

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING CALLED BY THE
OIL CONSERVATION DIVISION FOR THE
PURPOSE OF CONSIDERING:

CASE NO. 13816
Order No. R-12707

APPLICATION OF BLACK HILLS EXPLORATION & PRODUCTION, INC.
FOR THE CREATION OF THE JICARILLA APACHE TRIBAL LANDS
PRODUCTION AREA AND THE ADOPTION OF SPECIAL POOL RULES AND
REGULATIONS IN THE PICTURED CLIFFS FORMATION, EAST BLANCO-
PICTURED CLIFFS POOL, AND THE TERTIARY FORMATION, CABRESTO
CANYON-TERTIARY POOL, RIO ARRIBA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a. m. on November 30, 2006, at Santa Fe, New Mexico, before Examiner Richard I. Ezeanyim.

NOW, on this 30th day of January 2007, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner,

FINDS THAT:

- (1) Due public notice has been given and the Division has jurisdiction of this case and the subject matter.
- (2) By Order No. R-11858 issued in case No. 12892 on November 1, 2002, the Division approved Mallon Oil Company's twenty-five (25) 160-acre pilot infill drilling program in the Pictured Cliffs formation, East Blanco-Pictured Cliffs Pool, and twenty (20) 160-acre pilot infill drilling program in the Tertiary System, Cabresto Canyon-Tertiary Pool, all in portions of Townships 28, 29, 30 and 31 North, Ranges 2, and 3 West, Rio Arriba County, New Mexico.
- (3) This approval was to provide Mallon Oil Company the opportunity to gather engineering data to further study the reservoir and determine if increased well density is necessary to efficiently produce reserves from the Pictured Cliffs

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Formation and the Tertiary system.

(4) On March 10, 2003, Black Hills Exploration & Production, Inc. acquired Mallon Oil Company, and proceeded to conduct the approved drilling programs. Mallon Oil Company is now Black Hills Resources Company, a subsidiary of Black Hills Exploration and Production, Inc.

(5) The applicant, Black Hills Exploration & Production, Inc. ("Applicant" or "Black Hills"), now seeks the creation of the Jicarilla Apache Tribal Lands Production Area in the Pictured Cliffs formation, East Blanco-Pictured Cliffs Gas Pool (72400), and the Tertiary formation, Cabresto Canyon-Tertiary Pool (97037), comprised of the following Jicarilla Tribal Lands located in Rio Arriba County, New Mexico:

TOWNSHIP 30 NORTH, RANGE 3 WEST, NMPM

Sections 4 through 9: All
 Sections 15 through 22: All
 Sections 26 through 35: All

TOWNSHIP 31 NORTH, RANGE 3 WEST, NMPM

Section 32: S/2

TOWNSHIP 29 NORTH, RANGE 3 WEST, NMPM

Sections 3 through 10: All

(6) Black Hills also seeks the adoption of Special Rules and Regulations for the Jicarilla Apache Tribal Lands Production Area that provide for increased well density within each standard 160-acre spacing and proration unit from the current maximum of one well as provided by division Rule 104.C(3) to a maximum of two wells per 160-acre gas spacing and proration unit, or two (2) horizontal wells per 320-acre spacing and proration unit, and for special well location requirements. Further, the Applicant seeks the recompletion of existing wells and the drilling of new wells at locations that are unorthodox based on the well location requirements of Division Rule 104.C(3), provided however, that any such unorthodox location shall be no closer than 660 feet to the outer boundary of the Jicarilla Apache Tribal Lands Production Area, nor closer than 10 feet to any interior quarter-quarter section line or subdivision inner boundary.

(7) Energen Resources Corporation, the only other working interest owner in the proposed Jicarilla Apache Tribal Lands Production Area, had a representative present at the hearing to support the application.

(8) At the hearing, Black Hills presented Resolution 2006-R-513-11 adopted by The Legislative Council of the Jicarilla Apache Nation and executed by the President

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of the Nation on November 28, 2006, which supports the application of Black Hills in this Case for increased well density in the Pictured Cliffs formation and the Tertiary system.

