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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:

RECEIVED

JUL 12 1993

OIL CON. DIV
DIST. 3

*Case No. 10735
Order No. R-9921*

**APPLICATION OF MERIDIAN OIL INC. FOR DOWNHOLE COMMINGLING AND
FOR AN ADMINISTRATIVE DOWNHOLE COMMINGLING PROCEDURE WITHIN
THE HUERFANO UNIT AREA, SAN JUAN COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on June 3, 1993, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 9th day of July, 1993, 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, Meridian Oil Inc., seeks approval to downhole commingle conventional Pictured Cliffs gas and Fruitland Coal gas production within the wellbores of the following three wells all within the Huerfano Unit Area in San Juan County, New Mexico:

- (a) in Section 23, Township 26 North, Range 9 West, NMPM, the applicant seeks to downhole commingle Ballard-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its existing Huerfano Unit Well No. 46 located 1650 feet from the South and West lines (Unit K). Said well is to be dedicated to a standard 320-acre gas spacing and proration unit for the Basin-Fruitland Coal

(Gas) Pool being the W/2 of said Section 23 and the SW/4 of said Section 23 is to remain the dedicated acreage in the Ballard-Pictured Cliffs Pool, being a standard 160-acre gas spacing and proration unit;

- (b) in Section 26, Township 26 North, Range 9 West, NMPM, the applicant seeks to downhole commingle Ballard-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its existing Huerfano Unit Well No. 59 located 890 feet from the North line and 1750 feet from the East line (Unit B). Said well is to be dedicated to a standard 320-acre gas spacing unit for the Basin-Fruitland Coal (Gas) Pool being the N/2 of said Section 26 and the NE/4 of said Section 26 is to remain the dedicated acreage in the Ballard-Pictured Cliffs Pool, being a standard 160-acre gas spacing and proration unit; and,
- (c) in Section 33, Township 27 North, Range 10 West, NMPM, the applicant seeks to downhole commingle West Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Huerfano Unit Well No. 549 tentatively to be drilled at a standard location for both intervals 1190 feet from the North line and 890 feet from the East line (Unit A). Said well is to be dedicated to a standard 320-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being the E/2 of said Section 33 and to a standard 160-acre gas spacing unit for the West Kutz-Pictured Cliffs Pool being the NE/4 of said Section 33.

(3) Further, the applicant seeks the adoption of a special administrative procedure for authorizing the downhole commingling of conventional Pictured Cliffs gas and Basin-Fruitland Coal gas production in the wellbores of existing and proposed wells within the Huerfano Unit Area without hearing and without the requirement of notice to any offsetting operator and without the requirement that each interest owner in the Pictured Cliffs and Fruitland Coal Participating Areas be notified of such commingling.

(4) The Huerfano Unit is an exploratory unit comprised primarily of Federal lands and initially covered approximately 63,122.05 acres in portions of Townships 25, 26 and 27 North, Ranges 9, 10 and 11 West, NMPM, San Juan County, New Mexico. The unit was formed in 1949/1950 and is currently operated by Meridian Oil, Inc.

(5) The pool boundaries of the West Kutz-Pictured Cliffs Pool, Ballard-Pictured Cliffs Pool, Huerfano-Pictured Cliffs Pool, and Fulcher Kutz-Pictured Cliffs Pool all fall within the Huerfano Unit Area and currently each is governed under the spacing provisions of the Division's General Rules and Regulations [Rule 104.C(3)] which provides for 160-acre drilling tracts.

(6) The Basin Fruitland Coal (Gas) Pool is spaced on 320-acre spacing, pursuant to the provisions of Rule 4 of the Special Rules and Regulations for the Basin Fruitland Coal (Gas) Pool, as promulgated by Division Order No. R-8768, as amended.

(7) The current "Pictured Cliffs" participating area for the subject unit contains 9,670.42 acres, more or less, of non-contiguous and often unconnected proration and spacing units throughout the Unit Area.

(8) The current Basin-Fruitland Coal gas participating area for the Unit contains 320 acres comprising a single standard gas spacing/proration unit for the Basin-Fruitland Coal (Gas) Pool in the N/2 of Section 28, Township 26 North, Range 9 West, NMPM, San Juan County, New Mexico.

