

**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. 12508
Order No. _____**

**APPLICATION OF BURLINGTON RESOURCES
OIL & GAS COMPANY FOR A PILOT PROJECT
FOR ITS SAN JUAN 27-5 UNIT INCLUDING
UNORTHODOX WELL LOCATIONS AND AN
EXCEPTION FROM THE BASIN DAKOTA GAS
POOL RULES, RIO ARriba COUNTY, NEW MEXICO**

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on October 19, 2000, at Santa Fe, New Mexico, before Examiner David R. Catanach

NOW, on this ____day of October, 2000, 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) Burlington Resources Oil & Gas Company ("Burlington") seeks approval of a Pilot Project including unorthodox well locations and an exception from the Special Rules and Regulations for the Basin-Dakota Gas Pool for purposes of establishing a pilot infill drilling program within its San Juan 27-5 Unit, consisting of T27N, R5W whereby up to four wells may be drilled on a standard gas proration unit to determine proper well density for Dakota wells, Rio Arriba County, New Mexico

(3) Burlington proposes that the well density for each 160-acres within the unit along its outer boundary ("buffer zone") shall be limited to the current well density of not more than one (1) well per 160-acres with the original and infill wells to be located anywhere within the proration unit provided that such wells are located no closer than 660 feet to the outer boundary of the San Juan 27-5 Unit and no closer than 10 feet from the interior quarter-section within a GPU.

(4) Within the unit area, Burlington proposes that:

(a) the well density shall not be more than two (2) wells per 160-acres within any standard 320-acre gas proration unit:

(b) the proposed infill wells to be located anywhere within the GPU provided that such wells are located no closer than 10 feet to the outer boundary of the GPU; and

(c) the proposed infill wells to be located anywhere within the GPU provided that such wells are located no closer than 10 feet from the interior quarter-section within a GPU.

(5) Burlington seeks approval for an initial eight (8) well pilot project with the first five (5) of those wells at unorthodox well locations as follows:

1. San Juan 27-5 Unit #90F 2275' FNL, 200' FEL,
E/2 H 16-27N-5W
2. San Juan 27-5 Unit #112F 2485' FNL, 2445' FWL,
W/2 F 08-27N-5W
3. San Juan 27-5 Unit #114F 380' FNL, 2310' FWL,
N/2 C 17-27N-5W
4. San Juan 27-5 Unit #123F 800' FSL, 2265' FEL,
S/2 O 17-27N-5W

5. San Juan 27-5 Unit #37F 560' FNL, 305' FEL,
E/2 A 18-27N-5W

6. San Juan 27-5 Unit #40F 1980' FWL, 1175' FSL,
W/2 K 16-27N-5W

7. San Juan 27-5 Unit #70F 1755' FSL, 930' FEL,
E/2 08-27N-5W

8. San Juan 27-5 Unit #138F 835' FNL, 660' FEL,
E/2 A 19-27N-5W

(6) Finally, Burlington seeks an administrative procedure for the expansion of the pilot project without further notice or hearing.

(7) Burlington is the current operator of the San Juan 27-5 Unit containing 23,040 acres, more or less and located in Township 27 North, Range 5 West, NMPM.

(8) The San Juan 27-5 Unit is within the current boundaries of the Basin Dakota Gas Pool and includes 118 producing, 20 temporarily shut-in and 1 plugged and abandoned Dakota wells which are dedicated to that pool.

(9) On May 22, 1979, the New Mexico Oil Conservation Commission ("Commission") issued Order R-1670-V which adopted "infill drilling" for the Basin Dakota Gas Pool by permitting in Rule 2 for the drilling of a second well within a 320-acre gas proration and spacing unit ("GPU") providing this **one optional** "infill well" to be located on the opposite 160-acres from the 160-acres containing the original well ("the initial well") **and** further providing that these infill wells were not closer than 790 feet (but subject to a 200 foot topographical allowance) to the outerboundary of a quarter section and no closer than 130 feet to any quarter-quarter section line or subdivision inner boundary and that no infill well could be drilled nearer than 920 feet to an existing Dakota well in the same GPU.

(10) On March 28, 1986, the Commission issued Order R-8170 which, among other things, promulgated the Rules and Regulations for the Prorated Gas Pools, including "reformatting" Rule 2 of the Rules and Regulations for the Basin Dakota Gas Pool.

(11) On June 30, 2000, the New Mexico Oil Conservation Division ("Division") issued Order R-10987-B in Case 12290 which amended the well location requirements of the Rules and Regulations for the Basin Dakota Gas Pool which currently provide:

"A. WELL ACREAGE AND LOCATION REQUIREMENTS

RULE 2(a). **Standard GPU (Gas proration Unit)** in the Basin-Dakota Gas Pool shall be 320 acres.

RULE 2(b) **Well Location:**

1. THE INITIAL WELL drilled on a GPU shall be located not closer than 660 feet to any outer boundary of the quarter section on which the well is located and not closer than 10 feet to any quarter-quarter section line or subdivision inner boundary.

