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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. 11349
Order No. R-10476

APPLICATION OF CONOCO INC. FOR DOWNHOLE COMMINGLING AND FOR TWO UNORTHODOX GAS WELL LOCATIONS, RIO ARRIBA COUNTY, NEW MEXICO.

RECEIVED
OCT 10 1995
OIL CON. DIV.
DIST. 3

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on July 27, 1995, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 6th day of October, 1995, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

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

(2) The applicant, Conoco Inc., seeks approval to commingle gas production from the Basin-Dakota and Blanco-Mesaverde Gas Pools within fourteen (14) existing Basin-Dakota Gas Pool wells, and within seventeen (17) wells to be subsequently drilled as Dakota-Mesaverde commingled completions, all as shown on Exhibit "A" attached hereto, and all located within its San Juan 28-7 Unit located in portions of Townships 27 and 28 North, Range 7 West, NMPM, Rio Arriba County, New Mexico.

(3) The applicant further seeks:

a) to establish an administrative procedure whereby additional wells within its San Juan 28-7 Unit, either existing or subsequently drilled, may be downhole commingled in the Basin-Dakota and Blanco-Mesaverde Gas Pools upon submission and approval of an application to the Aztec District Office of the Division; and,

b) approval to drill its San Juan 28-7 Unit Well Nos. 125M and 157M, both wells proposed to be downhole commingled, at unorthodox gas well locations for both the Basin-Dakota and Blanco-Mesaverde Gas Pools 580 feet from the North line and 1140 feet from the West line (Unit D) of Section 12, and 798 feet from the South line and 712 feet from the East line (Unit P) of Section 11, respectively, both in Township 27 North, Range 7 West, NMPM.

(4) Conoco is the current operator of the San Juan 28-7 Unit, a Federal Exploratory unit which currently encompasses approximately 31,000 acres.

(5) Both the Blanco-Mesaverde and Basin-Dakota Gas Pools have been extensively developed within the San Juan 28-7 Unit with approximately 110 existing Mesaverde and 127 existing Dakota producing wells.

(6) According to applicant's land testimony, the interest ownership between the Dakota and Mesaverde formations within any given wellbore in the unit is not common due to differing Dakota and Mesaverde Participating Areas (PA's).

(7) The applicant provided notice of its application to all offset operators and to all working, royalty and overriding royalty interest owners within the existing San Juan 28-7 Unit Dakota and Mesaverde PA's, including the Commissioner of Public Lands for the State of New Mexico and the United States Bureau of Land Management. No offset operator and/or interest owner appeared at the hearing in opposition to the application.

(8) The geologic evidence and testimony presented by the applicant indicates that within the San Juan 28-7 Unit:

a) the regional dip within both the Dakota and Mesaverde formations is from the southwest to the northeast;

b) the Mesaverde formation is continuous and productive throughout the entire unit, with production predominantly originating from the Point Lookout and Cliffhouse intervals. Mesaverde wells located within the north and northeast portion of the unit generally exhibit better producing rates and higher cumulative gas recoveries due to better sand development in the Point Lookout and Cliffhouse intervals;

c) the Mesaverde formation is relatively "tight" with low porosities and permeabilities;

d) the Dakota formation is continuous and productive throughout the entire unit, and Dakota wells generally exhibit consistent producing rates and cumulative gas recoveries; and,

e) there is potential for the recovery of additional gas reserves from both the Mesaverde and Dakota formations from recompletions and infill drilling.

(9) Applicant's geologic and engineering evidence and testimony indicates that:

a) 55 MCF gas per day is the current average Dakota producing rate within those fourteen existing wells applicant proposes to recomplete and downhole commingle with Mesaverde production;

b) 73 MCF gas per day is the current average producing rate of existing Mesaverde wells located within those Sections in which the fourteen existing Basin-Dakota Gas Pool wells are located;

c) current Dakota and Mesaverde production within those sections applicant proposes to drill its seventeen infill wells averages approximately 82 and 88 MCF gas per day, respectively.

(10) In its proposed recompletions and infill wells, the applicant expects to obtain initial stabilized producing rates from each of the proposed commingled formations ranging from 200-600 MCF gas per day.

(11) In its attempt to analyze recoverable gas reserves and the feasibility of infill drilling within the unit, and in order to provide a mechanism whereby commingled production could be fairly allocated between the Dakota and Mesaverde reservoirs within the proposed commingled wells, the applicant has constructed a computer assisted production model of the San Juan 28-7 Unit.

(12) The data utilized to construct and verify the model, as well as the results of the computer model, indicate that:

a) at the end of a ten year production period, cumulative gas recoveries from the Mesaverde and Dakota formations in the proposed commingled infill wells range from 350-875 MMCFG, and 350-700 MMCFG, respectively;

b) at the end of a one year production period, Mesaverde and Dakota production from 1980's infill wells within the unit averaged approximately 250 MCF gas per day for each of the intervals;

c) at the end of a six month production period, Mesaverde and Dakota production from 1994's infill wells within the unit averaged approximately 250 and 300 MCF gas per day, respectively.