(9) Both the existing Huerfano Unit Well Nos. 46 and 59 are within the current "Pictured Cliffs" participating area but outside the "Basin-Fruitland Coal (Gas)" participating area. The proposed Huerfano Unit Well No. 549 will be located outside of both the "Pictured Cliffs and Basin-Fruitland Coal (Gas)" participating areas.

(10) The majority of development within the Huerfano Unit Area has occurred in the deeper Mesaverde and Dakota intervals, and although there appears to be little development in the shallower Pictured Cliffs and Fruitland zones, there is an abundance of technical and geological data available for these two intervals.

(11) Engineering evidence indicates that the Pictured Cliffs producing horizon is nearing depletion in the Unit and geologic evidence indicates there to be no isolated and/or significant pockets of new or virgin producing intervals within the Pictured Cliffs formation underlying the Unit Area.

(12) Although Fruitland coal gas production data is somewhat limited within the Unit Area the evidence presented indicates the production capabilities from the Fruitland Coal to be marginal in nature, thereby making the downhole commingling of both zones practical in order to adequately and efficiently recover Basin-Fruitland Coal gas and the remaining conventional Pictured Cliffs gas reserves within the Unit.

(13) Further, the applicant's evidence indicates that due to the marginal production expected in both intervals, it will probably be uneconomic to drill either a stand alone Pictured Cliffs or Fruitland Coal Gas well or a dual producer in the Unit. However, in the event total gas production from both pools in a well exceeds 300 MCF per day, downhole commingling will not be allowed in the effected well until the combined production drops below 300 MCF/day.

(14) The applicant further demonstrated through its evidence and testimony that:

- (a) there will be no cross-flow between the two commingled pools;
- (b) neither commingled zone exposes the other to damage by produced liquids;
- (c) the fluids from each zone are compatible with the other;
- (d) the bottomhole pressure of the lower pressure zone should not be less than 50 percent of the bottomhole pressure of the higher pressure zone adjusted to a common datum; and,
- (e) the value of the commingled production is not less than the sum of the values of the individual production.

(15) The Pictured Cliffs and Basin-Fruitland Coal (Gas) participating areas within the Huerfano Unit are not common; therefore, by virtue of different participating areas, the interest ownership between the Pictured Cliffs and Fruitland Coal within any given wellbore is not common.

(16) Applicant's Exhibits "C" and "D" in this case listed one hundred and ninety-eight (198) interest owners in the Pictured Cliffs and Basin-Fruitland Coal Gas participating areas within the Huerfano Unit. All such interest owners were notified of the application in this case.

(17) Rule No. 303(C) of the Division Rules and Regulations provides that administrative approval for downhole commingling may be granted provided that the interest ownership, including working, royalty and overriding royalty interest, is common among the commingled zones.

(18) Eliminating notice to offset operators would not be in the best interest of conservation nor to the integrity of this process. The applicant's request to alleviate notice requirements to all offset operators other than themselves should be denied.

(19) The remaining portions of the applicant's proposed administrative procedure would provide for Division approval to downhole commingle wells in the Huerfano Unit Area without hearing, and without the requirement that each interest owner in the Pictured Cliffs and Basin-Fruitland Coal Gas participating areas be notified of such commingling.

(20) The downhole commingling of wells within the Huerfano Unit Area will benefit working, royalty and overriding royalty interest owners. In addition, the downhole commingling of wells within the Huerfano Unit Area should not violate the correlative rights of any interest owner.

(21) The evidence in this case indicates that notice to each interest owner within the Pictured Cliffs and Basin-Fruitland Coal Gas participating areas of subsequent downhole comminglings within the Huerfano Unit is unnecessary and is an excessive burden on the applicant.

(22) No interest owner and/or offset operator appeared at the hearing in opposition to the application.

(23) An administrative procedure should be established within the Huerfano Unit for obtaining approval for subsequently downhole commingled wells without notice to unit interest owners and hearing, provided however that, all provisions contained within Rule No. 303(C) of the Division Rules and Regulations, with the exception of Part 1(b)(v), are fully complied with.

(24) The proposed administrative procedure for obtaining approval for downhole commingling will allow the applicant the opportunity to recover additional gas reserves from the Huerfano Unit Area which may otherwise not be recovered, thereby preventing waste and protecting correlative rights.

(25) In the interest of prevention of waste and protection of correlative rights, the proposed downhole commingling within the Huerfano Unit Well Nos. 46, 59 and 549 should be approved.

