet from the south line and 750 feet from the east line of Section 5, is currently completed vertically in the Sadler-Bakken Pool on a spacing unit described as the SE/4 of Section 5. There are no other wells currently permitted to or producing from the Sadler-Bakken Pool in Sections 3, 4, 5, 8, 9, or 10.

(8) Continental plans to develop the Bakken Pool underlying Sections 3 and 10; Sections 4 and 9; and Sections 5 and 8 by drilling single-lateral horizontal wells from surface locations 500 feet from the north line and 1320 feet from the west line of the north sections. The casing will be set horizontally in the Bakken Pool south of the surface locations and the laterals will then be drilled to bottom hole locations 500 feet from the south line and 1320 feet from the west line of the south sections. Utilization of horizontal drilling technology in this manner would result in the wells 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 as long as the horizontal well design still justifies the proposed spacing unit.

(9) Evidence and testimony presented to the Commission indicates that the proposed horizontal wells will produce oil that might otherwise not be produced.

(10) Allowing the Johnson #2-4 and Nelson #1-5 wells to continue to produce on their existing spacing units, described as the SW/4 of Section 4 and the SE/4 of Section 5 respectively, will provide maximum ultimate recovery from the pool in a manner that will protect correlative rights.

(11) Siting of surface locations can be difficult and limited due to rough topography, waterways, landowner concerns, and regulatory distance requirements combined with rough topography. In some instances, there may be an existing road which can be utilized thereby improving the economics of drilling a well and decreasing the necessity of building new roads which will minimize surface disturbance and enhance aesthetic values.

(12) Requiring all portions of the well bore not isolated by cement of a horizontal well drilled to be no closer than 1220 feet to the east and west boundaries of the spacing unit, increases the cost and risk associated with setting the production casing at said 1220-foot setback

in a well where surface constraints dictate locating it at a less than optimum location. This increased cost and risk is due to the necessity of deviating the normally vertical portion of the well bore and encountering potential difficulties in landing the production casing at the aforementioned 1220-foot setback requirement due to increased friction and tortuosity. Deviation of the normally vertical portion of the well bore also results in increased rod wear and less pump efficiency due to the setting depth.

(13) Flexibility with respect to siting the surface location of horizontal wells in the Sadler Field due to surface constraints will increase drilling and production efficiencies allowing the recovery of as much oil and gas as economically possible, will prevent waste and the drilling of unnecessary wells in a manner which will not have a detrimental effect on correlative rights, and will enhance landowner relationships.

(14) In order to foster, encourage, and promote the development and production of oil and gas resources, the Director should be granted authority to issue an administrative order, without holding a hearing, allowing a horizontal well drilled in Zone IV in the Sadler-Bakken Pool to be completed open hole between the 500-foot and 1220-foot setback requirements contingent upon the well bore traversing to a point beyond the 1220-foot setback requirement in an expeditious manner. Further deviation from this trajectory should be granted if the necessity therefor can be demonstrated to the Director's satisfaction.

(15) In order to foster, encourage, and promote the development and production of oil and gas resources, the Director should be granted authority to issue an administrative order, without holding a hearing, reassigning 1280-acre spacing units established in Zone III to Zone IV and in Zone IV to Zone III in the Sadler-Bakken Pool.

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

(17) Pursuant to Section 38-08-07 of the North Dakota Century Code, 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.

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

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

(20) If Continental'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.

(21) There were no objections to this application.

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

IT IS THEREFORE ORDERED:

(1) Sections 3 and 10; Sections 4 and 9; and Sections 5 and 8, Township 161 North, Range 95 West, Divide County, North Dakota, are hereby established as 1280-acre spacing units for the exclusive purpose of drilling a horizontal well within each said spacing unit within the Sadler-Bakken Pool and Zone IV is hereby created to include said spacing units. Existing and future vertical and directional wells drilled within the spacing units 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 units herein established has justified the creation of such units, 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 Johnson #2-4 well (File No. 14407), currently completed in the Sadler-Bakken Pool, shall be allowed to continue to produce on its existing spacing unit described as the SW/4 of Section 4, Township 161 North, Range 95 West, Divide County, North Dakota.

(4) The Nelson #1-5 well (File No. 13866), currently completed in the Sadler-Bakken Pool, shall be allowed to continue to produce on its existing spacing unit described as the SE/4 of Section 5, Township 161 North, Range 95 West, Divide County, North Dakota.

(5) The Sadler Field is hereby redefined 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, 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.

