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. 10796
Order No. R-9974

APPLICATION OF MANZANO OIL
CORPORATION FOR AN UNORTHODOX
GAS WELL LOCATION, LEA COUNTY,
NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on August 19, 1993, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 21st day of September, 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, Manzano Oil Corporation (Manzano), seeks approval of an unorthodox gas well location 660 feet from the North line and 1650 feet from the East line (Unit B) of Section 14, Township 20 South, Range 35 East, NMPM, for its Neuhaus Federal Well No. 2 which has been drilled to and completed in the Lea-Wolfcamp Pool. The E/2 of Section 14 is to be dedicated to the subject well forming a standard 320-acre gas spacing and proration unit for said pool.

(3) The applicant further seeks approval of the unorthodox location as to all prospective pools or formations including, but not limited to the Wolfcamp, spaced on 320 acres.

(4) Marathon Oil Company (Marathon), the affected offset

operator to the north of the subject acreage and operator of a standard 320-acre gas proration unit comprising the S/2 of Section 11, Township 20 South, Range 35 East, NMPM, appeared at the hearing in opposition to the application and tendered witnesses and offered evidence in support of its protest. The S/2 of Section 11 is currently dedicated to the Marathon Oil Company Jordan "B" Well No. 1 located at a standard gas well location 660 feet from the South line and 1980 feet from the East line (Unit O), which is currently completed in and producing from the Lea-Wolfcamp Pool.

(5) The Marathon Jordan "B" Well No. 1 was drilled in 1984 and completed in the Morrow formation as a commercial producer. In 1991 the well was abandoned in the Morrow, plugged back and completed in the Wolfcamp formation. The well first produced from the Lea-Wolfcamp Pool during December, 1991. The evidence and testimony indicate that the Jordan "B" Well No. 1 is currently capable of producing at a rate of approximately 3,900 MCFGD and has cumulatively produced approximately 2.5 BCFG and 255,494 barrels of condensate from the Lea-Wolfcamp Pool.

(6) On April 20, 1993, Manzano filed an APD (Application to Drill) for its proposed Neuhaus Federal Well No. 2. Division records indicate that the applicant filed for a Strawn oil test at a standard 40-acre oil well location, said well to be drilled to a depth of approximately 12,400 feet.

(7) The applicant spudded the well on June 3, 1993, and subsequently drilled the subject well to the Wolfcamp formation. A drill stem test subsequently conducted in the Wolfcamp formation indicated the presence of a good reservoir. The well was drilled an additional 169 feet and then drilling ceased and the well was completed in the Wolfcamp because, according to applicant's testimony, initial reservoir pressure indicated that drainage was occurring and that conditions in the wellbore existed such that continued drilling could cause extensive damage to the Wolfcamp reservoir.

(8) Marathon contends that the applicant initially circumvented the Division's unorthodox location approval process by permitting the Neuhaus Federal Well No. 2 as a wildcat Strawn test. According to Marathon's geologic witness, the nearest Strawn production in this area is over four miles away, and, the potential for Strawn production in this area is severely limited.

(9) On July 13, 1993, Manzano requested that the Division assign the Neuhaus Federal Well No. 2 a testing allowable equal to 1 1/2 times the average lifetime producing

rate of the Jordan "B" Well No. 1 until such time as a hearing to approve the unorthodox location is held. By letter dated July 21, 1993, the Division assigned the Neuhaus Federal Well No. 2 a testing allowable of 882 MCFG per day, or 1/3 of the absolute open flow potential rate of 2,647 MCFGD.

(10) On July 20, 1993, a condensate allowable of 6,000 barrels per month was assigned to the Neuhaus Federal Well No. 2 by the supervisor of the Division's Hobbs district office.

(11) Based upon Manzano's submission of a new potential test, the Division, by letter dated August 13, 1993, assigned the Neuhaus Federal Well No. 2 a revised gas testing allowable of 11,740 MCFGD, or 1/3 of the calculated absolute open flow potential rate of 35,240 MCFGD.

(12) Subsequent to the hearing held on August 19, 1993, the Division ordered the applicant to shut in the Neuhaus Federal Well No. 2.

