

**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. 10556 (Reopened)
ORDER NO. R-5353-M-1**

IN THE MATTER OF CASE 10556 BEING REOPENED PURSUANT TO THE PROVISIONS OF DIVISION ORDER NO.R-5353-M, WHICH ORDER RECLASSIFIED THE OLD MILLMAN RANCH-BONE SPRING POOL IN TOWNSHIPS 19 AND 20 SOUTH, RANGE 28 EAST, EDDY COUNTY, NEW MEXICO, AS AN "ASSOCIATED POOL" TO BE GOVERNED BY THE GENERAL RULES AND REGULATIONS FOR THE ASSOCIATED OIL AND GAS POOLS OF NORTHWEST AND SOUTHEAST NEW MEXICO, AS CONTAINED WITHIN DIVISION ORDER NO. R-5353, AS AMENDED, AND WHICH PROMULGATED TEMPORARY SPECIAL POOL RULES AND REGULATIONS THEREFOR.

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on March 2, 1995, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 4th day of April, 1995, 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) By Order No. R-9545 issued in Case No. 10343 on July 1, 1991, the Division created and defined the Old Millman Ranch-Bone Spring Pool. The discovery well for the pool was the Strata Production Company Aguila Federal Well No. 1 located in Unit L of Section 4, Township 20 South, Range 28 East, NMPM, Eddy County, New Mexico.

(3) By Order No. R-9759 issued in Case No. 10556 on November 4, 1992, the Division, upon application of Chi Energy Inc., promulgated Temporary Special Rules and Regulations for the Old Millman Ranch-Bone Spring Pool, including a provision for a gas-oil ratio limitation of 20,000 cubic feet of gas per barrel of oil. Division Order No. R-9759 also required that Case No. 10556 be reopened in February, 1993, in order to allow the operators to appear and present evidence and testimony as to the nature of the reservoir with regards to the proper classification of the pool as either oil or gas.

(4) By Order No. R-5353-M issued in Case No. 10556 (Reopened) on August 31, 1993, the Division, upon application of Chi Energy Inc., reclassified the Old Millman Ranch-Bone Spring Pool as an associated oil and gas pool, reduced the limiting gas-oil ratio to 5,000 cubic feet of gas per barrel of oil, and established 80-acre spacing for oil wells and 160-acre spacing for gas wells.

(5) Pursuant to the provisions of Order No. R-5353-M, this case is being reopened to allow the operators in the subject pool the opportunity to appear and present evidence and testimony to show cause why the Temporary Special Rules and Regulations for the Old Millman Ranch-Bone Spring Pool should not be rescinded and the pool reclassified.

(6) The Old Millman Ranch-Bone Spring Pool currently contains five gas wells and fourteen oil wells operated by three different operators. The Old Millman Ranch-Bone Spring pool currently comprises the following described acreage in Eddy County, New Mexico:

TOWNSHIP 19 SOUTH, RANGE 28 EAST, NMPM

Section 34: S/2

TOWNSHIP 20 SOUTH, RANGE 28 EAST, NMPM

Section 3: All

Section 4: S/2

Section 5: SE/4

Section 8: NE/4

Section 10: N/2

(7) Chi Energy Inc. (Chi) and Oxy USA Inc. (Oxy) appeared at the hearing and presented geologic and engineering evidence and testimony in support of the following recommendations:

- a) that the Old Millman Ranch-Bone Spring Pool remain classified as an associated oil and gas pool;

- b) that oil well spacing be reduced from 80 acres to 40 acres and gas well spacing be reduced from 160 acres to 80 acres;
 - c) that the limiting gas-oil ratio for the pool remain at 5,000 cubic feet of gas per barrel of oil; and,
 - d) that the pool rules be made permanent.
- (8) Geologic evidence presented by Chi and Oxy demonstrates that:
- a) the reservoir is an elongated sand body draped over a southeast trending nose, is of limited extent and is positioned near the updip limit of the First Bone Spring Sand along the northwest edge of the Delaware Basin;
 - b) the trap of the reservoir is formed by a stratigraphic pinchout of effective porosity within the First Bone Spring Sand;
 - c) there are up to nine separate and distinct producing sand intervals within the First Bone Spring Sand. Less than half of these intervals are continuous across the entire field and some are discontinuous between wells only 40 acres apart;
 - d) the First Bone Spring Sand has a net pay with porosity greater than 12 percent ranging from 50 feet to 185 feet in thickness; and,
 - e) the original gas-oil contact within the reservoir was at -2945 feet subsea.
- (9) Chi presented engineering evidence and testimony which indicates that:
- a) the pool is a solution gas drive reservoir with an original initial reservoir pressure of 2345 psi;
 - b) while all five gas wells are located upstructure from the oil wells, based upon available pressure data, there is a reasonable engineering probability that because of very low permeability in the reservoir (0.5 md), the gas wells are having very little effect upon the oil wells;
 - c) while a gas cap may be forming or has formed upstructure of the oil production in the reservoir it is not expanding to the detriment of any oil production;

