

**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. 11152
ORDER NO. R-10307**

**APPLICATION OF TEXACO EXPLORATION
& PRODUCTION INC. AND MARATHON OIL
COMPANY FOR A PRESSURE MAINTENANCE
PROJECT, UNORTHODOX INJECTION WELL
LOCATIONS, AND QUALIFICATION FOR THE
RECOVERED OIL TAX CREDIT PURSUANT TO
THE NEW MEXICO OIL RECOVERY ACT, LEA
COUNTY, NEW MEXICO**

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on December 1, 1994, and January 5, 1995, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 3rd day of February, 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) The applicants, Texaco Exploration & Production, Inc. (Texaco), and Marathon Oil Company (Marathon), seek authority to institute a cooperative pressure maintenance project in the Vacuum-Drinkard Pool underlying the following described area in Lea County, New Mexico, by the injection of water into the Drinkard formation through two existing wells and six wells to be drilled at unorthodox locations, all as shown on Exhibit "A" attached hereto:

**TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
Section 36: SE/4 SW/4, S/2 SE/4**

TOWNSHIP 17 SOUTH, RANGE 35 EAST, NMPM
Section 31: Lot 4, SE/4 SW/4

TOWNSHIP 18 SOUTH, RANGE 34 EAST, NMPM
Section 1: Lots 1, 2, 3, SE/4 NW/4, S/2 NE/4, N/2 SE/4, and SE/4 SE/4

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
Section 6: Lots 1 through 7, SE/4 NW/4, SW/4 NE/4, E/2 SW/4, and W/2 SE/4

- (3) The applicants further seek approval of the proposed pressure maintenance project as a qualified "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).
- (4) In addition to Texaco and Marathon, Shell Western E & P Inc. (Shell), appeared at the hearing and requested that it be included in the cooperative pressure maintenance project inasmuch as it operates acreage within the proposed project area.
- (5) There are nine separate state leases within the proposed project area. The leases are owned and operated as follows:

TEXACO OPERATED LEASES

<u>LEASE NAME</u>	<u>DESCRIPTION</u>
N.M. "O" State Lease:	Section 36: SE/4 SW/4, S/2 SE/4
N.M. "M" State Lease:	Section 1: Lot 3, SE/4 NW/4
N.M. "L" State Lease:	Section 1: Lots 1 and 2, S/2 NE/4
N.M. "R" State NCT-3:	Section 1: N/2 SE/4, SE/4 SE/4
N.M. "R" State NCT-1:	Section 6: Lots 1 and 2, SW/4 NE/4
N.M. "AB" State Lease:	Section 6: W/2 SE/4

MARATHON OPERATED LEASES

<u>LEASE NAME</u>	<u>DESCRIPTION</u>
Warn State AC/2 Lease:	Section 6: Lots 3 through 7, SE/4 NW/4, E/2 SW/4

SHELL OPERATED LEASES

<u>LEASE NAME</u>	<u>DESCRIPTION</u>
State "D" Lease:	Section 31: Lot 4
State "E" Lease:	Section 31: SE/4 SW/4

(6) Currently, there are approximately twenty-seven producing wells within the project area. Of the twenty-seven wells, seventeen are operated by Texaco, eight are operated by Marathon, and two are operated by Shell.

(7) The proposed pressure maintenance project encompasses approximately 35 percent of the area within the Vacuum-Drinkard Pool. In addition, there are nine producing wells outside the boundaries of the proposed project area but within the boundaries of the Vacuum-Drinkard Pool.

(8) According to applicants' evidence and testimony, the proposed pressure maintenance project will be operated as a cooperative venture only with respect to drilling and operating the injection wells. Production and revenue will be maintained on a lease/operator basis.

