



# MARATHON OIL COMPANY

PRODUCTION - UNITED STATES AND CANADA

POST OFFICE BOX 552  
MIDLAND, TEXAS 79701

August 1, 1968

New Mexico Oil Conservation Commission  
P. O. Box 2088  
Santa Fe, New Mexico 87501

ATTENTION MR. D. S. NUTTER

Gentlemen:

Re: Application for Designation of Miller Ranch Unit Area  
Eddy County, New Mexico

Enclosed is one copy of a revised text for the "Geologic Report" (Exhibit B) that was left with you July 25, 1968 in Santa Fe. This new text incorporates additional information requested by the USGS. Please substitute this report for the copy that was left with you. Copies of this text are also being sent to USGS and New Mexico Commissioner of Public Lands.

Yours very truly,

MARATHON OIL COMPANY

BJMcM:elr  
Encl.

By *B. J. McMichael*  
B. J. McMichael

68 AUG 2 1968

EXHIBIT "B"

To Application of Marathon Oil Company  
For  
Designation Of

Miller Ranch Unit Area  
Townships 21 and 22 South, Range 25 East  
Eddy County, New Mexico

GEOLOGIC REPORT

LOCATION AND INTRODUCTION

The proposed unit is located 12 miles west of Carlsbad, New Mexico in Townships 21 and 22 South, Range 25 East. The land surface is dissected with hills and arroyos.

GEOLOGY

The unit area is located on a subsurface structure about 10 miles long, 3 miles wide, and aligned in a north-south direction. Overlying and paralleling this structure is the Upper Pennsylvanian Reef (Cisco-Canyon). This carbonate section, which is the primary objective, is approximately 800' thick. The upper 500' acts as a single reservoir (see Isopach Map, Exhibit B-2 and Cross Section, Exhibit B-3). This is the gas productive horizon at the Indian Basin Field and in the more recent Gulf #1 Springs Unit discovery (Unit G, Section 34, Township 20 South, Range 26 East). The proposed unit is based on closure along this biohermal reef trend as shown by the Upper Penn. Map (Exhibit B-1). The reef facies is generally dolomitized and porous as in the Atlantic #3 Walt Canyon (Unit D, Section 6, Township 22 South, Range 25 East), which had gas to the surface in 12 minutes, too small to measure, and recovered 7125' of salt water. The Logan #1 Rain Spring Unit (Unit J, Section 24, Township 22 South, Range 24 East) also recovered 5300' of salt water from the Upper Pennsylvanian. The recent Getty #1 Wilson Federal (Unit H, Section 13, Township 22 South, Range 24 East) flowed gas at the rate of 55 MCFGPD, recovered 2325' of heavily gas cut mud plus 1540' of sulfur water. This is the highest occurrence of water in the prospect area, between -4077 (T/Reef) and -4116 (B/Test). The fore-reef facies in immediate proximity to the reef is a tight limestone in the Inman #1 Carnero Peak (Unit A, Section 31, Township 22 South, Range 25 East) and the Stanolind #1 Guadalupe Foothills (Unit O, Section 20, Township 22 South, Range 25 East).

The unit outline, as shown on the structure map (Exhibit B-1), is based on a gas reservoir with an estimated gas-water contact at approximately -4075'. The reservoir characteristics should be similar to Indian Basin Field to the west which is being satisfactorily produced on 640 acre spacing. Considering the future possibility of 640-acre spacing under field rules, the unit outline was drawn to include the full sections considered productive. The east one-half of Section 20 was excluded because of its questionable productive possibility. Similarly the nonproductive part of Section 6 was excluded. The contours indicate that a small part of Section 31, Township 21 South, Range 25 East might be productive. Since the productive part within this section is less than one-half of the acreage required for a Pennsylvanian gas test, none of the section was included. (The minimum drilling tract required for a Pennsylvanian gas well is 320 acres as set by New Mexico Oil Conservation Commission rules.) In our opinion, the unit outline represents a reasonable interpretation of an exploratory unit which might be productive. The unit agreement will provide for enlargement upon appropriate authorizations in the event that lands presently outside the proposed unit area prove to be productive.

Although the Morrow sands are productive in the Rock Tank Unit immediately south of the proposed Miller Ranch Unit, Marathon does not propose a Morrow test. The individual sand members have erratic distribution and porosity development; consequently, a commercial producer from the Morrow comes under the category of a very high risk venture. Several factors discourage a Morrow test. First, there is probably separation of the Rock Tank Morrow Field from the Miller Ranch Unit as indicated by the Inman #1 Carnero Peak (Unit A, Section 31, Township 22 South, Range 25 East). Five drillstem tests of the Atoka and Morrow sand section showed gas at rates from 750 MCFCPD to too small to measure. This well was plugged and abandoned. Secondly, the Rock Tank Unit, reportedly, has good structural closure on the pre-Pennsylvanian formations as shown by the Devonian seismic reflection. This closure is a controlling factor on the Morrow production. According to Marathon's present information, it is doubtful that a structure comparable to Rock Tank would be trapping Morrow gas in the proposed unit. Although there is a structural trend associated with the Miller Ranch Unit, the closure as shown by the Upper Pennsylvanian Map (Exhibit B-1) is dependent on carbonate buildup. Third, and finally, there is the disappointing

