

Entered January 21, 1982  
JHR

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

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

CASE NO. 7209  
Order No. R-6888

APPLICATION OF KOCH INDUSTRIES, INC.  
FOR DESIGNATION OF A TIGHT FORMATION,  
SAN JUAN COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 9 a.m. on March 25, 1981, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 21st day of January, 1982, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Koch Industries, Inc., pursuant to Section 107 of the Natural Gas Policy Act of 1978, and 18 C.F.R. Section 271.703, requested the designation as a "tight formation" of the Mesaverde formation underlying the following described lands:

SAN JUAN COUNTY, NEW MEXICO

TOWNSHIP 32 NORTH, RANGE 8 WEST, NMPM

Section 7: All  
Sections 18 and 19: All  
Sections 30 and 31: All

TOWNSHIP 32 NORTH, RANGE 9 WEST, NMPM

Sections 10 through 15: All  
Sections 22 through 27: All  
Sections 34 and 35: All

containing a total of 10,551.0 acres, more or less.

(3) That the vertical limits of the Blanco-Mesaverde Pool in the area under consideration extend from the Huerfanito Bentonite in the Lewis Shale to a point 500 feet below the top of the Point Lookout member of the Mesaverde formation and consist of the Cliffhouse, Menefee, and Point Lookout members, with the Cliffhouse and Point Lookout zones contributing most of the gas, and the less continuous Menefee sands also contributing in some wells.

(4) That in the area under consideration, the thickness and porosity of the three zones is as follows: Cliffhouse, average thickness about 50 feet, porosity range from four to 15 percent; Menefee, thickness range from 230 feet to 290 feet, porosity range from less than three percent to 17 percent; and Point Lookout, thickness range from 150 feet to 200 feet, porosity range from three percent to 14 percent. The average porosity for all sands in all three members is approximately eight percent.

(5) That the aforesaid three members of the Mesaverde group exhibit depositional characteristics of three distinct phases -- shoreline deposits during the regression of the Mancos Sea, non-marine deposits of coals, silts, and shales, and shoreline deposits during transgression of the Lewis Sea -- and overall combine to form a low permeability pay near the northern productive limits of the Blanco Mesaverde Pool.

(6) That the average depth from the surface to the top of the Cliffhouse formation of the Mesaverde group in the area under consideration is approximately 5463 feet.

(7) That there have been 14 Mesaverde wells drilled in the area under consideration; that the expected ultimate recovery from these wells ranges from two million cubic feet of gas to 787 million cubic feet, and averages 374 million cubic feet.

(8) That development in the area to date consists of two sub-areas, with five of the 14 wells drilled to date being in the northern portion of the overall area, and nine of the 14 wells drilled to date being in the southern portion of the overall area.

(9) That the expected ultimate recovery for the five wells in the northern sub-area ranges from two million cubic feet of gas to 787 million cubic feet and averages 254 million cubic feet, while the expected ultimate recovery from the nine wells in the southern sub-area ranges from two million cubic

feet of gas to 596 million cubic feet and averages 440 million cubic feet.

(10) That data are not available in this case to determine the in situ gas permeability of the Mesaverde formation in the northern sub-area under consideration in this case.

(11) That the data available to determine the in situ gas permeability in the southern sub-area in this case is sketchy, based upon applicant's Exhibits 9 and 10. That Exhibit 9 indicates an in situ permeability in applicant's Gardner Well No. 1, located in Unit M of Section 35, Township 32 North, Range 9 West, NMPM of 0.0208 md.

(12) That while Exhibit 10 purports to show an in situ permeability for applicant's Gardner Well No. 3, located in Unit N of Section 31, Township 32 North, Range 8 West, NMPM, equivalent to 0.0012 or 0.0013 md, it is believed that the permeability calculations discussed in Finding No. (11) are based on more accurate input data and assumptions, and more nearly reflect the true in situ permeability of the Mesaverde formation in the southern sub-area, and although Exhibit No. 10 should be disregarded, it is reasonable to assume that the in situ permeability of the Mesaverde formation in the southern sub-area is less than 0.1 md.

(13) That no pre-stimulation stabilized flow rates are available for any of the 14 wells drilled in the area under consideration, but that data indicating the capability of the formation to produce, without stimulation, is available for wells drilled in the southern sub-area as follows:

- A. A non-stabilized flow rate of 47 MCF per day against atmospheric pressure was obtained on the Gardner Well No. 1 when it was drilled in 1954. A stabilized rate of production would have been less than 47 MCF per day.
- B. Gardner Wells Nos. 2, 3, 3-A, 4, 4-A, and 5 were drilled with gas so that a continuous check was possible as to whether the formation was producing during drilling operations. Gardner Wells Nos. 2, 3, 3-A, 4-A, and one zone of 5 indicated "no gas while drilling." Gardner Well No. 4 indicated "slight show of gas while drilling," and one zone of Well No. 5 indicated that gas "too small to measure" was produced during drilling operations.

(14) That based upon the evidence discussed in Finding No. (13) above, it may reasonably be assumed that the stabilized productivity, prior to stimulation, of the wells completed in the Mesaverde formation in the southern sub-area is less than the 163 MCF per day which is the maximum productivity set forth in 18 C.F.R. 271.703(c)(2)(i)(B) for wells in the 5000-5500 foot range.

(15) That no data is available in this case to demonstrate the before-stimulation productivity of wells in the northern sub-area under consideration.

(16) That none of the wells drilled in the area is capable of producing, with or without stimulation, more than five barrels of oil per day.

