

KELLAHIN AND KELLAHIN

ATTORNEYS AT LAW

EL PATIO BUILDING

117 NORTH GUADALUPE

POST OFFICE BOX 2265

SANTA FE, NEW MEXICO 87504-2265

W. THOMAS KELLAHIN*

*NEW MEXICO BOARD OF LEGAL SPECIALIZATION
RECOGNIZED SPECIALIST IN THE AREA OF
NATURAL RESOURCES-OIL AND GAS LAW

JASON KELLAHIN (RETIRED 1991)

TELEPHONE (505) 982-4285
TELEFAX (505) 982-2047

August 11, 1997

Mr. David R. Catanach
Mr. Ben Stone
Oil Conservation Division
2040 South Pacheco
Santa Fe, New Mexico 87504

Mr. Ernie Bush
Oil Conservation Division
1000 Rio Brazos Road
Aztec New Mexico 87410

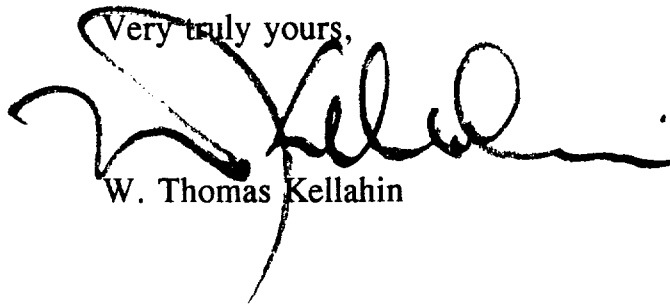
*Re: NMOCD Case 11815
Application of Conoco Inc
for a downhole commingling reference case
for its San Juan 28-7 Unit
San Juan County, New Mexico*

Gentlemen:

On July 24, 1997, at the conclusion of the hearing of this case, Examiner Stogner continued this case to the hearing to be held on August 21, 1997 and directed that I obtain and present to him your comments on the enclosed proposed draft order.

I would appreciate you providing me your comments and suggestions, if any, prior to August 20, 1997, so that I can comply with Examiner Stogner's directions to me. Please call me if you have any questions.

Very truly yours,

A handwritten signature in black ink, appearing to read 'W. Thomas Kellahin', is written over the typed name. The signature is fluid and cursive, with a large initial 'W' and a long, sweeping horizontal stroke at the end.

W. Thomas Kellahin

cc: Michael E. Stogner (OCD-Santa Fe)

cc: Conoco Inc.

Attn: Jerry Hoover

**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:

DRAFT

CASE NO. 11815
ORDER NO. R-_____

APPLICATION OF CONOCO INC.
FOR DOWNHOLE COMMINGLING REFERENCE
CASE FOR ITS SAN JUAN 28-7 UNIT
PURSUANT TO DIVISION RULE 303.E
AND FOR AN EXCEPTION TO RULE 303.C(1)(b)(ii)
RIO ARriba COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on July 24, 1997, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this ____ day of August, 1997, 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) Applicant, Conoco Inc., pursuant to the provisions of Division Rule 303.E, seeks to establish a downhole commingling "reference case" for its San Juan 28-7 Unit and the adoption of special administrative rules therefore including an exception from Rule 303.C(1)(b)(ii), Rio Arriba County, New Mexico, to provide for (a) marginal \ economic criteria, (b) pressure criteria, (c) allocation formulas, and (d) modification of notification rules on an area-wide basis authorization for downhole commingling of Dakota, Mesaverde, Fruitland-Coal, Chacra and Pictured Cliffs gas production in the wellbores of existing or future wells drilled anywhere within the San Juan 28-7 Unit located in Townships 27 North, Range 7 West and 28 North, Range 7 West, NMPM, Rio Arriba County, New Mexico. Applicant further seeks an exception from the pressure limitation criteria set forth in Rule 303C.(1)(b) (ii) for all future "new drills" for Dakota and Mesaverde production within said unit and for six (6) specific Dakota/Mesaverde wells currently being drilled.

(3) Division Rule 303.E, amended by Order R-10470-A, currently states:

"If sufficient data exists on a lease, pool, formation, geographic area, etc., so as to render it unnecessary to repeatedly provide such data on Form C-107-A, an operator may except any of the various criteria required under Paragraph 303.D of this rule by establishing a "reference case". The Division, upon its own motion, or by application from an operator, may establish "reference cases" either administratively or by hearing. Upon Division approval of such "reference cases" for specific criteria, subsequent applications to downhole commingle (Form C-107-A) will be required only to cite the Division order number which established such exceptions and shall not be required to submit data for those criteria."

