

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

June 8, 1987

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

CASES NOS. 7980, 8946,  
9113, AND 9114  
ORDER NO. R-7407-E

CASE NO. 7980

IN THE MATTER OF CASE 7980 BEING REOPENED PURSUANT TO THE  
PROVISIONS OF COMMISSION ORDER NO. R-7407, WHICH ORDER  
PROMULGATED TEMPORARY SPECIAL RULES AND REGULATIONS FOR THE  
GAVILAN-MANCOS OIL POOL IN RIO ARriba COUNTY, INCLUDING A  
PROVISION FOR 320-ACRE SPACING UNITS.

✓ CASE NO. 8946

IN THE MATTER OF CASE 8946 BEING REOPENED PURSUANT TO THE  
PROVISIONS OF COMMISSION ORDER NO. R-7407-D, WHICH ORDER  
PROMULGATED A TEMPORARY LIMITING GAS-OIL RATIO AND DEPTH  
BRACKET ALLOWABLE FOR THE GAVILAN-MANCOS OIL POOL IN RIO ARriba  
COUNTY.

CASE NO. 9113

APPLICATION OF BENSON-MONTIN-GREER DRILLING CORPORATION, JEROME  
P. McHUGH & ASSOCIATES, AND SUN EXPLORATION AND PRODUCTION  
COMPANY TO ABOLISH THE GAVILAN-MANCOS OIL POOL, TO EXTEND THE  
WEST PUERTO CHIQUITO-MANCOS OIL POOL, AND TO AMEND THE SPECIAL  
RULES AND REGULATIONS FOR THE WEST PUERTO CHIQUITO-MANCOS OIL  
POOL, RIO ARriba COUNTY, NEW MEXICO.

CASE NO. 9114

APPLICATION OF MESA GRANDE RESOURCES, INC. FOR THE EXTENSION OF  
THE GAVILAN-MANCOS OIL POOL AND THE CONTRACTION OF THE WEST  
PUERTO CHIQUITO-MANCOS OIL POOL, RIO ARriba COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

These causes came on for hearing on March 30 and 31 and  
April 1, 2, and 3, 1987 at Santa Fe, New Mexico before the Oil  
Conservation Commission of New Mexico hereinafter referred to  
as the "Commission."

Cases Nos. 7980, 8946, 9113 and 9114  
Order No. R-7407-E

NOW, on this 8th day of June, 1987, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearings 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 these causes and the subject matter thereof.

(2) At the time of hearing, Cases 7980, 8946, 8950, 9113 and 9114 were consolidated for purposes of testimony.

(3) Case 7980 involves review of temporary pool rules promulgated by Order R-7407 and Case 8946 involves reopening the matter of temporary reduction of allowable and gas/oil ratio limit, under Order R-7407-D, both orders pertaining to the Gavilan-Mancos Oil Pool.

(4) Case 8950 involves reopening the matter of temporary reduction of allowable and gas/oil ratio limit under Order R-3401-A pertaining to the West Puerto-Chiquito-Mancos Oil Pool.

(5) Case 9113 involves a proposal to abolish the Gavilan-Mancos Oil Pool and consolidate that pool into the West Puerto-Chiquito-Mancos Oil Pool and Case 9114 involves a proposal to shift the boundary between Gavilan-Mancos and West Puerto Chiquito-Mancos Oil Pools.

(6) The evidence shows that there is limited pressure communication between the two designated pools, and that there are two weakly connected areas separated by some restriction at or near the common boundary of the two designated pools.

(7) The evidence shows there are three principal productive zones in the Mancos formation in both presently designated pools, designated A, B, and C zones listed from top to bottom and that, while all three zones are productive in both designated pools, West Puerto Chiquito produces primarily from the C zone and Gavilan produces chiefly from the A and B zones.

(8) It is clear from the evidence that there is natural fracture communication between zones A and B but that natural fracture communication is minor or non-existent between zones B and C.

(9) The reservoir consists of fractures ranging from major channels of high transmissibility to micro-fractures of negligible transmissibility, and possibly, some intergranular porosity that must feed into the fracture system in order for oil therein to be recovered.

(10) The productive capacity of an individual well depends upon the degree of success in communicating the wellbore with the major fracture system.