(13) Production records obtained from the applicant subsequent to the hearing indicate that during the period from July 21-August 13, 1993, the Neuhaus Federal Well No. 2 was produced, in violation of a Division directive, at an average rate of approximately 3,407 MCFG per day.

(14) The Division should consider, outside the scope of these proceedings, taking action against the applicant as may be appropriate for violation of a Division directive.

(15) Geologic evidence presented by both parties indicates that the Lea-Wolfcamp Pool is a reservoir of limited extent which can be drained and developed by the Jordan "B" Well No. 1 and the Neuhaus Federal Well No. 2.

(16) The geologic evidence presented by Manzano shows that:

a) the Wolfcamp formation in the Lea-Wolfcamp Pool is a carbonate buildup similar to the Osudo-Wolfcamp Pool to the south which is a small localized pod feature which flanks off quickly;

b) the thickest portion and the majority of the total reservoir is located within the E/2 of Section 14;

c) the Middle Wolfcamp pay interval thickens substantially from 63 feet in the Marathon-Jordan well to 131 feet in the Manzano-Neuhaus well;

d) the Manzano-Neuhaus well has 119 feet of net dolomite with porosity greater than 4 percent compared to 62 feet within the Marathon-Jordan well; and,

e) the size, shape and orientation of this Wolfcamp reservoir is such that the E/2 of Section 14 contains 7,600 acre-ft. of reservoir and 140 productive acres, while the S/2 of Section 11 contains 2,333 acre-ft. of reservoir and 58 productive acres.

(17) The geologic evidence presented by Marathon shows that:

a) the Lea-Wolfcamp Pool is a debris flow deposit;

b) the thickest portion of the reservoir is shared by both of the subject proration units while the majority of the total reservoir is located within the S/2 of Section 11;

c) the Manzano-Neuhaus well has 90 feet of net dolomite with porosity greater than 4 percent compared to 39 feet within the Marathon-Jordan well;

d) the size, shape and orientation of this Wolfcamp reservoir is such that the E/2 of Section 14 contains 2,331 acre-ft. of reservoir and 72 productive acres, while the S/2 of Section 11 contains 3,776 acre-ft. of reservoir and 123 productive acres.

(18) The parties' dispute concerning the shape and orientation of the reservoir is focused on whether or not the Marathon Jordan "B" Well No. 2, located 1980 feet from the North line and 2310 feet from the East line (Unit G) of Section 11, which has cumulatively produced 159 MMCFG and 28,032 barrels of condensate from the Wolfcamp formation since 1985, is within the Lea-Wolfcamp Pool.

(19) Manzano's contention that the Jordan "B" Well No. 2 is not located within the subject Wolfcamp reservoir is based upon geologic interpretation only. Marathon's contention that the Jordan "B" Well No. 2 is located within the subject Wolfcamp reservoir is based upon geologic interpretation and reservoir pressure data.

(20) The geologic and engineering evidence presented by

Marathon indicates that the Jordan "B" Well No. 2 should be placed within the subject Wolfcamp reservoir and, therefore, the shape and orientation of the reservoir as interpreted by Marathon should be considered a more accurate representation than that presented by Manzano.

(21) There is also considerable disagreement among the parties as to the size of the subject reservoir. Manzano's evidence shows the reservoir to contain some 9,937 acre-ft. while Marathon's evidence shows the reservoir to contain some 6,107 acre-ft. The factor which appears to be in dispute among the parties in calculating reservoir volume is the z or compressibility factor. It appears from the evidence presented that the z factor utilized by Marathon in its calculations is more accurate in that it is based upon results of a pvt analysis conducted on the fluids obtained from the reservoir.

(22) The size of the subject reservoir as calculated by Marathon should be considered a more accurate representation than that presented by Manzano.

(23) Manzano proposed that no production penalty be imposed on the Neuhaus Federal Well No. 2. This proposal is based upon Manzano's contention that since the Marathon-Jordan and Manzano-Neuhaus wells are both located 660 feet from the common boundary, since the Manzano-Neuhaus well location would have been standard if a N/2 spacing unit could have been dedicated to the well, and since no drainage from the Marathon tract by the Manzano-Neuhaus well is occurring, no advantage is gained on Marathon by reason of this unorthodox location.