2. THE INFILL WELL drilled on a GPU shall be located in the quarter section of the GPU not containing a Dakota well, and shall be located with respect to the GPU boundaries as described in the preceding paragraph.

(12) On February 1, 1999, the Division entered Order R-11139 in Case 12122 which approved a Dakota Pilot Project for Conoco, Inc. within its San Juan 28-7 Unit.

(13) Based upon a study of the geological and reservoir engineering data, Burlington has concluded that:

(a) in order to increase ultimate recovery of gas from this pool there is a need to drill more wells per GPU than is currently permitted by Rule 2(b) of the pool rules;

(b) one of the most effective and efficient current means of drilling and producing new Dakota gas wells is to do so as wellbores which either downhole commingle or dually complete the Dakota formation with other formations including the Mesaverde, Basin Fruitland Coal-Gas and Pictured Cliffs formation formations;

(c) in order to increase the opportunity to locate wells in the optimum position to recovery additional gas form the Dakota or to accommodate numerous topographical and archaeological conditions, it is necessary to have various pilot projects to study appropriate well density and well locations for this pool;

(d) there is a need for additional pilot projects in this pool;

(e) the San Juan 27-5 Unit is an appropriate area for an additional pilot project;

(f) there are currently 7 undrilled 160-acre locations in the unit but they are unsuitable locations for pilot wells because they are scattered around the unit and are not close enough to provide proper density for the simulation area.

(14) Accordingly, Burlington desires to initiate a pilot program for the drilling of additional Basin-Dakota Gas Pool wells in the San Juan 27-5 Unit to provide data for reservoir engineering and geologic studies for the purposes of determining the proper well density not to exceed a maximum of four (4) wells per GPU ("80-acre infill") **and** for determining the well location requirements for these wells.

(15) Five of the initial eight pilot project wells are to be located at unorthodox gas well locations in an attempt to locate them in undrained portions of the reservoir and in compliance with BLM requirements.

(16) In order to protect the correlative rights of any owners adjacent to the outer boundary of this unit, Burlington proposes that the well density for each 160-acres within the unit along its outer boundary ("buffer zone") shall be limited to the current well density of not more than one (1) well per 160-acres with the original and infill wells to be located anywhere within the proration unit provided that such wells are located no closer than 660 feet to the outer boundary of the San Juan 27-5 Unit and no closer than 10 feet from the interior quarter-section within a GPU.

(17) The Bureau of Land Management, BP Amoco, Williams Production Company, and Dugan Production Corporation appeared in support of granting this application and no interested person has appeared in opposition to approval of this application.

(18) Burlington presented an expert petroleum landman who demonstrated that the approval of a pilot program which increases the density of Basin Dakota Gas Pool wells at unorthodox well locations within the San Juan 27-5 Unit will not violate correlative rights because the San Juan 27-5 Unit Agreement provides for the establishment of "Participating Areas" as an equitable method for the allocation of production of Basin-Dakota Gas Pool production to all interest owners within the unit's Dakota participating area regardless of the number of wells drilled or where those wells are located. The current Dakota Participating Area consists of the entire unit area except for one 40-acre tract in the SE/4SW/4 Section 3, T27N, R5W, NMPM.

(19) Burlington presented geologic evidence which demonstrated that the San Juan 27-5 Unit should be approved as a project area because:

- (a) there are four various producing intervals within the Basin Dakota Pool which are substantially different in their distribution within the pool;
- (b) contour map of the original gas in place for all four intervals when compared to the contour map of estimate ultimate recovery demonstrates that there will be a substantial volume of gas not recovered by the current well density for this pool;
- (c) within the San Juan 27-5 Unit, the contour map of the original gas in place for all four intervals when compared to the contour map of estimate ultimate recovery demonstrates that within this unit there will be a substantial volume of gas not recovered by the current well density for this pool;
- (d) within the San Juan 27-5 Unit area the "2 Wells", "Upper Cubero" and "Lower Cubero" intervals are present with most of the current production attributed to the "2 Wells" and "Lower Cubero" intervals
- (e) estimates of ultimate recovery within this unit can not be attributed to differences in matrix thickness, porosity or permeability or in reservoir structure.
- (f) the presence and density of natural fractures in the Dakota Pool appear to account for the differences between areas of high and low recoveries.
- (g) in order to determine the proper density for the pool, it is necessary to supplement conventional geologic data and analysis with reservoir simulation.
- (h) the pilot project will afford the opportunity to gather additional data for simulation.
- (i) it represents an area of the Basin Dakota Gas Pool which has substantially different geologic characteristics from the Conoco project in the San Juan 28-7 Unit;

(20) Burlington presented reservoir engineering evidence which demonstrated that:

- (a) drilling of the first optional infill as authorized by Order R-1670-V within four separate areas of the pool has resulted in the production of new reserves;
- (b) within the San Juan 27-5 Unit, the parent and first optional infill well will recover only 40 % of the estimated original gas in place;
- (c) the remaining 60 % of the original gas in place can only be recovered by increasing the well density and amending the ~~well location requirements in this pool;~~
- (d) there is a need for additional pressure data to be obtained from pilot wells which are initially drilled and tested as Dakota only production;
- (e) these pilot wells are expected to produce at initial rates of less than 400 mcfpd and at low pressure in a very low permeability reservoir thereby substantially diminishing any risk of the impairment of correlative rights.

