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. 9678
Order No. R-3668-A

APPLICATION OF PHILLIPS PETROLEUM COMPANY TO AMEND DIVISION ORDER NO. R-3668 BY AUTHORIZING A CARBON DIOXIDE PILOT PROJECT, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on May 24, 1989, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this _____ day of June, 1989, 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-3668, dated January 24, 1969, the Division authorized the applicant, Phillips Petroleum Company, to institute a waterflood project on its Philmex Lease, comprising all or portions of Sections 26, 27, 28, 34 and 35, Township 17 South, Range 33 East, NMPM, Lea County, New Mexico, by the injection of water into the Grayburg and San Andres formations, Maljamar Grayburg-San Andres Pool, through its Philmex Well No. 5 located in Unit N of said Section 27.

(3) The applicant, Phillips Petroleum Company, seeks to amend said Order No. R-3668 to authorize the injection of carbon dioxide into said previously approved Maljamar Philmex Waterflood Project through its Philmex Well No. 38 to be drilled at an unorthodox location 1440 feet from the

South line and 1340 feet from the West line (Unit K) of Section 26, Township 17 South, Range 33 East, NMPM, Lea County, New Mexico.

(4) The applicant further seeks authority to drill two observation wells at unorthodox locations in said Section 26 as follows: Philmex Well No. 39 to be drilled 1552 feet from the South line and 1261 feet from the West line (Unit L) and Philmex Well No. 40 to be drilled 1702 feet from the South line and 1156 feet from the West line (Unit L).

(5) The applicant proposes to initially inject carbon dioxide only into certain sand members of the Grayburg formation from a depth of approximately 4150 feet to 4500 feet.

(6) Except for the area surrounding the Philmex Well No. 5, the original water injection well in the project, the Philmex Lease, which comprises approximately 1680 acres, has not been subject to secondary recovery operations.

(7) The proposed carbon dioxide pilot project is of an experimental nature to determine the effectiveness of carbon dioxide injection in an area not previously subject to waterflooding, and is further designed to gather sufficient reservoir data to determine the feasibility of a full scale carbon dioxide injection project on the subject lease and on six of the applicant's offsetting leases which comprise some 8600 acres.

(8) Testimony by the applicant further indicates that reservoir conditions within the Maljamar Grayburg-San Andres Pool in this area are especially conducive at the present time to carbon dioxide injection.

(9) The proposed pilot project will occur well within the boundaries of the applicant's Philmex Lease, and as such, will not impair correlative rights.

(10) The producing wells within the Philmex Lease are currently marginally productive, with average production approximately 10 barrels of oil per day.

(11) Approval of the proposed pilot project and unorthodox well locations will allow the applicant to determine the effectiveness of carbon dioxide injection as well as the feasibility of full scale carbon dioxide injection, which, if successful, may ultimately result in the recovery of a substantial amount of otherwise unrecoverable oil, thereby preventing waste.

(12) The applicant further requested the establishment of an administrative procedure whereby the subject pilot

project may be expanded by placing additional wells on production and/or injection.

(13) In order for the Division to properly assess the effectiveness of the subject pilot project and potential for waste, said pilot project should be expanded only after notice and hearing.

(14) The injection should be accomplished through 2 3/8 inch plastic-lined tubing installed in a packer set at approximately 4050 feet; the casing-tubing annulus 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 leakage in the casing, tubing, or packer.

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

(16) The injection well or system should be equipped with a pressure-limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 1700 psi, provided, however, that the applicant should be required to conduct a step-rate injection test prior to injection in order to accurately determine the fracture pressure of the Grayburg formation.

(17) The Director of the Division should be authorized to administratively approve an increase in the injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected waters from the Grayburg and San Andres formations.

(18) The operator should notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of injection equipment, of the initial step-rate injection test, and of the mechanical integrity pressure-test in order that the same may be witnessed.

(19) The operator should take all steps necessary to ensure that the injected carbon dioxide enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

(20) Inasmuch as the proposed application has no direct bearing on Division Order No. R-3668, said order should not be amended at this time and therefore all provisions contained in said order should remain in full force and effect.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Phillips Petroleum Company, is hereby authorized to initiate and conduct a pilot carbon dioxide injection project in its previously approved Maljamar Philmex Waterflood Project, by the injection of carbon dioxide into the Grayburg formation, Maljamar Grayburg-San Andres Pool, through its Philmex Well No. 38 to be drilled at an unorthodox location 1440 feet from the South line and 1340 feet from the West line (Unit K) of Section 26, Township 17 South, Range 33 East, NMPM, Lea County, New Mexico.

(2) The applicant is further authorized to drill two observation wells at unorthodox locations in said Section 26 as follows: Philmex Well No. 39 to be drilled 1552 feet from the South line and 1261 feet from the West line (Unit L) and Philmex Well No. 40 to be drilled 1702 feet from the South line and 1156 feet from the West line (Unit L).

(3) The tubing in the Philmex Well No. 38 shall be internally plastic-lined; the casing-tubing annulus shall be filled with an inert fluid; and a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak-detection device in order to determine leakage in the casing, tubing, and/or packer.

(4) Prior to commencing injection operations, the casing in the subject well shall be pressure-tested to assure the integrity of such casing in a manner that is satisfactory to the supervisor of the Division's district office at Hobbs.

(5) The injection well or system shall be equipped with a pressure-limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 1700 psi, provided that prior to injection, the applicant shall conduct a step-rate injection test to accurately determine the fracture pressure of the Grayburg formation.

(6) The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected carbon dioxide from the Grayburg formation.

(7) The operator shall notify the supervisor of the Hobbs district office of the Division of the date and time of the installation of disposal equipment, of the initial step rate injection test, and of the mechanical integrity pressure test in order that the same may be witnessed.

(8) The operator shall immediately notify the supervisor of the Division's Hobbs district office of the failure of the tubing, casing, or packer, in said well or

the leakage of carbon dioxide from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(9) The subject project shall be known as the Maljamar Philmex Pilot CO2 Injection Project, and the initial project area shall consist of the SW/4 of said Section 26.

(10) The pilot project area may be expanded by placing additional wells on production and/or carbon dioxide injection only after notice and hearing.

(11) The subject pilot project shall be governed by the provisions of Rules 701 through 708 of the Division Rules and Regulations, and, the operator shall submit monthly reports to the Division in accordance with Rules 706 and 1115.

(12) 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

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