(11) Interference tests indicate: 1) a high degree of communication between certain wells, 2) the ability of certain wells to economically and efficiently drain a large area of at least 640 acres; and 3) the probability exists that the better wells recover oil from adjacent tracts and even more distant tracts if such tracts have wells which were less successful in connecting with the major fracture system.

(12) There is conflicting testimony as to whether the reservoir is rate-sensitive and the Commission should act to order the operators in West Puerto Chiquito and Gavilan-Mancos pools to collect additional data during 90-day periods of increased and decreased allowables and limiting gas-oil ratios.

(13) Two very sophisticated model studies conducted by highly skilled technicians with data input from competent reservoir engineers produced diametrically opposed results so that estimates of original oil in place, recovery efficiency and ultimate recoverable oil are very different and therefore are in a wide range of values.

(14) There was agreement that pressure maintenance would enhance recovery from the reservoir and that a unit would be required to implement such a program in the Gavilan-Mancos Pool.

(15) Estimates of the amount of time required to deplete the Gavilan pool at current producing rates varied from 33 months to approximately five years from hearing date.

(16) Many wells are shut in or are severely curtailed by OCD limits on permissible gas venting because of lack of pipeline connections and have been so shut in or curtailed for many months, during which time reservoir pressure has been shown by pressure surveys to be declining at 1 psi per day or more, indicating severe drainage conditions.

(17) No party requested making the temporary rules permanent, although certain royalty (not unleased minerals)

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owners requested a return to 40-acre spacing, without presenting supporting evidence.

(18) Proration units comprised of 640 acres with the option to drill a second well would permit wider spacing and also provide flexibility.

(19) Recognizing that the two designated pools constitute two weakly connected areas with different geologic and operating conditions, the administration of the two areas will be simplified by maintaining two separate pools.

(20) A ninety day period commencing July 1, 1987, should be given for the connection for casinghead gas sale from now-unconnected wells in the Gavilan pool, after which allowables should be reduced in that pool until said wells are connected.

(21) To provide continuity of operation and to prevent waste by the drilling of unnecessary wells, the temporary spacing rules promulgated by Order R-7407 should remain in effect until superceded by this Order.

(22) Rules for 640-acre spacing units with the option for a second well on each unit should be adopted together with a provision that units existing at the date of this order should be continued in effect.

IT IS THEREFORE ORDERED THAT:

(1) The application of Benson-Montin-Greer et al in Case No. 9113 to abolish the Gavilan-Mancos pool and extend the West Puerto Chiquito-Mancos pool to include the area occupied by the Gavilan-Mancos Pool is denied.

(2) The application of Mesa Grande Resources, Inc. for the extension of the Gavilan-Mancos and the concomitant contraction of West Puerto Chiquito-Mancos Pool is denied.

(3) Rule 2 of the temporary special rules and regulations for the Gavilan-Mancos Oil Pool as promulgated by Order R-7407 is hereby amended as follows:

Rule 2 (a). A standard proration unit shall consist of between 632 and 648 acres consisting of a governmental section with at least one and not more than two wells drilled or recompleted thereon; provided that if the second well is drilled or recompleted on a standard unit it shall not be located in the same quarter section, nor

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Order No. R-7407-E

closer than 1650 feet to the first well drilled on the unit; and provided further that proration units formed prior to the date of this order are hereby granted exception to this rule.

(b). A buffer zone is hereby created consisting of the east half of sections bordering Township 1 West. Only one well per section shall be drilled in said buffer zone and if such well is located closer than 2310 feet from the western boundary of the West Puerto Chiquito-Mancos Oil Pool it shall not be allowed to produce more than one-half the top allowable for a 640-acre proration unit.

(4) Beginning July 1, 1987, the allowable shall be 1280 barrels of oil per day per 640 acres with a limiting gas-oil ratio of 2,000 cubic feet of gas per barrel of oil. Operators are required to monitor reservoir performance, including but not limited to, production rates, gas-oil ratios, reservoir pressures, and shall report this information to the Commission within 30 days after completion of the tests. Within the first week of July, 1987, bottom hole pressure tests shall be taken on all wells. Wells shall be shut-in until pressure stabilizes or for a period not longer than 72 hours. Additional bottom hole tests shall be taken within the first week of October, 1987, with similar testing requirements. All produced gas, including gas vented or flared, shall be metered. Operators are required to submit a testing schedule to the District Supervisor of the Aztec office of the Oil Conservation Division prior to testing so that tests may be witnessed by OCD personnel.