(6) 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, 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.

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, 11, 14, 15, 16, 21, 22, 23, 26, 27, 28, 33, 34 AND 35.

ZONE IV (Exclusively for horizontal wells)

TOWNSHIP 161 NORTH, RANGE 95 WEST, 5TH PM  
ALL OF SECTIONS 3, 4, 5, 8, 9 AND 10.

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

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

(9) 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.

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

(11) 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 (6) above shall conform to the applicable spacing requirements for the orderly development of Zone I in the Sadler-Bakken Pool.

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

(13) 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 660 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.

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

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

(16) 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 (6) above shall conform to the applicable spacing requirements for the orderly development of Zone I in the Sadler-Bakken Pool.

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

(18) 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 660 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.

(19) Sections 2 and 11; Sections 14 and 23; Sections 15 and 22, Sections 16 and 21; Sections 26 and 35; Sections 27 and 34; 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.

(20) Spacing units hereafter created in Zone III in the Sadler-Bakken Pool shall consist of two adjacent governmental sections or governmental lots corresponding thereto.

(21) The Director is hereby authorized to issue an administrative order reassigning 1280-acre spacing units established in Zone IV to Zone III in the Sadler-Bakken Pool, whenever, in his opinion, an application for such an order contains sufficient information to determine the following:

- (a) Horizontal drilling technology will be utilized in the Bakken Pool.
- (b) The 1280-acre spacing unit currently exists in Zone IV in the Sadler-Bakken Pool.
- (c) The proposed horizontal well design complies with the setback requirements in Zone III in Sadler-Bakken Pool and justifies the 1280-acre spacing unit.

(22) Zone III in the Sadler-Bakken Pool shall not be extended except under the provisions of paragraph (21) above or by further order of the Commission after due notice and hearing.

(23) 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 (6) above shall conform to the applicable spacing requirements for the orderly development of Zone I in the Sadler-Bakken Pool.

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

(25) 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 1220 feet to the east and west boundaries and 500 feet to the north and south boundaries of the spacing unit. Measurement inaccuracies in the directional survey equipment need not be considered except when deemed necessary by the Director.

(26) The Director is hereby authorized to issue an administrative order granting a waiver allowing a horizontal well permitted or drilled in the Sadler-Bakken Pool to be completed open hole at less than the 1220-foot setback requirement for topographic or access reasons, contingent upon the well bore traversing to a point beyond the 1220-foot setback requirement in an expeditious manner, whenever, in his opinion, the application for such an order contains sufficient information to determine the following:

- (a) Horizontal drilling technology will be utilized in the Bakken Pool.
- (b) The proposed production casing setting location is beyond a 500-foot setback requirement.
- (c) Topography, waterways, regulatory distance requirements combined with the rough topography, road access, or landowner concerns will substantially increase the cost and/or risk in drilling and producing the well.
- (d) Further deviation from the aforementioned expeditious trajectory may be granted if the necessity therefor can be demonstrated to the Director's satisfaction.

(27) Sections 3 and 10; Sections 4 and 9; and Sections 5 and 8, Township 161 North, Range 95 West, Divide County, North Dakota, are hereby designated 1280-acre spacing units in Zone IV in the Sadler-Bakken Pool.

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

(29) The Director is hereby authorized to issue an administrative order reassigning 1280-acre spacing units established in Zone III to Zone IV in the Sadler-Bakken Pool, whenever, in his opinion, an application for such an order contains sufficient information to determine the following:

- (a) Horizontal drilling technology will be utilized in the Bakken Pool.
- (b) The 1280-acre spacing unit currently exists in Zone III in the Sadler-Bakken Pool.
- (c) The proposed horizontal well design complies with the setback requirements in Zone IV in the Sadler-Bakken Pool and justifies the 1280-acre spacing unit.

(30) Zone IV in the Sadler-Bakken Pool shall not be extended except under the provisions of paragraph (29) above or by further order of the Commission after due notice and hearing.

(31) 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.

(32) 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.

(33) 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.

(34) 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.

(35) 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 2000 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.

(36) 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 within 45 days in all wells hereinafter completed in the Sadler-Bakken Pool. 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 after the well has been shut in for a minimum of 48 hours. 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.

(37) 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.

(38) 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.

(39) 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.

(40) 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 25th day of June, 2008.

INDUSTRIAL COMMISSION  
STATE OF NORTH DAKOTA

By the Director, on behalf of the Commission

/s/ Lynn D. Helms, Director