(13) According to applicant's evidence and testimony, a dually completed well within the San Juan 28-7 Unit costs approximately $785,000. A similar commingled Dakota/Mesaverde well costs approximately $545,000.

(14) The applicant utilized the data obtained from the production model to determine the economic viability of drilling dually completed wells within the San Juan 28-7 Unit instead of drilling commingled wells. The results of this analysis indicates that drilling commingled wells is the only viable economic method of recovering remaining gas reserves from the Dakota and Mesaverde formations within the San Juan 28-7 Unit.

(15) The applicant also provided evidence and testimony which shows that due to the presence of water and condensate within both the Dakota and Mesaverde formations, some wells within the unit are experiencing a liquid loading problem. This liquid loading problem, according to applicant's testimony, hampers efficient gas production.

(16) Downhole commingling of Dakota and Mesaverde production within the subject wells, as opposed to dual or single completions, will greatly benefit liquids removal from the wellbores, which should in turn result in the ultimate recovery of a greater amount of gas from the unit area, thereby preventing waste.

(17) The applicant further demonstrated through its evidence and testimony that within the wells it proposes to commingle within the unit:

a) neither commingled zone exposes the other to damage by produced liquids;

b) the fluids from each zone are compatible with the other;

c) the value of the commingled production is not less than the sum of the values of the individual production.

(18) Applicant's evidence and testimony indicates that the bottomhole pressures of the Dakota and Mesaverde formations within the San Juan 28-7 Unit are in the range of 1700-2500 psi and 750-950 psi, respectively. These pressures exceed the 50 percent pressure differential requirement as contained within Division Rule No. 303(C).

(19) According to applicant's evidence and testimony, the pressure differentials between the subject reservoirs should not result in crossflow, provided that the wells are not shut-in for an extended period of time, for the following reasons:

a) the Mesaverde formation, being the lower pressured zone, has relatively low porosity and permeability;

b) seven day shut-in pressure tests within the unit indicate on average a 45 percent difference in pressures between the Mesaverde and Dakota intervals.

(20) Provided that the subject commingled wells are not shut-in for an extended period of time, the evidence and testimony indicates that crossflow should not occur.

(21) The downhole commingling of the fourteen existing wells and the seventeen proposed infill wells within the San Juan 28-7 Unit will benefit the working, royalty and overriding royalty interest owners within the unit, will result in the recovery of gas reserves which may otherwise not be recovered, thereby preventing waste, and will not violate correlative rights.

(22) The applicant proposed that the allocation of production between the Dakota and Mesaverde formations within the fourteen existing Dakota wells be accomplished by projecting future Dakota production based upon known historical production data and attributing any production over these projections to the Mesaverde interval.

(23) The applicant proposed that the allocation of production between the Dakota and Mesaverde formations within the seventeen proposed infill wells be accomplished by utilizing the data obtained from a minimum three month production test on each zone.

(24) The evidence presented indicates that the applicant's proposed method of allocation is fair and reasonable and should be adopted.

(25) The applicant should consult with the supervisor of the Division's Aztec District Office subsequent to the completion of testing operations on the seventeen infill wells in order to arrive at fixed allocation percentages for each well.

(26) The applicant further seeks authority to drill its San Juan 28-7 Unit Well Nos. 125M and 157M, both wells proposed to be downhole commingled, at unorthodox gas well locations for both the Basin-Dakota and Blanco-Mesaverde Gas Pools as described in Finding No. (3) above.

(27) The evidence and testimony presented by the applicant indicates that the proposed unorthodox locations are necessitated by topographic conditions within the NW/4 of Section 12 and the SE/4 of Section 11.

(28) No offset operator and/or interest owner appeared at the hearing in opposition to the proposed downhole commingling and/or unorthodox gas well locations.

(29) The applicant's request to establish an administrative procedure whereby the downhole commingling of Mesaverde and Dakota production within existing or additional future infill wells may be reviewed and processed by the supervisor of the Division's Aztec District Office should not be approved at the current time for the following reasons:

a) a transfer of duties relating to the review and process of administrative downhole commingling applications from the Santa Fe Office of the Division to various Division District Offices is a major policy change which is beyond the scope of this application; and,

b) a New Mexico Oil & Gas Association/Industry Committee is in the process of formulating revised changes to Division Rule No. 303(C) (Downhole Commingling) which will likely include a provision similar to that proposed by the applicant. Such amendment will be appropriately considered by the Oil Conservation Commission.

(30) The operator should immediately notify the supervisor of the Aztec district office of the Division any time any of the subject wells have been shut-in for seven consecutive days and shall concurrently present, to the Division, a plan for remedial action.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Conoco Inc., is hereby authorized to commingle gas production from the Basin-Dakota and Blanco-Mesaverde Gas Pools within fourteen (14) existing Basin-Dakota Gas Pool wells, and within seventeen (17) wells to be subsequently drilled as Dakota-Mesaverde commingled completions, all as shown on Exhibit "A" attached hereto, and all located within its San Juan 28-7 Unit located in portions of Townships 27 and 28 North, Range 7 West, NMPM, Rio Arriba County, New Mexico.