record of Morrow sand tests in the two wells nearest Marathon's proposed location in Section 18, Township 22 South, Range 25 East. The Logan #1 Rain Springs (Unit J, Section 24, Township 22 South, Range 24 East) indicated impermeable sands on the two drillstem tests of the Morrow. The Stanolind #1 Guadalupe Foothills (Unit O, Section 20, Township 22 South, Range 25 East) produced salt water on completion tests after showing a very minor amount of gas on drillstem tests, 8 MCFGPD. After examination of these factors, it is our opinion that the Morrow sands are not attractive for the Miller Ranch Unit investigation.

Upon approval of this unit, Marathon Oil Company, as unit operator, proposes to drill a well to test the Upper Pennsylvanian carbonate at approximately 8200'. The location is tentatively proposed to be in the NE/4 of Section 18, Township 22 South, Range 25 East. Estimated elevation is 3800'. The top of the Upper Pennsylvanian is expected between 7750' and 7800'. Our prognosis of formations to be encountered is as follows:

B/Capitan-T/Delaware Mountain	1600' (+2200')
T/Bone Spring Ls.	3600' (+ 150')
T/Basal Leonard Ss.	7350' (-3550')
T/Wolfcamp	7500' (-3700')
T/Upper Penn (Cisco-Canyon) "Reef"	7750' (-3950') to 7800' (-4000')
Upper Penn probable gas-water contact	7877' (-4077')
Proposed total depth	8200' (-4400')

The proposed total depth is 323' below the probable water in the objective formation. This depth will be sufficient to thoroughly and adequately test the Upper Pennsylvanian (Cisco-Canyon) Reef.

Respectfully submitted,  
MARATHON OIL COMPANY

By N. E. Webernick  
N. E. Webernick  
Dist. Exploration Mgr.

Attachments:

Exhibit B-1, Upper Penn Structure Map  
Exhibit B-2, Isopach of Net Carbonate  
Indian Basin Reef Interval  
Exhibit B-3, Cross Section A-A'



# MARATHON OIL COMPANY

PRODUCTION - UNITED STATES AND CANADA

HOUSTON DIVISION

WILLIAM H. HOLLOWAY  
ATTORNEY

SOUTHERN NATIONAL BANK BUILDING  
P. O. BOX 3128  
HOUSTON, TEXAS 77001

September 16, 1968

*Case 3884*

The Oil Conservation Commission  
State of New Mexico  
P. O. Box 2088  
Santa Fe, New Mexico 87501

ATTN: Mr. George M. Hatch

Gentlemen:

Enclosed herewith, in triplicate, is the application of Marathon Oil Company for approval of the Miller Ranch Unit, embracing lands in Eddy County, New Mexico. You will also find enclosed three (3) copies of the proposed Unit Agreement. Marathon requests that this matter be set down for the Examiner's hearing on October 9, 1968.

Yours very truly,

*William H. Holloway*  
WILLIAM H. HOLLOWAY

WHH:pb

Encl.

DOCKET MAILED

Date 9-26-68



# MARATHON OIL COMPANY

PRODUCTION - UNITED STATES AND CANADA

HOUSTON DIVISION

WARREN B. LEACH, JR.  
DIVISION ATTORNEY

WILLIAM H. HOLLOWAY  
JACK M. MC ADAMS  
J. ROBERT TAYLOR  
ATTORNEYS

September 16, 1968

SOUTHERN NATIONAL BANK BUILDING  
P. O. BOX 3128  
HOUSTON, TEXAS 77001  
TEL. 713 CA 2-9721

*Case 3884*

The Oil Conservation Commission  
State of New Mexico  
P. O. Box 2088  
Santa Fe, New Mexico 87501

Re: Unit Agreement for Miller Ranch Unit Area,  
Embracing 5,276.27 Acres, More or Less,  
Situated in Townships 21 and 22 South,  
Range 25 East, N.M.P.M., Eddy County, New  
Mexico

Gentlemen:

Marathon Oil Company hereby makes application for approval of the Unit Agreement for the development and operation of the Miller Ranch Unit Area embracing 5,276.27 acres, more or less, in Eddy County, New Mexico, and more fully described as follows:

T-21-S, R-25-E, NMPM  
Section 32: All

T-22-S, R-25-E, NMPM  
Section 5: All  
Section 6: S/2; NE/4  
Section 7: All  
Section 8: All  
Section 17: All  
Section 18: All  
Section 19: All  
Section 20: W/2

In support of this application, Marathon respectfully shows:

(1) That there is filed herewith in triplicate the proposed Unit Agreement for the development and operation of the Miller Ranch Unit Area, which is in substantially the same form as has heretofore been approved by the Commission, the Commissioner of Public Lands and the United States Geological Survey in instances in which fee, State and Federal lands

were involved.