(4) Conoco is the current operator of the San Juan 28-7 Unit which encompasses some 31,000 acres in Townships 17 and 28 North, Range 7 West, NMPM, Rio Arriba County, New Mexico.

(5) Within the San Juan 28-7 Unit, Conoco currently operates some 133 Dakota wells, 118 Mesaverde wells, 10 Chacra wells, 76 Pictured Cliffs wells and 1 Fruitland Coal-gas well.

(6) In the **absence** of the establishment of a "reference case" as provided in Division Rule 303.E, Division Rule 303.C requires that administrative applications for

downhole commingling of gas production be submitted, processed and approved on a well by well basis including submittal of the following:

- (a) economic criteria to support that at least one zone to be commingled is marginal.
- (b) pressure criteria to demonstrate that the bottomhole pressure of each zone to be commingled is less than the original bottom hole pressure of the lowest pressured zone,
- (c) allocation formulas,
- (d) notification in writing to each interest owner where ownership is not common in the zones to be commingled, and
- (e) notification in writing to each offset operator.

(7) Accordingly to its evidence and testimony, Conoco has demonstrated that **sufficient data is now available** from existing wells in this unit so as to render it unnecessary to repeatedly provide supporting data on Form C-107-A for the downhole commingling of Dakota, Mesaverde, Fruitland-Coal, Chacra and Pictured Cliffs gas production within this unit as to establish a "reference" case for:

- (a) **marginal economic criteria:** to support that the Dakota, Chacra, Pictured Cliffs and Fruitland Coal gas formations/pools may be identified as "Marginal" on Form C-107-A's subsequently filed for wells within the San Juan 28-7 Unit. The applicant further proposes that the data provided in the immediate case serve as supplemental data for confirmation that these formations and/or pools should be classified as "marginal";
- (b) **allocation formulas:** whereby the Division utilizes the data presented in the immediate case to endorse or approve that each interest owner shall receive its fair and equitable share of production by the use of either the subtraction method or the percentage method of allocation and whereby the applicant need not submit additional data or justification when

proposing these methods of allocation production on Form C-107-A;s subsequently filed for wells within the San Juan 28-7 Unit.

- (c) **elimination of unnecessary notice:** such that any future or further notice concerning downhole commingling applications or orders within this unit shall not be required to (a) any owner (including royalty, overriding royalty or working interest owners) in instances where ownership are not common or percentages are not identical in the zones to be commingled or to (b) each offset operator who is also an interest owner in this unit; but
- (d) **notice to offset operators:** notification to each offset operator, except as provided in paragraph (c) above, will continue to be made provided those offset operators are operators other than applicant.
- (e) **pressure limitation:** for an exception to Rule 303.C(1)(b)(ii), and to establish a pressure exception for the downhole commingling of Dakota with Mesaverde production for new wells drilled in the San Juan 28-7 Unit based upon data presented in the immediate case which demonstrated that downhole commingling of the Dakota formation with the Mesaverde formation can be approved even if the bottomhole pressure of the Dakota formation (the higher pressured reservoir) exceeds the original bottom hole pressure of the Mesaverde formation (the lowest pressured reservoir) because engineering data and analysis has shown that there is no possibility of damage to the Mesaverde formation, nor will there be any loss of reserves, waste or violation of correlative rights.
- (f) **for an administrative procedure** for the submittal of Form C-107-A for wells in the San Juan 28-7 Unit directly to the Aztec Office of the Division for approval and thereby eliminating the necessity to review/approve said applications at the Santa Fe Office of the Division.

(8) Conoco seeks authorization pursuant to Division Rule 303.E that all administrative applications for downhole commingling of Mesaverde, Dakota, Fruitland-Coal, Chacra and Pictured Cliffs gas production within this unit submitted subsequent to the filing of this application in this case shall be required to complete the information blanks on Division Form C-107-A but shall not be required to submit additional supporting evidence or data for the following criteria (a) marginal economic criteria, (b) pressure criteria, (c) allocation formulas, and (d) notice to owners of any production within spacing units where the ownership is not common and offset operators who also own an interest in this unit.

(9) Applicant further seeks an exception from the pressure limitation criteria set forth in Rule 303C.(1)(b) (ii) for all future "new drills" for Dakota and Mesaverde production within said unit and for four (4) specific Dakota/Mesaverde wells currently being drilled described as follows:

- (a) San Juan 28-7 Unit Well No. 224M,
located 1450" FSL & 790' FEL., Sec 28, T28N, R7W
- (b) San Juan 28-7 Unit Well No. 226M,
located 790" FNL & 790' FWL., Sec 36, T28N, R7W
- (c) San Juan 28-7 Unit Well No. 227M,
located 1745" FSL & 1850' FEL., Sec 36, T28N, R7W
- (d) San Juan 28-7 Unit Well No. 232M,
located 2425" FSL & 500' FEL., Sec 20, T28N, R7W

(10) In support of its request to establish marginal economic criteria, the applicant presented geologic and petroleum engineering evidence and testimony which demonstrates that within the San Juan 28-7 Unit:

- (a) the Chacra, Pictured Cliffs and Fruitland Coal-gas formations/pools have been substantially depleted such that the most economic method to maximize recovery in existing wells is by recompleting them as downhole commingled wellbores.