(17) That there are fresh water aquifers in the area under consideration extending from the surface to the base of the Ojo Alamo formation, which is found at an average depth of approximately 2185 feet; that an average of some 3278 feet of vertical distance separates the base of said Ojo Alamo and the top of the Cliffhouse member of the Mesaverde formation.

(18) That the state and federal regulations governing casing and cementing of wellbores, as well as the aforementioned vertical distances, should prevent any adverse impact upon the fresh water aquifers during both hydraulic fracturing and waste disposal operations.

(19) That 18 C.F.R. Section 271.703(c)(2)(i)(D) provides that "if the formation or any portion thereof was authorized to be developed by infill drilling prior to the date of recommendation and the jurisdictional agency has information which in its judgment indicates that such formation or portion subject to infill drilling can be developed absent the incentive price established in paragraph (a) of this section then the jurisdictional agency shall not include such formation or portion thereof in its recommendation."

(20) That the Division, by its Order No. R-1670-T dated November 14, 1974, approved infill drilling in the Blanco Mesaverde Gas Pool in San Juan and Rio Arriba Counties, New Mexico, and said pool includes the Mesaverde formation underlying the lands described in Finding No. (2) above and under consideration in this case.

(21) That it appearing to the examiner at the hearing of this case on March 25, 1981, that there was insufficient evidence to make the determination described in Finding No. (19)

above, i.e., that the formation could or could not be developed economically absent the tight formation incentive price, the applicant was asked to submit additional evidence regarding well development and operating costs, reserves, and rates of return on investment under normal Section 103 gas prices and under Section 107 gas prices.

(22) That the requested data was submitted in the form of Revised Exhibits 6 and 13 in this case, and the original Exhibits 6 and 13 should be disregarded.

(23) That the data submitted by applicant on Revised Exhibit 13 in this case relates to reserves, development and operating costs, and rates of return in the southern sub-area only, and no data are available pertaining to such matters for wells drilled in the northern sub-area.

(24) That according to Revised Exhibit 13, the average ultimate recovery which may be expected under the Section 103 gas price in Sections 25, 26, 27, and 35, Township 32 North, Range 9 West, NMPM, and Section 31, Township 32 North, Range 8 West, NMPM, is approximately 494 million cubic feet of gas; that with development costs of approximately \$400,700 per well and operating costs of approximately \$4800 per year per well, the gross revenue received less expense interest and royalty interest and severance and ad valorem taxes, the operator may expect an 8.8 percent rate of return before income taxes on his investment, or 7.3 percent rate of return after income taxes.

(25) That according to Revised Exhibit 13, the average ultimate recovery which may be expected in the same area and under the same conditions as described in Finding No. (24) above, except under the Section 107 incentive gas price, is some 516 million cubic feet of gas, and the operator may expect a 39.2 percent rate of return on his investment before income taxes, or 27.5 percent rate of return after income taxes.

(26) That while the 39.2 percent rate of return before taxes or 27.5 percent rate of return after taxes provided by the incentive price may seem excessive, it is obvious that the 8.8 percent rate of return before taxes or 7.3 percent rate of return after taxes under the Section 103 price is too low to justify the risk of drilling additional wells in the area.

(27) That inasmuch as there is no data as to pre-stimulation flow rates in the northern sub-area, nor is there any data relating to development and operating costs vs. revenues, and rates of return, no recommendation as to designation of tight formation should be made at this time for that area.

-6-

Case No. 7209  
Order No. R-6888

(28) That the data that is available in this case justifies the recommendation as a tight formation in the southern sub-area, and that area should be described as follows:

SAN JUAN COUNTY, NEW MEXICO

TOWNSHIP 32 NORTH, RANGE 8 WEST, NMPM  
Sections 30 and 31: All

TOWNSHIP 32 NORTH, RANGE 9 WEST, NMPM  
Sections 25 through 27: All  
Sections 34 and 35: All

containing a total of 4216.98 acres, more or less.

IT IS THEREFORE ORDERED:

(1) That it be and hereby is recommended to the Federal Energy Regulatory Commission pursuant to Section 107 of the Natural Gas Policy Act of 1978, and 18 C.F.R. Section 271.703, that the Mesaverde producing interval extending from the Huerfanito Bentonite in the Lewis shale to a point 500 feet below the top of the Point Lookout member of the Mesaverde group, and consisting of the Cliffhouse, Menefee, and Point Lookout members of the Mesaverde group, underlying the following described lands in San Juan County, New Mexico, be designated as a tight formation:

SAN JUAN COUNTY, NEW MEXICO

TOWNSHIP 32 NORTH, RANGE 8 WEST, NMPM  
Sections 30 and 31: All

TOWNSHIP 32 NORTH, RANGE 9 WEST, NMPM  
Sections 25 through 27: All  
Sections 34 and 35: All

containing a total of some 4216.98 acres, more or less.

(2) That no recommendation is made as to those lands described in Finding No. (2) of this order but not included in Order No. (1) above.

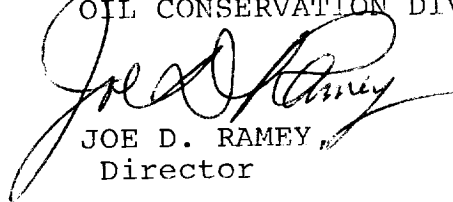
(3) That jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

-7-

Case No. 7209  
Order No. R-6888

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

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION



JOE D. RAMEY  
Director

S E A L