

STATE OF NEW MEXICO
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE NO. 9111
Order No. R-3401-B

APPLICATION OF BENSON-MONTIN-GREER
DRILLING CORPORATION FOR EXPANSION OF
THE PROJECT AREA FOR ITS WEST PUERTO
CHIQUITO-MANCOS PRESSURE MAINTENANCE
PROJECT, RIO ARriba COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9:00 a.m. on March 18, 1988, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission." Decision on the case was deferred until possibly related testimony in Cases 7980, 8946, 8950 and 9412 was received at the hearing held June 13, 1988.

NOW, on this 5th day of August, 1988, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS THAT:

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

(2) Applicant requests expansion of the West Puerto Chiquito-Mancos Pressure Maintenance Project area to include the below-described area which would make the project area coterminous with the Canada Ojito Unit area and the Mancos Participating Area of the unit:

TOWNSHIP 24 NORTH, RANGE 1 WEST, NMPM
Sections 5 through 8

TOWNSHIP 25 NORTH, RANGE 1 WEST, NMPM
Sections 5 through 8
Sections 17 through 20
Sections 29 through 32

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TOWNSHIP 26 NORTH, RANGE 1 WEST, NMPM
w/2 Sections 5, 8, 17, and 20
Sections 6, 7, 18, 19, 29, 30, 31 and 32

All in Rio Arriba County, New Mexico

(3) The expanded project area would abut the Gavilan-Mancos Pool boundary at the West line of Range 1 West.

(4) Applicant was supported in its application by Sun Exploration and Production Company and was opposed by Mallon Oil Company, Mesa Grande Resources, Inc., Mobil Texas-New Mexico Producing, Koch Exploration and others.

(5) Critical to the case is the degree, if any, of pressure communication across a low permeability zone at or near the present western boundary of the project area which is approximately two miles east of the western boundary of the unit.

(6) The two westernmost rows of sections inside the unit area are in effective pressure communication with the Gavilan-Mancos pool as demonstrated by shut in pressure measurements.

(7) The unit area east of the proposed expansion of the area described above exhibits a significantly greater pressure than the proposed expansion area and the adjacent Gavilan area, as a result of gas injection at the structurally higher and more easterly portion of the unit.

(8) The pressure differential across the low-permeability area which resides in the third row of sections east of the western boundary of the unit is in the range of 350-400 psi, and thus indicates limited pressure communication between the injection wells and the proposed expansion area.

(9) Limited transmissibility across the low-permeability zone has been shown by (1) transmission of a pressure pulse from a hydraulically fractured well to wells across the low permeability zone, (2) failure to increase the average pressure east of the zone by overinjection of gas, and (3) the lower gas-oil ratio of wells in the proposed expansion area as compared to adjacent Gavilan-Mancos wells.

(10) The gas credit provided by Rule 7 of Order R-3401, as amended, in the project area provides a reduced GOR penalty for wells in the project area because the pressure maintenance process results in a smaller reservoir voidage per barrel of oil produced than would occur if the gas were not reinjected.

(11) The permeability restriction described in Finding No. (5) limits the benefit which the proposed expansion area can receive from the pressure maintenance gas injection.

(12) There is evidence that wells within both the WPC and the Gavilan Pools are in communication with areas outside of those pools, particularly in a north-south direction. As a result there may be gas flow and repressurization from the pressure maintenance project in a northerly and southerly direction and that it may extend beyond the northern and southern boundaries of the pressure maintenance project.

(13) Because of Findings (11) and (12), giving full injection credit to those wells in the proposed expansion area would give those wells an advantage over the adjacent wells in the Gavilan-Mancos Pool and would impair the correlative rights of the owners in the Gavilan-Mancos Pool.

(14) Limited expansion of the project area, and reduced credit to wells in the expansion area for reinjected gas in the project area will encourage continued gas injection, will increase the ultimate recovery of oil in the West Puerto Chiquito-Mancos Oil Pool and will also protect correlative rights in the Gavilan-Mancos Pool wells offsetting the unit.

(15) The project area should be expanded only one tier of sections to the west leaving one tier of sections between the expansion area and Gavilan.

(16) The evidence is not conclusive as to the amount of injection credit which the wells in the expansion area of the project should receive, and pending further data evaluation, a 50% injected gas credit is reasonable.

(17) The gas credit amount in the expansion area granted by this order should be modified upon presentation of evidence that an advantage is gained by either pool over the other.

(18) The Aztec district office of the Division, in consultation with the operators in the two pools should determine the wells and procedures to be employed to obtain accurate, representative BHP's on either side of the common pool boundary on a semi-annual basis for detection and evaluation of any drainage across the said boundary and a basis for adjusting the gas injection credit assigned the wells in the expansion area.