(24) Marathon proposed that an 80 percent production penalty (20 percent allowable factor) be imposed on the Neuhaus Federal Well No. 2. Marathon's proposed penalty is an averaged deliverability-adjusted penalty based upon the following factors: (1) deviation from a standard well location in the north/south direction; and (2) productive acreage underlying the E/2 of Section 14 relative to productive acreage underlying the S/2 of Section 11, and then reduced by a deliverability ratio of 2.3, all as shown as follows:

Factor (1) = 660 feet/1980 feet = 0.33
Factor (2) = 72 acres/123 acres = 0.585

Average of Factors = 0.33 + 0.585/ 2 = 0.46
Reduction by a factor of 2.3 = 0.46 X 0.433 = 0.20

(25) Marathon's reduction based upon deliverability is based upon the assumption that there is a direct relationship

between net pay and deliverability. The reduction factor of 2.3 was calculated based upon the respective net pays of the Marathon and Manzano wells, or 39 feet/90 feet.

(26) Based upon engineering evidence presented and the cumulative production from the Jordan "B" Well Nos. 1 and 2, it can be derived that there are approximately 3.2 BCF of remaining recoverable gas reserves within the subject reservoir.

(27) Utilizing the reservoir volumes in acre-ft. as determined by Marathon, it can be further derived that within the E/2 of Section 14 there remain approximately (0.38) X 3.2 BCF = 1.2 BCFG.

(28) Manzano should be allowed to recover the remaining gas reserves underlying the E/2 of Section 14.

(29) Utilizing the multipoint back pressure test conducted on the Neuhaus Federal Well No. 2, Marathon has calculated that the subject well is capable of producing approximately 7,450 MCFG per day into the pipeline.

(30) At the request of the examiner and subsequent to the hearing Marathon submitted ultimate gas recovery estimates for the Manzano-Neuhaus and Marathon-Jordan wells at various allowables and producing rates.

(31) Marathon's engineering calculations indicate that at a producing allowable of 33 percent, the Neuhaus Federal Well No. 2 will initially produce approximately 2.3-2.5 MMCFG per day and will ultimately recover approximately 1.264 BCFG from the subject reservoir.

(32) A production allowable of 33.3 percent (66.6 production penalty) also happens to coincide with the amount of deviation the Neuhaus Federal Well No. 2 is from a standard well location in the north/south direction or 660 ft./ 1980 ft. = 33.3 percent.

(33) The engineering data and the deviation from a standard well location, normally used by the Division in calculating production penalties, both indicate that a production penalty of 66.6 percent is fair and will allow the applicant the opportunity to produce its just and equitable share of the gas underlying the E/2 of Section 14.

(34) Approval of the unorthodox location for the Neuhaus Federal Well No. 2 will prevent the drilling of unnecessary wells, will allow the applicant the opportunity to produce its

just and equitable share of the gas in the Lea-Wolfcamp Pool underlying the E/2 of Section 14, and will protect correlative rights.

(35) The production penalty should be applied to the Neuhaus Federal Well No. 2's ability to produce into the pipeline as determined from a deliverability test to be initially conducted and annually thereafter. The applicant should notify the supervisor of the Division's Hobbs district office of the date and time said test is to be conducted in order that it may be witnessed.

IT IS THEREFORE ORDERED THAT:

(1) The application of Manzano Oil Corporation for approval of an unorthodox gas well location 660 feet from the North line and 1650 feet from the East line (Unit B) of Section 14, Township 20 South, Range 35 East, NMPM, for its Neuhaus Federal Well No. 2 which has been drilled to and completed in the Lea-Wolfcamp Pool, Lea County, New Mexico, is hereby approved.

(2) The E/2 of Section 14 shall be dedicated to the subject well forming a standard 320-acre gas spacing and proration unit for said pool.

(3) The unorthodox location is hereby further approved for all prospective pools or formations including, but not limited to the Wolfcamp, spaced on 320 acres.

(4) The Neuhaus Federal Well No. 2 is hereby assigned a production penalty of 66.6 percent. The production penalty shall be applied to the Neuhaus Federal Well No. 2's ability to produce into the pipeline as determined from a deliverability test which shall be conducted within 30 days of this order and annually thereafter. The applicant shall notify the supervisor of the Division's Hobbs district office of the date and time said test is to be conducted in order that it may be witnessed.

(5) Jurisdiction of this cause 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