(26) Due to the nature of gas production from the Basin-Fruitland Coal (Gas) Pool, straight allocation of gas volumes from both zones is not appropriate. The applicant therefore seeks the adoption of a monthly allocation formula, based on initial production test and known/assumed parameters from the Pictured Cliffs zone whereby its initial rate, estimated ultimate recovery, and decline rate can be determined. Any production rate over what is calculated for the Pictured Cliffs utilizing the applied formula can be attributed to the Fruitland coal gas interval. See Exhibit "A" attached hereto and made a part hereof for additional reference.

(27) The applicant provided calculations and allocations for the two existing well Nos. 46 and 59 at the time of the hearing as Exhibit "O". Said Exhibit should be incorporated by reference into this order and production from both aforementioned wells should be based on the figures shown therein.

(28) The operator should consult with the Supervisor of the Aztec Office of the Division to insure the validity and scientific accuracy of the initial test on each well.

(29) The operator should be responsible for reporting the monthly gas production from each of the subject wells by utilizing the proposed allocation formula.

(30) An annual report should be submitted by the operator for each well to both the Aztec and Santa Fe offices of the Division showing the complete computations for each month.

(31) Any condensate production should be allocated entirely to the Pictured Cliffs interval. Water production should be reported in a manner acceptable to the supervisor of the Aztec district office of the Division.

(32) Any change in the method of gas allocation between the two pools for any well subject to this order should be made only after due notice and hearing.

(33) To afford the Division an opportunity to assess the potential of waste and to expeditiously order the appropriate remedial action, the operator should notify the Aztec district office of the Division any time a well subject to this order is shut-in for seven consecutive days.

IT IS THEREFORE ORDERED THAT:

- (1) The applicant, Meridian Oil Inc., is hereby authorized:
 - (a) to downhole commingle Ballard-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its existing Huerfano Unit Well No. 46 located 1650 feet from the South and West lines (Unit K) of Section 23, Township 26 North, Range 9 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 320-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being the W/2 of said Section 23 and the SW/4 of said Section 23 is to remain the dedicated acreage in the Ballard-Pictured Cliffs Pool, being a standard 160-acre gas spacing and proration unit;
 - (b) to downhole commingle Ballard-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its existing Huerfano Unit Well No. 59 located 890 feet from the North line and 1750 feet from the East line (Unit B) of Section 26, Township 26 North, Range 9 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 320-acre gas spacing unit for the Basin-Fruitland Coal (Gas) Pool being the N/2 of said Section 26 and the NE/4 of said Section 26 is to remain the dedicated acreage in the Ballard-Pictured Cliffs Pool, being a standard 160-acre gas spacing and proration unit; and,
 - (c) to downhole commingle West Kutz-Pictured Cliffs Pool and Basin-Fruitland Coal (Gas) Pool production within the wellbore of its proposed Huerfano Unit Well No. 549 to be drilled at a standard location for

both intervals 1190 feet from the North line and 890 feet from the East line (Unit A) of Section 33, Township 27 North, Range 10 West, NMPM, San Juan County, New Mexico. Said well is to be dedicated to a standard 320-acre gas spacing and proration unit for the Basin-Fruitland Coal (Gas) Pool being the E/2 of said Section 33 and to a standard 160-acre gas spacing unit for the West Kutz-Pictured Cliffs Pool being the NE/4 of said Section 33.

PROVIDED HOWEVER, in the event total gas production from both pools in a well exceeds 300 MCF per day, downhole commingling will not be allowed in the effected well until combined production drops below 300 MCF/day.

(2) The allocation of gas produced from the Pictured Cliffs and Fruitland Coal intervals in each of the subject wells shall be in accordance with the adopted allocation formula, as further referenced in Exhibit "A" attached hereto and made a part hereof or for the No. 46 and 59 wells allocations shall be based on the calculations presented at the time of the hearing as applicant's Exhibit "O", which is hereby incorporated by reference into this order.

(3) The operator shall consult with the Supervisor of the Aztec Office of the Division to insure the validity and accuracy of the initial test on each well.

(4) Further, the operator is responsible for reporting the monthly gas production from any well subject to this order to the Division utilizing said allocation formula. An annual report for each well shall be submitted by the operator to both the Aztec and Santa Fe offices of the Division showing the complete computations for the previous twelve month period.