(5) Beginning October 1, 1987, the allowable shall be 800 barrels of oil per day per 640 acres with a limiting gas-oil ratio of 600 cubic feet of gas per barrel of oil. Operators are required to monitor reservoir performance as in (4) above with bottom hole pressure tests to be taken within the first week of January, 1988. This allowable and GOR limitation shall remain in effect until further notice from the Commission.

(6) In order to prevent further waste and impairment of correlative rights each well in the Gavilan-Mancos Oil Pool shall be connected to a gas gathering system by October 1, 1987 or within ninety days of completion. If Wells presently unconnected are not connected by October 1 the Director may reduce the Gavilan-Mancos allowable as may be appropriate to prevent waste and protect correlative rights. In instances where it can be shown that connection is absolutely uneconomic the well involved may be granted authority to flow or vent the

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gas under such circumstances as to minimize waste as determined by the Director.

(7) The temporary special pool rules promulgated by Order R-7407 are hereby extended to the effective date of this order and said rules as amended herein are hereby made permanent.

(8) This case shall be reopened at a hearing to be held in May, 1988 to review the pools in light of information to be gained in the next year and to determine if further changes in rules may be advisable.

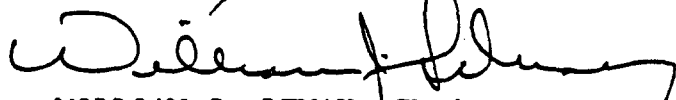
(9) Jurisdiction of this cause is retained for entry of such further orders as the Commission may deem necessary.

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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STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

IN THE MATTER OF THE HEARING  
CALLED BY THE OIL CONSERVATION  
DIVISION FOR THE PURPOSE OF  
CONSIDERING:

CASE 8950  
Order No. R-6469-D

IN THE MATTER OF CASE 8950 BEING REOPENED PURSUANT TO THE  
PROVISIONS OF COMMISSION ORDERS NOS. R-6469-C AND R-3401-A, AS  
AMENDED, WHICH ORDER PROMULGATED A TEMPORARY ALLOWABLE AND  
LIMITING GAS-OIL RATIO FOR THE WEST PUERTO CHIQUITO-MANCOS OIL  
POOL IN RIO ARriba COUNTY.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing on March 30 and 31 and  
April 1, 2, and 3, 1987 at Santa Fe, New Mexico before the Oil  
Conservation Commission of New Mexico, hereinafter referred to  
as the "Commission."

NOW, on this 8th day of June, 1987 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) At the time of hearing, Cases 7980, 8946, 8950, 9113  
and 9114 were consolidated for purposes of testimony.

(3) Case 8950 involves re-opening the matter of  
temporary reduction of allowable and gas/oil ratio limit under  
Order R-6469-C/R-3401-A pertaining to the West Puerto Chiquito-  
Mancos Oil Pool.

(4) Case 9113 involves a proposal to abolish the  
Gavilan-Mancos Oil Pool and consolidate that pool into the West  
Puerto Chiquito-Mancos Oil Pool and Case 9114 involves a  
proposal to shift the boundary between Gavilan-Mancos and West  
Puerto Chiquito-Mancos Oil Pool.

(5) The evidence shows that there is limited pressure communication between the two designated pools, and that there are two weakly connected areas separated by some restriction at or near the common boundary of the two designated pools.

(6) The evidence shows there are three principal productive zones in the Mancos formation in both presently designated pools, designated A, B, and C zones listed from top to bottom and that, while all three zones are productive in both designated pools, West Puerto Chiquito produces primarily from the C zone and Gavilan produces chiefly from the A and B zone.

(7) It is clear from the evidence that there is natural fracture communication between zones A and B but that natural fracture communication is minor or non-existent between zones B and C.

(8) Interference tests indicate: 1) a high degree of communication between certain wells, 2) the ability of certain wells to economically and efficiently drain a large area of at least 640 acres; and 3) the probability exists that the better wells recover oil from adjacent tracts and even more distant tracts if such tracts have wells which were less successful in connecting with the major fracture system.