(9) Black Hills also presented a letter from the Bureau of Land Management (BLM) which supports its application on the condition that Black Hills annually report the results of the development project to both the BLM and the Oil Conservation Division (OCD).

(10) The Applicant's witness testified that the development of the oil and gas minerals under the proposed Jicarilla Tribal Lands Production Area is difficult because it is in an area where there are numerous topographical, archeological, geological, and cultural issues.

(11) To address these development issues, the Division by Administrative Order No. NSL-4355 issued to Mallon Oil Company on September 7, 1999, approved administrative procedures that authorized unorthodox well locations without further regulatory review for 60,167.64 acres more or less of Jicarilla Apache tribal Lands, as long as all wells were a standard set back from the outer boundary of the Jicarilla Apache Tribal lands.

(12) In support of this application, Black Hills presented geological evidence that demonstrates that:

- (a) the proposed Jicarilla Apache Tribal Lands Production Area is located on the Northeastern flank of the San Juan Basin, and consists of only 20,800 acres more or less;
- (b) the Pictured Cliffs formation is a continuous homogeneous reservoir across the area, and contain formations with excellent geological characteristics for development with horizontal wellbores; and
- (c) the Tertiary formations that are located above the Pictured Cliffs formation are complex reservoirs comprised of fluvial deposits that are discontinuous and anisotropic in nature.

(13) Black Hills' reservoir engineering evidence, which was based on information obtained from wells drilled in the Mallon Pilot Project Area and from other wells in the proposed Jicarilla Apache Tribal Lands Production Area demonstrates that:

- (i) most wells in the proposed Jicarilla Apache Tribal Lands Production Area drain less than 80 acres;

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- (ii) based on an idealized model, there is high recovery within the drainage volume;
- (iii) half of the Pictured Cliffs wells in this area drain less than 30 acres, 65 % have less than 80-acre recovery efficiency, and only 5% of the wells exceeded the idealized 160-acre recovery efficiency; and
- (iv) there is complex reservoir behavior in the Tertiary formations due to layers, anisotropy and limited continuity.

The Division accordingly concludes the following:

(14) Energen Resources Corporation, the only other working interest owner in the proposed Jicarilla Apache Tribal Lands Production Area supports the application; therefore, it appears that there are no correlative rights issues.

(15) The Applicant's evidence demonstrates that the horizontal wellbore orientation helps it expose the well to the best reservoir in the Pictured Cliffs formation by staying the well in the better porosity and permeability zones for the duration of the well. Further, this horizontal well orientation will enable Black Hills to maximize resource recovery and minimize surface disturbance.

(16) Black Hills evidence established that increased density of two vertical wells per 160-acre drainage area or two horizontal wells per 320-acre horizontal well project area in the Pictured Cliffs formation in the proposed Jicarilla Apache Tribal Lands Production Area should yield incremental recoveries.

(17) Black Hills is the principal operator in the East Blanco-Pictured Cliffs Pool and the only operator in the formations in the proposed Jicarilla Apache Tribal Lands Production Area, and therefore the development of the Pictured Cliffs formation with horizontal wellbores can be conducted pursuant to Division Rule 111.

(18) The Applicant's evidence also established that, because of the complex reservoir behavior of the Tertiary Formations in this area and because wells drilled and recompleted to access the lower Pictured Cliffs formation will be drilled through the Tertiary formations, increased density in the Tertiary formations will enable more sources of supply to be accessed resulting in the recovery of incremental reserves from the Tertiary formation that otherwise will not be recovered.

(19) Approval of this application will result in the recovery of reserves that would otherwise not be recovered, will protect correlative rights, and is in the best interest of conservation and should be approved.