(9) The plan of operation for the cooperative pressure maintenance project includes proposals that:

- a) Texaco will operate those seven of the eight proposed injection wells which are located on its leases. Marathon will operate the one proposed injection well which is located on its lease;
- b) each operator will operate all producing wells on their respective leases;
- c) the project be assigned an oil allowable of 5,049 barrels of oil per day (27 developed 40-acre tracts X 187 BOPD allowable). Each operator will be assigned an oil allowable equal to 187 BOPD times the number of 40-acre tracts it operates within the project area. In addition, each operator will be allowed to produce its allowable from any of its wells in any proportion.

(10) According to applicants' evidence and testimony, they propose this size and type of cooperative pressure maintenance project for the following reasons:

- a) initiation of voluntary or compulsory unitization proceedings may delay the onset of pressure maintenance operations for some period of time. According to applicants' engineering evidence, each six month delay in initiating pressure maintenance operations will result in a loss of 5 percent of incremental reserves, or approximately 75,000 barrels of oil;
- b) ARCO Permian, Mobil Producing Texas & New Mexico, Inc., and Phillips Petroleum Company, being the operators of the remaining wells in the Vacuum-Drinkard Pool located outside the project area, were excluded from participation due to applicants' desire to expedite pressure maintenance operations. Applicants testified that these operators' wells will receive some benefit from pressure maintenance operations even though they are excluded from participation. In addition, none of these operators appeared at the hearing in opposition to the application.

(11) Marathon presented engineering evidence and testimony which indicates that:

- a) the Vacuum-Drinkard Pool is a solution gas drive reservoir. Bubble point pressure within the reservoir, as measured in 1992, was approximately 2,350 psi. Current reservoir pressure is approximately 1950 psi.
- b) cumulative recovery from the Vacuum-Drinkard Pool is 1.2 million barrels of oil;
- c) current production from the twenty-seven producing wells within the proposed project area is 2,500 barrels of oil per day. Approximately seven of the twenty-five producing wells are capable of producing at or near top allowable for the Vacuum-Drinkard Pool.

(12) Marathon has conducted a reservoir simulation study to determine the effect of initiating pressure maintenance operations within the proposed project area. The results of this simulation, presented as evidence in this case, indicate that initiation of the proposed pressure maintenance project at the current time should result in the recovery of an additional 2.5 million barrels of oil from the project area which would otherwise not be recovered by primary depletion, thereby preventing waste.

(13) The total project cost is estimated by the applicants to be approximately \$2.8 million dollars.

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

(15) The applicants have consulted with the Commissioner of Public Lands for the State of New Mexico, and, according to testimony, the Commissioner has no objection to the proposed pressure maintenance project.

(16) The evidence presented indicates that approval of the proposed pressure maintenance project should result in the recovery of an additional 2.5 million barrels of oil from the project area which would otherwise not be recovered, thereby preventing waste, and will not violate correlative rights.

(17) The applicants submitted data on the proposed injection wells, water wells in the area, and all other wells (including plugged wells) which penetrate the zone of interest within 1/2-mile of each of the proposed injection wells. This data shows that wells in the area are cased and plugged so as to protect fresh water and prevent fluid migration from the injection zone, and includes testimony indicating no evidence of open faults or any other hydrologic connection between the injection zone and the fresh water resources in the area.

(18) The operators should take all steps to ensure that the injected water enters only the proposed injection interval and is not permitted to escape into other formations or onto the surface from injection, production or plugged and abandoned wells.

(19) Injection into each of the wells shown on Exhibit "A" should be accomplished through 2 3/8-inch cement-lined tubing installed in a packer set at approximately 100 feet above the uppermost injection perforations; the casing-tubing annulus in each well should be filled with an inert fluid; and a pressure gauge or approved leak-detection device should be attached to the annulus in order to determine leaks in the casing, tubing or packer.

(20) The injection wells or pressurization system for each well should be so equipped as to limit injection pressure at the wellhead to no more than 1500 psi. The Division Director should have the authority to approve an injection pressure in excess of the above upon a demonstration by the operators that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(21) Prior to commencing injection operations, the casing in each of the wells shown on Exhibit "A" should be pressure tested throughout the interval, from the surface down to the proposed packer-setting depth, to assure integrity of such casing.