(21) Burlington presented a reservoir simulation study which demonstrates that:

- (a) by adding at least one more well per GPU, those additional 8 wells will recover an additional 6.8 MMCFG which will be new gas reserves that would otherwise not be recovered by the existing 31 wells within the 4800 acre area modeled;
- (b) this represents a 67 % increase in the recovery of new gas reserves which can be obtained economically by a wellbore producing only from the Dakota formation;
- (c) the pilot wells are necessary in order to obtain pressure data which will be used to future refine the simulation model and allow Burlington to then accurately predict the proper well density and well locations requirements for this area of the pool.

(22) Burlington has demonstrated that each of the unorthodox well locations should be approved because (i) correlative rights will not be impaired because of the operations of the participating area procedures within this unit, and (ii) these locations are necessary to provide a well location and density pattern to properly test for interference between existing wells.

(23) Granting the well location exceptions and relaxing the footage setbacks will not impair correlative rights due to (i) the operation of the participating area provisions of the Unit Agreement and (ii) the low reservoir permeability, low reservoir pressure and low rates of production. Due to the very low reservoir permeability, reservoir drainage is unlikely to exceed 160 acres. Notwithstanding the operation of the participating area procedures, any potential adverse impact that may occur to offsetting GPUs by relaxing the footage setback requirements may be accelerated by only a few months during which time Burlington will have an opportunity to best chose if, when and where to locate their own wells.

(24) Adopting Burlington's proposed administrative procedure for expansion of the pilot project will be in the best interest of conservation, the prevention of waste and the protection of correlative rights.

(25) The Division finds that granting this application will afford the applicant the opportunity to gather additional data and examine various geologic and engineering factors to determine proper well density and well locations in this portion of the Basin Dakota Gas Pool, will allow the recovery of additional gas reserves from the San Juan 27-5 Unit that may not otherwise be recovered, thereby preventing waste and will not violate correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) As an exception to the "**SPECIAL RULES AND REGULATIONS FOR THE BASIN DAKOTA GAS POOL**" the applicant, Burlington Resources Oil & Gas Company is hereby authorized to conduct an 80-acre pilot infill drilling program within its San Juan 27-5 Unit, located in Township 27 North Range 5 West, NMPM, Rio Arriba County, New Mexico as follows:

(a) the San Juan 27-5 Unit is designated as the pilot project area;

(b) eight wells are designated as the initial pilot wells:

1. San Juan 27-5 Unit #90F 2275' FNL, 200' FEL,
E/2 H 16-27N-5W
2. San Juan 27-5 Unit #112F 2485' FNL, 2445' FWL,
W/2 F 08-27N-5W
3. San Juan 27-5 Unit #114F 380' FNL, 2310' FWL,
N/2 C 17-27N-5W
4. San Juan 27-5 Unit #123F 800' FSL, 2265' FEL,
S/2 O 17-27N-5W
5. San Juan 27-5 Unit #37F 560' FNL, 305' FEL,
E/2 A 18-27N-5W
6. San Juan 27-5 Unit #40F 1980' FWL, 1175' FSL,
W/2 K 16-27N-5W
7. San Juan 27-5 Unit #70F 1755' FSL, 930' FEL,
E/2 08-27N-5W
8. San Juan 27-5 Unit #138F 835' FNL, 660' FEL,
E/2 A 19-27N-5W

(c) the unorthodox well locations for the first five wells listed above are approved:

(2) The following administrative procedure is hereby established for the expansion of the pilot project:

(a) a well or wells may be added to the pilot project by Burlington submitting to the Division written justification for the additional well or wells;

(b) the additional infill pilot well or wells shall be an exception to Division Rule 104, without notice or hearing, provided that:

(i) the well density shall not be more than two (2) wells per 160-acres within any standard 320-acre gas proration unit:

(ii) the proposed infill wells to be located anywhere within the GPU provided that such wells are located no closer than 10 feet to the outer boundary of the GPU; and

(iii) the proposed infill wells to be located anywhere within the GPU provided that such wells are located no closer than 10 feet from the interior quarter-section within a GPU.

(iv) the well density for each 160-acres within the unit along its outer boundary ("buffer zone") shall be limited to the current well density of not more than one (1) well per 160-acres with the original and infill wells to be located anywhere within the proration unit provided that such wells are located no closer than 660 feet to the outer boundary of the San Juan 27-5 Unit and no closer than 10 feet from the interior quarter-section within a GPU.

(3) The GPUs with increased density wells shall not receive a gas allowable greater than that normally assigned a proration unit containing two wells in the Basin-Dakota Gas Pool.

(4) Jurisdiction of this cause is 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 hereinafter designated.

**STATE OF NEW MEXICO
OIL CONSERVATION DIVISION**

LORI WROTENBERY, DIRECTOR