(b) the Dakota, Chacra, Pictured Cliffs and Fruitland Coal-gas formations/pools have been substantially developed such that any new wells to be drilled would only be economic if drilled as wellbores downhole commingled with production from one or more of these other formations/pools.

(c) the average recoverable gas reserves and average initial producing rates from the various formations within the San Juan 28-7 Unit are summarized as follows:

<u>Formation</u>	<u>Average Estimated Per Well Ultimate Recovery</u> (MMCFG)	<u>Average Initial Per Well Producing Rate</u> (MCFPD)
Dakota	852	437
Mesaverde	1702	675
Pictured Cliffs	419	248
Chacra	203	158
Fruitland Coal	415	130

(11) The evidence and testimony presented by the applicant demonstrated that the economic life of the Dakota, Mesaverde, Pictured Cliffs, Chacra, and Fruitland Coal formations within the San Juan 28-7 Unit can be extended by downhole commingling with other production in the unit.

(12) The evidence and testimony presented by the applicant demonstrated that the Dakota, Pictured Cliffs, Chacra, and Fruitland Coal formations within the San Juan 28-7 Unit should be properly classified as "marginal".

(13) In support of its request to establish pressure limitation criteria and an exception from Rule 303.C(1)(ii), the applicant presented geologic and petroleum engineering evidence and testimony which demonstrates that within the San Juan 28-7 Unit:

(a) the average initial (original) reservoir pressure and average current reservoir pressures in existing wells, adjusted to a common datum of 5,000 feet from the various formations within the San Juan 28-7 Unit are summarized as follows:

<u>Formation</u>	<u>Original Pressure</u>	<u>Current Pressure</u>
Dakota	2866 psia	713 pisa
Mesaverde	1238 psia	457 pisa
Pictured Cliffs	1072 psia	360 pisa
Chacra	1206 psia	400 pisa
Fruitland Coal	1089 psia	734 pisa

(b) the Mesaverde formation is "under-pressured" and both the Dakota and Mesaverde formations are low permeability reservoirs and have previously been qualified as "tight sand gas reservoirs."

(c) That the average initial pressure of recently drilled Dakota wells has been 1959 psia while the initial pressure of recently drilled Mesaverde wells has been 858 psia.

(d) Thus there exists the possibility that a newly drilled well will encounter current reservoir pressure in the Dakota formation of 2,072 psia which is higher than the average original reservoir pressure of the Mesaverde formation of 1238 psia which would preclude the downhole commingling of those two formation unless an exception to Rule 303.C(1)(b)(ii) is granted.

(e) Based upon pressure buildup calculations, the applicant has demonstrated that if the Dakota formation is flowed for at least 30-days and then shut-in, it would take more than 10 days for the Dakota pressure to buildup to 1238 psia which is the original Mesaverde pressure.

(f) It is highly unlikely that any Dakota well in this unit would be shut-in for more than 10 days. However, in the event of that occurrence, fracture gradient data demonstrates that average fracture gradient for the Mesaverde formation is 0.52 psi/ft which means the Mesaverde formation can withstand a pressure of 3,850 psia before any fractures would be initiated. The maximum pressure the Dakota could possibly exert on the Mesaverde is 1959 psia.

(14) The evidence and testimony presented by the applicant demonstrates that the Dakota and Mesaverde can be downhole commingled without causing waste and therefore an exception from the pressure limitation set forth in Rule 303.C(1)(b)(ii) should be granted.

(15) In support of its request for approval of various allocation methods for this unit, applicant submitted at hearing proposed formulas for the allocation of production to each of the commingled zones and a description of the factors or data used in determining such formulas which included:

(a) the subtraction method will be utilized in instances involving the Basin-Fruitland Coal Gas Pool and in those instances where a zone with a well established decline rate is commingled with a newly completed zone;

(b) a fixed allocation formula will be utilized in those instances where a newly drilled well involves any zones other than the Fruitland Coal Gas Pool;

(c) the fixed allocation formula is fair accurate and reasonable because normalized production data from all wells in each pool in the San Juan 28-7 Unit demonstrates that with the exception of the Basin Fruitland Coal Gas Pool, production from all formations and pools declines at virtually the same rate and therefore a fixed percentage can be established which will continue to be accurate and reliable for the producing life of the well.