(22) The operator should give advance notice to the supervisor of the Hobbs District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure-tests in order that the same may be witnessed.

(23) The project should be designated the Vacuum-Drinkard Cooperative Pressure Maintenance Project. In addition, the project should be governed by the provisions of Rules 701 through 708 of the Division Rules and Regulations.

(24) For the purpose of assigning allowable and reporting production, the Vacuum Drinkard Cooperative Pressure Maintenance Project should comprise four separate "Areas" as follows:

VDCPMP AREA 1 (TEXACO OPERATED)
TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPPM
Section 36: SE/4 SW/4, S/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 34 EAST, NMPPM
Section 1: Lots 1, 2, 3, SE/4 NW/4, S/2 NE/4, N/2
SE/4, and SE/4 SE/4

VDCPMP AREA 2 (TEXACO OPERATED)
TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPPM
Section 6: Lots 1 and 2, SW/4 NE/4, W/2 SE/4

VDCPMP AREA 3 (MARATHON OPERATED)
TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPPM
Section 6: Lots 3 through 7, SE/4 NW/4, E/2 SW/4

VDCPMP AREA 4 (SHELL OPERATED)
TOWNSHIP 17 SOUTH, RANGE 35 EAST, NMPPM
Section 31: Lot 4, SE/4 SW/4

(25) The VDCPMP Areas should be assigned allowables as follows:

Area 1: 2,244 BOPD	Area 2: 935 BOPD
Area 3: 1,496 BOPD	Area 4: 374 BOPD

(26) The applicants further request that the subject pressure maintenance project be approved by the Division as a qualified "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).

(27) The evidence presented indicates that the subject pressure maintenance project meets all the criteria for approval.

(28) The approved "project area" should initially comprise the entire project area as described in Finding No. (2) above.

(29) To be eligible for the EOR credit, prior to commencing injection operations, the operators must request from the Division a Certificate of Qualification, which certificate will specify the proposed project area as described above.

(30) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the applicants must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations, and identifying the specific wells which the operator believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to The Department of Taxation and Revenue those lands and wells which are eligible for the credit.

(31) The injection authority granted herein for the proposed injection wells should terminate one year after the effective date of this order if the operators have not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

(32) Prior to commencing the drilling or recompletion of any injection wells within the Vacuum Drinkard Cooperative Pressure Maintenance Project, the operator should be required to submit an Injection Lease-Line Agreement executed by those parties whose acreage is located adjacent to the proposed injection well(s).

IT IS THEREFORE ORDERED THAT:

(1) The applicants, Texaco Exploration & Production, Inc. (Texaco), Marathon Oil Company (Marathon) and Shell Western E & P Inc., (Shell), are hereby authorized to institute a cooperative pressure maintenance project in the Vacuum-Drinkard Pool underlying the following described "Areas" in Lea County, New Mexico, by the injection of water into the Drinkard formation through two existing wells and six wells to be drilled at unorthodox locations, all as shown on Exhibit "A" attached hereto:

VDCPMP AREA 1 (TEXACO OPERATED)
TOWNSHIP 17 SOUTH, RANGE 34 EAST, NMPM
Section 36: SE/4 SW/4, S/2 SE/4

TOWNSHIP 18 SOUTH, RANGE 34 EAST, NMPM
Section 1: Lots 1, 2, 3, SE/4 NW/4, S/2 NE/4, N/2
SE/4, and SE/4 SE/4

VDCPMP AREA 2 (TEXACO OPERATED)
TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
Section 6: Lots 1 and 2, SW/4 NE/4, W/2 SE/4

VDCPMP AREA 3 (MARATHON OPERATED)
TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM
Section 6: Lots 3 through 7, SE/4 NW/4, E/2 SW/4

VDCPMP AREA 4 (SHELL OPERATED)
TOWNSHIP 17 SOUTH, RANGE 35 EAST, NMPM
Section 31: Lot 4, SE/4 SW/4

(2) Texaco is hereby authorized to operate those seven of the eight proposed injection wells located on its leases. Marathon is hereby authorized to operate the remaining injection well located on its lease.