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IT IS THEREFORE ORDERED THAT:

(1) The application of Black Hills Exploration & Production, Inc. is hereby approved for the creation of the Jicarilla Apache Tribal Lands Production Area in the Pictured Cliffs formation, East Blanco-Pictured Cliffs Gas Pool (**72400**), and the Tertiary formation, Cabresto Canyon-Tertiary Pool (**97037**), comprised of the following Jicarilla Tribal Lands located in Rio Arriba County, New Mexico:

TOWNSHIP 30 NORTH, RANGE 3 WEST, NMPM

Sections 4 through 9: All
 Sections 15 through 22: All
 Sections 26 through 35: All

TOWNSHIP 31 NORTH, RANGE 3 WEST, NMPM

Section 32: S/2

TOWNSHIP 29 NORTH, RANGE 3 WEST, NMPM

Sections 3 through 10: All

(2) Special Rules and Regulations for the Jicarilla Apache Tribal Lands Production Area are hereby promulgated as follows:

SPECIAL RULES AND REGULATIONS
FOR THE
JICARILLA APACHE TRIBAL LANDS PRODUCTION AREA

RULE 1: Each well completed or recompleted in the Jicarilla Apache Tribal Lands-Production Area, as designated in Ordering Paragraph (1), shall be spaced, drilled, operated and produced in accordance with the Special Rules and Regulations hereinafter set forth.

RULE 2: ACREAGE AND WELL LOCATION REQUIREMENTS

A. Standard GPU (Gas Proration Unit): A standard GPU in the Jicarilla Apache Tribal Lands Production Area shall be 160 acres, more or less, comprising a quarter section of a single governmental section, being a legal subdivision of the United States Public Lands Survey.

B. Well density:

(1) As many as two (2) wells may be drilled on a standard GPU, as follows:

- (a) The INITIAL WELL on each GPU shall be located in accordance with the provisions of Subsection 2.C of this rule.
 - (b) An OPTIONAL INFILL WELL drilled on a GPU shall be located in a quarter-quarter section not containing the initial well completed in the same formation.
 - (c) no more than two Pictured Cliffs formation and no more than two Tertiary formation wells shall be located within a quarter section.
- (2) The plat (Form C-102) accompanying the "Application for Permit to Drill ("APD") (Form C-101 or federal equivalent) for subsequent wells on a GPU shall have outlined the boundaries of the GPU and shall show the location (well name, footage location, API number) of all existing wells on the GPU completed in the same formation and the subsequent proposed new well.

C. Well locations:

A well drilled or recompleted within the Jicarilla Apache Tribal Lands Production Area shall not be closer than 660 feet to the outer boundary of the Jicarilla Apache Tribal Lands Production Area, and shall not be closer than 10 feet to any section, quarter section, or interior quarter-quarter section line or subdivision inner boundary.

RULE 3: The Division Director, in accordance with Division Rule 104, may administratively grant an exception to the well location requirements of subparagraph 2.C above upon application to the Division which includes notification by certified mail-return receipt requested to affected parties.

RULE 4: Nothing in these rules shall limit the ability of an operator to drill or produce a directional or a horizontal well pursuant to the provisions of Division Rule 111.A and C.

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IT IS FURTHER ORDERED THAT:

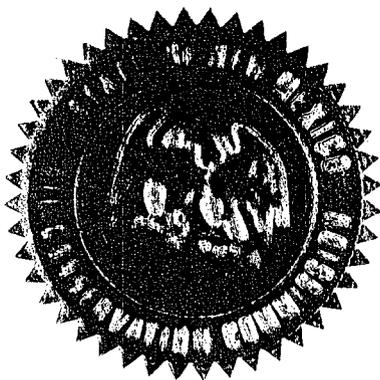
(3) The recompletion of existing wells and the drilling of new wells at locations that are unorthodox based on the well location requirements of Division Rule 104.C(3) are hereby approved without further regulatory review, provided however, that any such unorthodox location shall be no closer than 660 feet to the outer boundary of the Jicarilla Apache Tribal Lands Production Area, nor closer than 10 feet to any interior quarter-quarter section line or subdivision inner boundary.

(4) Black Hills Exploration & Production, Inc. shall annually report the results of the development project to both the Bureau of Land Management (BLM) and the Oil Conservation Division (OCD) for four years.

(5) The provisions of the Division Administrative Order NSL-4355 shall remain in full force and effect.

(6) Jurisdiction of this case is hereby retained for the entry of such further orders as the Division may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.



SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

MARK E. FESMIRE, P.E.
Director