- d) the results of a previously conducted PVT analysis indicate that the subject Bone Spring reservoir is likely a gas-condensate reservoir.

(10) The evidence currently available indicates that the Old Millman Ranch-Bone Spring Pool is best managed and ultimate recovery maximized by maintaining the current classification of the pool as an associated oil and gas pool.

(11) Chi presented further engineering evidence which indicates that based upon decline curve analysis and volumetric calculations, the drainage area for a typical oil well in the subject pool ranges from 5-14 acres, while the drainage area for a typical gas well in the subject pool ranges from 32-50 acres.

(12) Oxy presented a computer generated reservoir simulation based upon a three dimensional, three phase model on a 50 x 50 grid which utilized reservoir conditions and properties for all wells in the pool and was validated by matching simulated production and bottomhole pressure to historical measurements of production and pressure.

(13) Oxy's reservoir simulation revealed the following:

- a) at existing 80-acre oil and 160-gas spacing and maintaining a 5,000:1 GOR with no additional wells drilled, ultimate recovery from the Old Millman Ranch-Bone Spring Pool will be 3.142 million barrels of oil and 36.950 BCF of gas;
- b) at existing 80-acre oil and 160-gas spacing and maintaining the 5,000:1 GOR, it is likely that an additional five oil wells will be drilled within the subject pool. Under such a scenario, ultimate recovery will be 3.437 million barrels of oil and 39.543 BCF of gas;
- c) by reducing spacing to 40-acre oil and 80-acre gas and maintaining the 5,000:1 GOR, it is likely that seven oil wells and two gas will be drilled within the subject pool. Under this scenario, ultimate recovery will be increased to 3.441 million barrels of oil and 42.763 BCF of gas;
- d) under existing spacing if the GOR is reduced from 5,000:1 to 2000:1, then total recovery from the pool is reduced by an estimated 107 MSTB of barrels of oil equivalent; and,
- e) under the proposed reduced spacing if the GOR also is reduced to 2000:1, then total recovery from the pool is reduced by an estimated 69 MSTB of barrels of oil equivalent.

(14) According to testimony by both Chi and Oxy, the proposed spacing reduction will not alter the interest ownership in any well operated by Chi and Oxy in the subject pool.

(15) Mewbourne Oil Company, the only other operator in the subject pool, submitted a letter to the Division expressing its support of the pool rule amendments proposed by Oxy and Chi.

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

(17) Division policy would normally dictate that in this type of situation, in lieu of reducing the gas spacing to 80 acres, the gas spacing would remain at 160 acres, and an infill gas well provision would be incorporated into the special rules.

(18) The circumstances in this case are such that reducing the gas spacing to 80 acres is advisable for the following reasons:

- a) two of the proposed seven new oil wells are located on acreage currently dedicated to gas wells;
- b) the engineering evidence indicates that the drainage areas for gas wells in this reservoir is substantially less than 160 acres;
- c) no interest owners would be affected, adversely or otherwise, with the proposed spacing reduction; and,
- d) the proposed pool rule amendments will result in the recovery of an additional 3.22 BCF of gas which may otherwise not be recovered.

(19) The evidence presented in this case indicates that the current classification of the Old Millman Ranch-Bone Spring Pool as an associated oil and gas pool and the current gas-oil ratio limitation of 5,000 cubic feet of gas per barrel of oil should be permanently adopted.

(20) The evidence further indicates that the spacing in the Old Millman Ranch-Bone Spring Pool should be reduced to 40 acres for oil wells and 80 acres for gas wells.

(21) Gas wells within the Old Millman Ranch-Bone Spring Pool should be located within 150 feet of the center of either quarter-quarter section or lot.