(16) The allocation methods proposed by the applicant are routinely utilized by the industry and approved by the Division and therefore, the proposal to establish these allocation methods for the San Juan 28-7 Unit should be approved.

(17) In support of its request to establish a "reference case" deleting the requirement that each application for downhole commingling be sent to each interest owner affected, the applicant provided evidence and testimony which demonstrated that:

(a) because this is a "divided" unit with various participating areas, the interest ownership between any zones to be down commingled within a given wellbore in the Unit will not be common,

(b) pursuant to Division Rules 303.D, applicant is currently required to notify all interest owners in the unit every time a Form C-107-A is submitted to the Division which can involve as many as 272 different owners.

(c) providing notice to each interest owner in the unit of subsequent downhole commingling application is unnecessary and is an excessive burden to the applicant.

(18) the downhole commingling of wells within this unit will benefit working, royalty, and overriding royalty interest owners. In addition, the downhole commingling of wells in this unit will not violate the correlative rights of an interest owners.

(19) all interest owners in this unit were sent a copy of the application and notice of hearing in this case and no interest owner appeared at the hearing in opposition to the establishment of an exception to Rule 303.D.

(20) An administrative procedure should be established within the Unit for obtaining approval for subsequently downhole commingled wells without notice to unit interest owners.

(21) Conoco requests the adoption of a summary administrative procedure with the necessary exceptions to the Division Rule 303.C so that the Supervisor of the Aztec District Office of the Division shall be authorized to approve the downhole commingling of said production within this unit.

(22) The approval of downhole commingling of these formations within this unit will extend the economic life of the existing wells and thereby increase ultimate recovery from these formations.

(23) It is anticipated that new wells, recompleted wells or existing wellbores in this unit will be most economically completed if there is a summary administrative procedure by which those wells may be downhole commingled.

(24) The processing of downhole commingling application for this unit in the absence of adopting a reference case will be an administrative burden to the Division and to the operator.

(25) Approval of a downhole commingling reference case for this unit on an area-wide basis is in the best interest of conservation, the pretention of waste and the protection of correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) The application of Conoco Inc. to establish a "reference case" for marginal economic criteria and modification of notification rules on a unit-wide basis for downhole commingling of Dakota, Pictured Cliffs, Chacra and Fruitland Coal Gas production with the Mesaverde formation gas production within existing and future drilled wells within the San Juan 28-7 Unit is hereby approved.

(2) The application of Conoco Inc. to establish an exception from Rule 303.D and for modification of notification rules on a unit-wide basis for downhole commingling of Dakota, Mesaverde, Pictured Cliffs, Chacra and Fruitland Coal Gas production within existing and future drilled wells within the San Juan 28-7 Unit is hereby approved

(3) The application of Conoco Inc. to establish an exception from Rule 303.C(1)(b)(ii) to establish a "reference case" for pressure criteria on a unit-wide basis for downhole commingling of Dakota and Mesaverde formation gas production within existing and future drilled wells within the San Juan 28-7 Unit is hereby approved and for four (4) specific Dakota/Mesaverde wells currently being drilled described as follows:

- (a) San Juan 28-7 Unit Well No. 224M,
located 1450" FSL & 790' FEL., Sec 28, T28N, R7W
- (b) San Juan 28-7 Unit Well No. 226M,
located 790" FNL & 790' FWL., Sec 36, T28N, R7W
- (c) San Juan 28-7 Unit Well No. 227M,
located 1745" FSL & 1850' FEL., Sec 36, T28N, R7W
- (d) San Juan 28-7 Unit Well No. 232M,
located 2425" FSL & 500' FEL., Sec 20, T28N, R7W

CASE NO. 11815

Order No. R-_____

Page -11-

(4) Upon filing of Division Form No. C-107-A's for wells subsequently downhole commingled within the San Juan 28-7 Unit, the applicant shall not be required to submit supporting data to justify classification of the Dakota, Pictured Cliffs, Chacra or Fruitland Coal gas production as "marginal", supporting data to verify the Dakota and Mesaverde pressure information when those two formations are downhole commingled, and support or justification for utilizing a given method or formula for allocation of production.

(5) In order to obtain Division authorization to downhole commingle wells within the San Juan 28-7 Unit, the applicant shall file a Form C-107-A only with the Aztec office of the Division. The applicant shall complete all of the blanks on Form C-107-A but is not required to supply the supporting documentation which has been exempted by this order and shall not be required to provide notice to all interest owners within the San Juan 28-7 Unit of such proposed commingling.

(6) 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 hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

DRAFT

WILLIAM J. LEMAY
Director.