(2) The applicant is further authorized to drill its San Juan 28-7 Unit Well Nos. 125M and 157M, both wells to be downhole commingled Dakota/Mesaverde completions, at unorthodox gas well locations for both the Basin-Dakota and Blanco-Mesaverde Gas Pools 580 feet from the North line and 1140 feet from the West line (Unit D) of Section 12, and 798 feet from the South line and 712 feet from the East line (Unit P) of Section 11, respectively, both in Township 27 North, Range 7 West, NMPM.

(3) The allocation of production between the Dakota and Mesaverde formations within the fourteen existing Dakota wells shall be accomplished by projecting future Dakota production based upon known historical production data and attributing any production over these projections to the Mesaverde interval.

(4) The allocation of production between the Dakota and Mesaverde formations within the seventeen proposed infill wells shall be determined by utilizing the data obtained from a minimum three month production test on each zone.

(5) The applicant shall consult with the supervisor of the Division's Aztec District Office subsequent to the completion of testing operations on the seventeen infill wells in order to arrive at fixed allocation percentages for each well.

(6) The operator shall immediately notify the supervisor of the Aztec district office of the Division any time any of the subject wells have been shut-in for seven consecutive days and shall concurrently present, to the Division, a plan for remedial action.

(7) The applicant's request to establish an administrative procedure whereby the downhole commingling of Mesaverde and Dakota production within existing or additional future infill wells may be reviewed and processed by the supervisor of the Division's Aztec District Office is hereby denied.

(8) Jurisdiction 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.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY
Director

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OIL CON. DIV.
DIST. 3

EXHIIBIT "A"
DIVISION CASE NO. 11349
ORDER NO. R- 10476
EXISTING WELLS

WELL NAME & NUMBER	WELL LOCATION
San Juan 28-7 Unit No. 242E	900' FSL & 800' FWL (M) 7-28N-7W
San Juan 28-7 Unit No. 233	1460' FNL & 1000' FWL (E) 14-28N-7W
San Juan 28-7 Unit No. 255	1890' FNL & 1130' FWL (E) 15-28N-7W
San Juan 28-7 Unit No. 255E	1540' FSL & 800' FWL (L) 15-28N-7W
San Juan 28-7 Unit No. 234	2150' FSL & 1840' FEL (J) 15-28N-7W
San Juan 28-7 Unit No. 231	1495' FNL & 875' FWL (E) 16-28N-7W
San Juan 28-7 Unit No. 231E	1915' FSL & 1930' FWL (K) 16-28N-7W
San Juan 28-7 Unit No. 195	1550' FSL & 1840' FEL (J) 16-28N-7W
San Juan 28-7 Unit No. 239	2080' FSL & 950' FWL (L) 17-28N-7W
San Juan 28-7 Unit No. 257E	990' FSL & 1850' FEL (O) 19-28N-7W
San Juan 28-7 Unit No. 194E	1670' FSL & 1060' FEL (I) 21-28N-7W
San Juan 28-7 Unit No. 252	79' FNL & 1850' FWL (C) 32-28N-7W
San Juan 28-7 Unit No. 192	736' FNL & 990' FWL (D) 33-28N-7W
San Juan 28-7 Unit No. 191	890' FSL & 1780' FEL (O) 33-28N-7W

WELLS TO BE DRILLED

San Juan 28-7 Unit No. 159M		1550' FSL & 1850' FEL (J) 22-28N-7W
San Juan 28-7 Unit No. 258M		1523' FNL & 933' FWL (E) 23-28N-7W
San Juan 28-7 Unit No. 259M		790' FNL & 960' FWL (D) 24-28N-7W
San Juan 28-7 Unit No. 222M		916' FNL & 813' FWL (D) 25-28N-7W
San Juan 28-7 Unit No. 188M		1640' FNL & 1530' FWL (F) 26-28N-7W
San Juan 28-7 Unit No. 223M		830' FSL & 930' FEL (P) 26-28N-7W
San Juan 28-7 Unit No. 230M		1190' FSL & 870' FEL (P) 29-28N-7W
San Juan 28-7 Unit No. 131M		1150' FNL & 1055' FWL (D) 34-28N-7W
San Juan 28-7 Unit No. 225M		830' FSL & 930' FEL (P) 34-28N-7W
San Juan 28-7 Unit No. 183M		870' FSL & 1480' FEL (O) 1-27N-7W
San Juan 28-7 Unit No. 130M		808' FNL & 1182' FWL (D) 2-27N-7W
San Juan 28-7 Unit No. 182M		1610' FSL & 1674' FEL (J) 3-27N-7W
San Juan 28-7 Unit No. 156M		1028' FSL & 1872' FEL (O) 10-27N-7W
San Juan 28-7 Unit No. 124M		1170' FNL & 1842' FWL (C) 11-27N-7W
San Juan 28-7 Unit No. 157M	**	798' FSL & 712' FEL (P) 11-27N-7W
San Juan 28-7 Unit No. 125M	**	580' FNL & 1140' FWL (D) 12-27N-7W
San Juan 28-7 Unit No. 132M		1488' FNL & 1100' FWL (E) 15-27N-7W

** - Unorthodox gas well locations as described in Finding No. (3) above.