(22) Approval of Chi Energy Inc's and OXY USA Inc.'s joint request will allow the operators the opportunity to economically recover their share of the oil and gas in the subject pool, will not reduce ultimate recovery from the subject pool, and will not violate correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) The Old Millman Ranch-Bone Spring Pool, located in portions of Townships 19 and 20 South, Range 28 East, NMPM, Eddy County, New Mexico, is hereby permanently classified as an associated oil and gas pool.

(2) The Old Millman Ranch-Bone Spring Pool shall be governed by the General Rules and Regulations for the Associated Oil and Gas Pools of Northwest and Southeast New Mexico, as promulgated by Division Order No. R-5353, as amended, insofar as said General Rules and Regulations are not inconsistent with the Special Rules and Regulations for the subject pool hereinafter set forth or amended, in which event the Special Rules and Regulations shall apply.

(3) The Special Rules and Regulations for the Old Millman Ranch-Bone Spring Pool, previously established by Division Order No. R-5353-M, are hereby amended and made permanent as follows:

**SPECIAL RULES AND REGULATIONS
FOR THE
OLD MILLMAN RANCH-BONE SPRING POOL**

RULE 2. A standard oil proration unit shall consist of 40 acres. A standard gas proration unit shall consist of 80 acres.

RULE 2 (b). Gas wells shall be located within 150 feet of the center of either quarter-quarter section or lot.

RULE 6. The limiting gas-oil ratio shall be 5,000 cubic feet of gas per barrel of oil.

(4) Pursuant to Division Rule No. 505, the depth bracket oil allowable for the Old Millman Ranch-Bone Spring Pool is hereby established at 142 barrels of oil per day.

IT IS FURTHER ORDERED THAT:

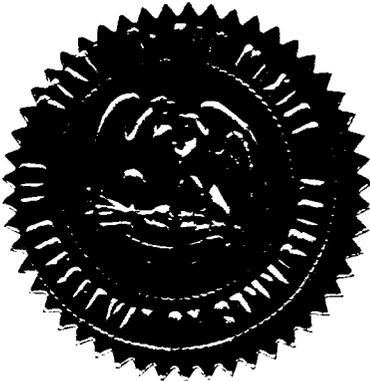
(5) The location of all wells presently drilling to or completed in the Old Millman Ranch-Bone Spring Pool or in the Bone Spring formation within one mile thereof are hereby approved; the operator of any well having an unorthodox location shall notify the Artesia District Office of the Division in writing of the name and location of the well within 30 days from the date of this order.

(6) Pursuant to Paragraph A of Section 70-2-18, N.M.S.A. 1978 Comp., contained in Laws of 1969, Chapter 271, existing oil wells in the Old Millman-Ranch Bone Spring Pool shall have dedicated thereto 40 acres and existing gas wells shall have dedicated thereto 80 acres in accordance with the foregoing pool rules; or, pursuant to Paragraph C of said Section 70-2-18, existing wells may have non-standard spacing or proration units established by the Division and dedicated thereto.

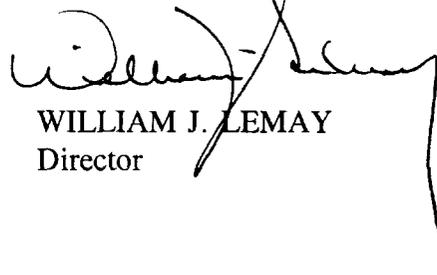
Failure to file new Forms C-102 with the Division dedicating 40 acres to an oil well and 80 acres to a gas well or to obtain a non-standard unit approved by the Division within 60 days from the date of this order shall subject the well to cancellation of allowable until a non-standard spacing unit has been approved and, subject to said 60-day limitation, each well presently drilling to or completed in the Old Millman-Ranch-Bone Spring Pool or in its corresponding vertical limits, or within one mile thereof, shall receive no more than one-fourth of a standard allowable for said pool.

(7) 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

**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. 10556
Order No. R-9759**

**APPLICATION OF CHI ENERGY INC.
FOR SPECIAL POOL RULES, EDDY
COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on September 17, 1992, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 4th day of November, 1992, 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) By Order No. R-9545 issued in Case No. 10343 on July 1, 1991, the Division created and defined the Old Millman Ranch-Bone Spring Pool. The discovery well for the pool was the Strata Production Company Aguila Federal Well No. 1 located in Unit L of Section 4, Township 20 South, Range 28 East, NMPM, Eddy County, New Mexico.

(3) The Old Millman Ranch-Bone Spring Pool currently comprises the SW/4 of Section 4, the SE/4 of Section 5, and the NE/4 of Section 8, all in Township 20 South, Range 28 East, NMPM.