(5) Any condensate production from a well shall be allocated entirely to the appropriate Pictured Cliffs Pool. Water production shall be reported in a manner acceptable to the supervisor of the Aztec district office of the Division.

(6) Any variance in the method of gas allocation between the two pools for any of the subject wells shall be made only after due notice and hearing.

(7) The operator shall immediately notify the supervisor of the Aztec District Office of the Division any time one of the wells subject to this order has been shut-in for seven consecutive days and shall concurrently present, to the Division, a plan for remedial action.

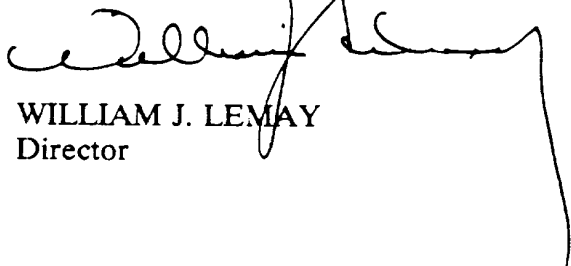
(8) An administrative procedure for obtaining approval to downhole commingle additional wells within the Huerfano Unit, located in portions of Townships 25, 26 and 27 North, Ranges 9, 10 and 11 West, NMPM, San Juan County, New Mexico, is hereby established.

(9) In order to obtain Division authorization to downhole commingle wells within the Huerfano Unit, the applicant shall file an application with the Santa Fe and Aztec Offices of the Division. Such application shall contain all of the information required under Rule No. 303(C) of the Division Rules and Regulations, provided however that the applicant shall not be required to provide notice to all interest owners within the Pictured Cliffs and Fruitland Coal participating areas in the Huerfano Unit of such proposed commingling. The application shall contain evidence that all offset operators and the United States Bureau of Land Management (BLM) have been notified of the proposed commingling.

(10) 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

S E A L

Exhibit "A"

CASE No. 10735

DIVISION ORDER NO. R-9921

MONTHLY GAS PRODUCTION ALLOCATION FORMULA

GENERAL EQUATION

$$Q_t = Q_{ftc} + Q_{pc}$$

WHERE:

Q_t = TOTAL MONTHLY PRODUCTION FROM WELL (MCF/MONTH)
 Q_{ftc} = FRUITLAND COAL (FTC) MONTHLY PRODUCTION (MCF/MONTH)
 Q_{pc} = PICTURED CLIFFS (PC) MONTHLY PRODUCTION (MCF/MONTH)

REARRANGING THE EQUATION TO SOLVE FOR Q_{ftc} :

$$Q_{ftc} = Q_t - Q_{pc}$$

ANY PRODUCTION RATE OVER WHAT IS CALCULATED FOR THE PICTURED CLIFFS (PC) USING THE APPLIED FORMULA IS FRUITLAND COAL (FTC) PRODUCTION.

PICTURED CLIFFS (PC) FORMATION PRODUCTION FORMULA IS:

$$Q_{pc} = Q_{pci} * e^{-\{(D_{pc}) * (t)\}}$$

WHERE:

Q_{pci} is the INITIAL PC MONTHLY FLOW RATE (CALCULATED FROM FLOW TEST)
OR

$$Q_{pci} = \frac{Q_t(1) * Q_{pc}(p)}{Q_{pc}(p) + Q_{ftc}(p)}$$

WHERE:

$Q_t(1)$ = FIRST MONTH TOTAL PRODUCTION (MCF)
 $Q_{pc}(p)$ = FINAL PICTURED CLIFFS FLOW TEST (MCFPD)
 $Q_{ftc}(p)$ = FINAL FRUITLAND COAL FLOW TEST (MCFPD)

AND WHERE:

D_{pc} is the calculated Pictured Cliffs Monthly Decline Rate Determined.

$$D_{pc} = (Q_{pci} - Q_{pcabd}) / N_p(pc)$$

Where: Q_{pcabd} = Pictured Cliffs Production Rate At Abandonment (300 MCF/Mo.); and, $N_p(pc)$ is the Pictured Cliffs Estimated Ultimate Recovery.

$$\text{THUS: } Q_{ftc} = Q_t - Q_{pci} * e^{-\{(D_{pc}) * (t)\}}$$

WHERE: (t) = TIME (MONTHS) FROM INITIAL PRODUCTION