(2) That by letter dated August 23, 1968 the Miller Ranch Unit Area as above described was designated as a "logical Unit Area" by the United States Geological Survey. The proposed Unit Area includes 4,476.27 acres, more or less, of Federal land; 640.00 acres, more or less, of State land and 160.00 acres of fee or privately owned lands.

(3) That all owners of interests within the Unit Area have been offered the opportunity to join in the Unit Agreement.

(4) That the Unit Agreement has been approved by all except one (1) of the working interest owners holding interests within the proposed Unit Area. The one exception is the owner of a 25% undivided interest in a 280-acre tract comprised of the NW/4; N/2 SW/4; SE/4 SW/4 of Section 20, T-22-S, R-25-E, NMPM. Negotiations with said owner are still being conducted. It is expected that by the date which will be set for a hearing on this application, the Unit Agreement will have been executed by all, or substantially all, of the owners of working interests, overriding royalty interests and other interests in the land included within the Unit Area.

(5) That applicant, Marathon Oil Company, is designated as Unit Operator in said Unit Agreement and all oil and gas in any and all formations are unitized under the terms of the Agreement.

(6) That preliminary approval of the Unit Agreement was given by the United States Geological Survey on August 23, 1968.

(7) That a copy of the Unit Agreement has heretofore been submitted to the Land Commissioner of the State of New Mexico.

(8) That in the opinion of applicant, the proposed Unit Area covers all or substantially all of the geological structure or anomaly involved; and in the event said Unit Agreement is approved and production of unitized substances is obtained, it is believed that said Unit Agreement will

The Oil Conservation Commission

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be in the interest of conservation and the prevention of waste, and that it will protect the correlative rights of all parties concerned.

(9) A list of all interested parties known to applicant is attached hereto.

Marathon Oil Company respectfully requests that this application be set for hearing before a duly appointed Examiner of the Commission at the earliest possible date, that notice be given as required by law and the regulations, and that the Miller Ranch Unit Area and the Unit Agreement be approved.

Respectfully submitted,

MARATHON OIL COMPANY

By William H. Holloway  
William H. Holloway

P. O. Box 3128  
Houston, Texas 77001



LIST OF INTERESTED PARTIES

MILLER RANCH UNIT AREA - EDDY COUNTY, NEW MEXICO

Commissioner of Public Lands  
State of New Mexico  
P. O. Box 791  
Santa Fe, New Mexico

Mr. John Anderson  
Regional Oil and Gas Supervisor  
United States Geological Survey  
Roswell, New Mexico 88201

Atlantic Richfield Company  
P. O. Box 1978  
Roswell, New Mexico 88201

Cities Service Oil Company  
P. O. Box 4906  
Midland, Texas 79701

Gulf Oil Corporation  
P. O. Box 1938  
Roswell, New Mexico 88201

Jake L. Hamon  
P. O. Box 663  
Dallas, Texas 75200

Curtis R. Inman  
P. O. Box 737  
Midland, Texas 79701

James E. Logan  
503 Midland National Bank Bldg.  
Midland, Texas 79701

Richard T. Lyons  
1602 First City National Bank Bldg.  
Houston, Texas 77002

Northern Natural Gas Producing Co.  
c/o Mobil Oil Company  
P. O. Box 820  
Roswell, New Mexico 88201

J. Hiram Moore  
Suite 314, Gulf Building  
Midland, Texas 79701

Phillips Petroleum Company  
P. O. Box 791  
Midland, Texas 79701

Sinclair Oil & Gas Company  
P. O. Box 1470  
Midland, Texas 79701

Tenneco, Inc.  
P. O. Box 1031  
Midland, Texas 79701

Union Oil Company of California  
300 Security National Building  
Roswell, New Mexico 88201

Barney R. Greathouse  
P. O. Box 4247  
Midland, Texas 79701

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P. O. Box 1368  
Kansas City, Kansas 66110

Joseph P. Burt  
P. O. Box 12666  
Fort Worth, Texas 76101

John H. Anderson et ux., Marian E. Anderson  
P. O. Box 268  
Santa Barbara, California 93102

G. Dee Williamson et ux., Lanita C. Williamson  
P. O. Box 2206  
Roswell, New Mexico 88201

Mary Louise Tuttle  
P. O. Box 2218  
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Mason, Texas

Adrian Berryhill et ux., Gladdus Berryhill

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Grants, New Mexico

Lillian Hinkle Coll, Individually & Trustee

P. O. Box 1818

Roswell, New Mexico 88201

Dick Morrison et ux., Grace Morrison

c/o Crawford Hotel

920 North Canal

Carlsbad, New Mexico

Jack White et ux., Frankie White

White City, New Mexico