(4) The applicant, Chi Energy, Inc., seeks an order promulgating special rules for the Old Millman Ranch-Bone Spring Pool, including a provision for a limiting gas-oil ratio of 20,000 cubic feet of gas per barrel of oil.

(5) The applicant further seeks the assignment of the proposed gas-oil ratio retroactively to the date of first production from its Winchester Federal Well No. 1 located 1980 feet from the North line and 660 feet from the East line (Unit H) of Section 4, which date, according to Division records, was July 8, 1992.

(6) In addition to the Aquila Federal Well No. 1 and the Winchester Federal Well No. 1 there is one additional well completed in the subject pool, this being the Mewbourne Oil Company Federal "V" Well No. 2 located in Unit B of Section 8.

(7) Applicant's geologic evidence indicates that all three of the wells in the subject pool are completed in and producing from the first Bone Spring Sand. The producing interval in the Winchester Federal Well No. 1, the Aquila Federal Well No. 1 and the Federal "V" Well No. 2 occurs at depths, respectively, of 6146'-6300', 6140'-6250', and 6038'-6131'.

(8) According to further geologic evidence, the Winchester Federal Well No. 1 and the Federal "V" Well No. 2 are completed in areas of the reservoir that are thicker and contain better porosity development.

(9) Since its completion in July, 1992, the Winchester Federal Well No. 1 has exhibited a producing gas-oil ratio ranging from approximately 23,000:1 to 84,000:1.

(10) During portions of 1991 and 1992, the Federal "V" Well No. 2 has also exhibited producing gas-oil ratios ranging from approximately 9,000:1 to 126,000:1. During the same time period, the Aquila Federal Well No. 1 has exhibited producing gas-oil ratios ranging from approximately 9,000:1 to 39,000:1.

(11) Division records indicate that the Aquila Federal Well No. 1 is currently temporarily abandoned.

(12) The applicant presented engineering evidence and testimony, specifically, results of a PVT analysis conducted on the production stream from the Winchester Federal Well No. 1. The results of the PVT analysis indicate that the subject Bone Spring reservoir is likely a gas-condensate reservoir.

(13) The evidence presented further indicates that the assignment of a retroactive gas-oil ratio of 20,000 cubic feet of gas per barrel of oil should have no adverse affect on the reservoir and should not reduce the ultimate recovery of oil or gas from the reservoir.

(14) Mewbourne Oil Company appeared through counsel at the hearing but did not object to the application or present any evidence or testimony.

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

(16) Approval of the subject application will allow the operators the opportunity to economically recover their share of the oil and gas in the subject pool, will not reduce ultimate recovery from the subject pool, and will not violate correlative rights.

(17) The gas-oil ratio established herein should remain in effect for a temporary period until such time as the Division has the opportunity to hear evidence and testimony with regards to the proper classification of the subject pool.

(18) This case should be reopened at an examiner hearing in February, 1993, at which time the operators in the Old Millman Ranch-Bone Spring Pool should be prepared to appear and present evidence and testimony as to the nature of the reservoir with regards to the proper classification of the pool as either oil or gas.

IT IS THEREFORE ORDERED THAT:

(1) Pursuant to the application of Chi Energy Inc, the limiting gas-oil ratio for the Old Millman Ranch-Bone Spring Pool, Eddy County, New Mexico, is hereby established at 20,000 cubic feet of gas per barrel of oil.

(2) The effective date of establishment of such gas-oil ratio shall be retroactive to July 8, 1992.

(3) The gas-oil ratio established herein shall remain in effect for a temporary period until such time as the Division has the opportunity to hear evidence and testimony with regards to the proper classification of the subject pool.

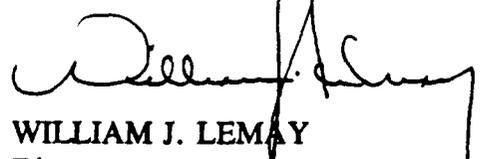
(4) This case shall be reopened at an Examiner hearing in February, 1993, at which time the operators in the Old Millman Ranch-Bone Spring Pool should be prepared to appear and present evidence and testimony as to the nature of the reservoir with regards to the proper classification of the pool as either oil or gas.

(5) Jurisdiction is hereby retained for the entry of such further orders as the Division may deem necessary.

CASE NO. 10556
Order No. R-9759
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DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY
Director

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