(9) There is conflicting testimony as to whether the reservoir is rate-sensitive and the Commission should act to order the operators in West Puerto Chiquito and Gavilan-Mancos pools to collect additional data during 90-day periods of increased and decreased allowables and limiting gas-oil ratios.

(10) Estimates of the amount of time required to deplete the Gavilan Pool at current producing rates varied from 33 months to approximately five years from hearing date.

(11) An allowable of 1280 barrels per day is based upon an extension of the depth bracket allowable table and should be the allowable for a 640-acre proration unit for a period of 90 days with a limiting gas-oil ratio of 2,000 cubic feet of gas per barrel of oil.

(12) The Oil Conservation Commission and their staff will evaluate the data collected, or contract to have the data evaluated, to ascertain whether the 1280 BOPD allowable and 2,000 to 1 limiting GOR will cause waste and/or provide a mechanism for confiscation of oil and gas through drainage via the highly transmissive fracture system.



(13) After the initial 90-day period ends, the allowable should be reduced to 800 BOPD per 640 acres with a limiting GOR of 600 cubic feet of gas per barrel of oil.

(14) The West Puerto Chiquito-Mancos Pool is dominated by the Canada Ojitos Unit on which a pressure maintenance program has been in progress since 1968 wherein all produced gas has been reinjected as well as outside purchased gas being injected.

(15) From commencement of production in the West Puerto Chiquito Mancos Pool in 1964 until approximately the end of 1986, a period of 22 years, the West Puerto Chiquito Pool enjoyed a favored pressure differential to the area now designated the Gavilan Mancos Pool but now the pressure differential favors the Gavilan Mancos Pool.

(16) The existing West Puerto Chiquito Mancos Pool wells located in the westernmost tier of sections in Township 25 North, Range 1 West, and the proper development of the Mancos Pool along the common existing boundary of the two pools will protect operators within the West Puerto Chiquito Mancos Pool from drainage by wells within the Gavilan Mancos Pool.

(17) Recognizing that the two designated pools constitute two weakly connected areas with different geologic and operating conditions the administration of the two areas will be simplified by maintaining two separate pools.

IT IS THEREFORE ORDERED THAT:

(1) The application of Benson-Montin-Greer in Case No. 9113 to abolish the Gavilan-Mancos Pool and extend the West Puerto Chiquito-Mancos Pool to include the area occupied by the Gavilan-Mancos pool is denied.

(2) The application of Mesa Grande Resources, Inc. for the extension of the Gavilan-Mancos and the concomitant contraction of West Puerto Chiquito-Mancos pool is denied.

(3) Beginning July 1, 1987, the allowable shall be 1280 barrels of oil per day per 640 acres with a limiting gas-oil ratio of 2,000 cubic feet of gas per barrel of oil. Operators are required to monitor reservoir performance, including but not limited to, production rates, gas-oil ratios, reservoir pressures, and shall report this information to the Commission within 30 days from completion of the tests. Within the first week of July, 1987, bottom hole pressure tests shall be taken

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on all wells. Wells shall be shut-in until pressure stabilizes or for a period not longer than 72 hours. Additional bottom hole tests shall be taken within the first week of October, 1987, with similar testing requirements. All produced gas, including gas vented or flared, shall be metered. Operators are required to submit a testing schedule to the District Supervisor of the Aztec office of the Oil Conservation Division prior to testing so that tests may be witnessed by OCD personnel.

(4) Beginning October 1, 1987, the allowable shall be 800 barrels of oil per day per 640 acres with a limiting gas-oil ratio of 600 cubic feet of gas per barrel of oil. Operators are required to monitor reservoir performance as in (3) above with bottom hole pressure tests to be taken within the first week of January, 1988. This allowable and GOR limitation shall remain in effect until further notice from the Commission.

(5) This case shall be reopened at a hearing to be held in May, 1988 to review the pools in light of information to be gained in the next year and to determine if further changes in rules may be advisable.

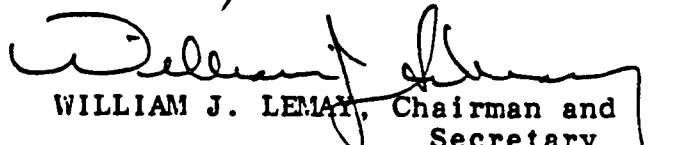
(5) Jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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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