IT IS THEREFORE ORDERED THAT:

(1) The Project Area of the West Puerto Chiquito-Mancos Pressure Maintenance Project is hereby expanded to include the following described area:

TOWNSHIP 24 NORTH, RANGE 1 WEST, NMPM
Sections 5 and 8

TOWNSHIP 25 NORTH, RANGE 1 WEST, NMPM
Sections 5, 8, 17, 20, 29 and 32

TOWNSHIP 26 NORTH, RANGE 1 WEST, NMPM
W/2 Sections 5, 8, 17 and 20 and all of
Sections 29 and 32

All in Rio Arriba County, New Mexico.

(2) Rule 6 and Rule 7 of the Special Rules for the West Puerto Chiquito-Mancos Pressure Maintenance Project established by Order No. R-3401, as amended, are hereby amended to read in their entirety as follows:

"Rule 6. The allowable assigned to any well which is shut-in or curtailed in accordance with Rule 3, shall be determined by a 24-hour test at a stabilized rate of production, which shall be the final 24-hour period of a 72-hour test throughout which the well should be produced in the same manner and at a constant rate. The daily tolerance limitation set forth in Commission Rule 502 I (a) and the limiting gas-oil ratio for the West Puerto Chiquito-Mancos Oil Pool shall be waived during such tests. The project operator shall notify all operators offsetting the well, as well as the Commission, of the exact time such tests are to be conducted. Tests may be witnessed by representatives of the offsetting operators and the Commission, if they so desire."

"Rule 7. The allowable assigned to each producing well in the Project shall be equal to the well's ability to produce or top unit allowable for the West Puerto Chiquito-Mancos Oil Pool, whichever is less, provided that any producing well in the project area which directly or diagonally offsets a well outside the Canada Ojitos Unit Area producing from the same common source of supply shall not produce in excess of top unit allowable for the pool. Production of such well at a higher rate shall be authorized only after notice and hearing. Each producing well shall be subject to the limiting gas-oil

ratio for the West Puerto Chiquito-Mancos Oil Pool except that any well or wells within the project area producing with a gas-oil ratio in excess of the limiting gas oil ratio may be produced on a "net gas-oil ratio" basis, which shall be determined by applying credit for daily average gas injected, if any, into the West Puerto Chiquito-Mancos Oil Pool within the project area to such high gas-oil ratio well. The daily adjusted oil allowable for any well receiving gas injection credit shall be determined in accordance with the following formula:

$$A_{adj} = TUA \times F_a \times \frac{GOR}{\frac{P_g - I_g}{P_o}}$$

where A_{adj} = the well's daily adjusted allowable.

TUA = top unit allowable for the pool.

F_a = the well's acreage factor (1.0 if one well on a 640 acre proration unit or 1/2 each if two wells on a 640 acre unit, and 1/2 for a well in a section along the Gavilan boundary which lies closer than 2310' from the Gavilan boundary).

P_g = average daily volume of gas produced by the well during the preceding month, cubic feet.

I_g = the well's allocated share of the daily average gas injected during the preceding month, cubic feet.

P_o = average daily volume of oil produced by the well during the preceding month, barrels.

GOR = limiting gas-oil ratio for the West Puerto Chiquito-Mancos Oil Pool.

In no event shall the amount of injected gas being credited to a well be such as to cause the net gas-oil ratio, $\frac{P_g - I_g}{P_o}$ to be less than the limiting gas-oil ratio for the West Puerto Chiquito Mancos Oil Pool.

Provided however, that wells located in the area described as: Sections 5 and 8, Township 24 North, Range 1

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West; Sections 5, 8, 17, 20, 29 and 32,
Township 25 North, Range 1 West; Sections 29
and 32 and W/2 of Sections 5, 8, 17 and 20,
Township 26 North, Range 1 West

shall be limited to 50% of the allocated share of injection
gas in the l_g term of the formula above.

(3) The Aztec district office of the Division, with due counselling and advice from pool operators, shall, by October 1, 1988, develop a program for semi-annual bottomhole pressure surveys of wells in both pools located not less than 3/8 mile and not more than 1 1/2 miles from the common pool boundary, designed to measure accurately the pressure differential across the pool boundary and to be used as a basis for adjusting the gas injection credit to wells in the expansion area. The program shall be presented for approval to the Commission Conference on October 6, 1988.

(5) This order may be modified, after notice and hearing, to offset any advantage gained by wells on either side of the common boundary of the Gavilan and West Puerto Chiquito Oil Pools, as a result of this order.

(6) Jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

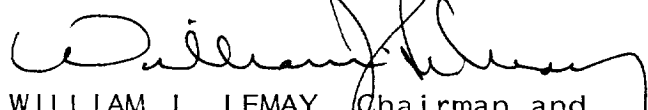
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION



WILLIAM R. HUMPHRIES, Member

ERLING A. BROSTUEN, Member



WILLIAM J. LEMAY, Chairman and
Secretary

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