(3) Each of the "Areas" within the Vacuum Drinkard Cooperative Pressure Maintenance Project shall be operated separately and production reported separately by the operators described above.

(4) The Vacuum Drinkard Cooperative Pressure Maintenance Project is hereby assigned an oil allowable of 5,049 barrels of oil per day, said allowable to be distributed and assigned as follows:

Area 1: 2,244 BOPD	Area 2: 935 BOPD
Area 3: 1,496 BOPD	Area 4: 374 BOPD

(5) The allowable assigned to each respective "area" may be produced by any of the wells within the "area" in any proportion.

(6) The operators shall take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(7) Injection shall be accomplished through 2 3/8 inch cement-lined tubing installed in a packer set approximately within 100 feet of the uppermost injection perforation; the casing-tubing annulus in each well shall be filled with an inert fluid and equipped with an approved pressure gauge or attention-attracting leak detection device.

(8) The injection wells or pressurization system shall be equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 1500 psi.

(9) The Division Director shall have the authority to administratively authorize a pressure limitation in excess of the above upon a showing by the operators that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(10) Prior to commencing injection operations, the casing in each injection well shall be pressure-tested throughout the interval from the surface down to the proposed packer setting depth, to assure the integrity of such casing.

(11) The operators shall give advance notification to the supervisor of the Hobbs District Office of the Division of the date and time of the installation of injection equipment and of the mechanical integrity pressure tests in order that the same may be witnessed.

(12) The operators shall immediately notify the supervisor of the Hobbs District Office of the Division of the failure of the tubing, casing or packer in any of the injection wells, the leakage of water or oil from or around any producing well, or the leakage of water or oil from any plugged and abandoned well within the project area, and shall take such steps as may be timely and necessary to correct such failure or leakage.

(13) The subject pressure maintenance project is hereby designated the Vacuum Drinkard Cooperative Pressure Maintenance Project, and the operators shall conduct injection operations in accordance with Division Rule Nos. 701 through 708 and shall submit monthly progress reports in accordance with Division Rule Nos. 706 and 1115.

(14) The subject pressure maintenance project is hereby approved as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).

(15) The approved "project area" shall initially comprise the entire proposed project area as described in Finding No. (2) above.

(16) To be eligible for the EOR credit, prior to commencing injection operations, the operators must request from the Division a Certificate of Qualification, which certificate will specify the proposed project area as described above.

(17) At such time as a positive production response occurs and within five years from the date of the Certificate of Qualification, the operators must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations, and identifying the specific wells which the operators believes are eligible for the credit. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to The Department of Taxation and Revenue those lands and wells which are eligible for the credit.

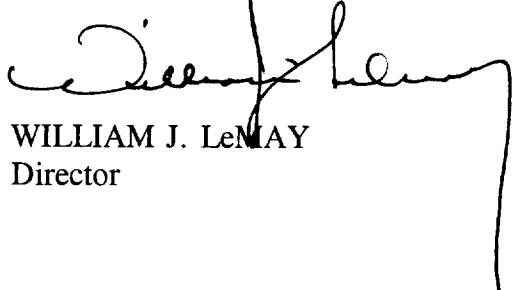
(18) The injection authority granted herein for the proposed injection wells shall terminate one year after the effective date of this order if the operators have not commenced injection operations into the subject wells, provided however, the Division, upon written request by the operator, may grant an extension thereof for good cause shown.

(19) Prior to commencing the drilling or recompletion of any injection wells within the Vacuum Drinkard Cooperative Pressure Maintenance Project, the operators shall submit an Injection Lease-Line Agreement executed by those parties whose acreage is located adjacent to the proposed injection well(s).

(20) Jurisdiction of this cause is 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

S E A L

EXHIBIT "A"
DIVISION ORDER NO. R-10307
CASE NO. 11152
VACUUM DRINKARD COOPERATIVE PM PROJECT
APPROVED INJECTION WELLS

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