

**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. 12320
ORDER NO. R-7766-B**

**APPLICATION OF CHEVRON U.S.A. PRODUCTION COMPANY FOR
WATERFLOOD EXPANSION AND AUTHORIZATION TO INJECT, LEA
COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on March 2, 2000 at Santa Fe, New Mexico, before Examiner Mark W. Ashley.

NOW, on this 29th day of March, 2000, the Division Director, having considered the testimony, the record and the recommendations of the Examiner,

FINDS THAT:

(1) Due public notice has been given and the Division has jurisdiction of this case and its subject matter.

(2) The applicant, Chevron U.S.A. Production Company ("Chevron"), is the operator of the Eunice Monument South Unit Waterflood Project ("EMSU"), Lea County, New Mexico. The EMSU was originally defined and authorized by Division Order No. R-7766, issued in Case No. 8398 and dated December 27, 1984, which was amended by Division Order No. R-7766-A, issued in Case No. 10060 and dated October 19, 1990.

(3) Chevron seeks authority to expand the EMSU by converting the following five existing producing wells to injection wells to improve recovery efficiency of the waterflood patterns and enhance production:

<u>WELL NUMBER</u> <u>API NUMBER</u>	<u>WELL LOCATION</u>	<u>INJECTION</u> <u>INTERVAL</u>	<u>UNIT</u> <u>TOP</u>	<u>PACKER</u> <u>DEPTH</u>
EMSU No. 210 30-025-04469	3261' FNL & 1980' FWL Unit K-Sec.4-T21S-R36E	3650'-3807'	3613'	3617'

EMSU No. 212 30-025-04504	3258' FNL & 660' FEL Unit I-Sec.5-T21S R36E	3661'-3890'	3646'	3615'
EMSU No. 222 30-025-04531	3300' FSL & 1000' FEL Unit O-Sec.6-T21S-R36E	3754'-4010'	3673'	3700'
EMSU No. 252 30-025-04528	660' FSL & 1980' FEL Unit W-Sec.6-T21S-R36E	3758'-3977'	3688'	3711'
EMSU No. 258 30-025-21251	940' FSL & 940' FWL Unit U-Sec.4-0-T21S-R36E.	3659'-3817'	3633'	3637'

(4) Pursuant to Division Order No. R-7766, the unitized interval of the EMSU includes "the formations which extend from an upper limit of 100 feet below mean sea level or at the top of the Grayburg formation, whichever is higher, to a lower limit being the base of the San Andres formation," all within the Eunice Monument Grayburg-San Andres Pool, Lea County, New Mexico.

(5) Chevron proposes to inject through the subject wells into the Penrose, Grayburg and San Andres formations in the gross interval from approximately 3,400 feet to 4,500 feet.

(6) Chevron further proposes to inject into the subject wells through 2 3/8-inch internally plastic or cement lined tubing set in a packer located no higher than 100 feet above the upper most perforation at a rate of approximately 750 barrels of water per day.

(7) Chevron requests that the subject wells be allowed to inject at a maximum surface injection pressure of 750 psi, which is within the 0.2 pounds per foot of depth from the surface to the top-most injection perforation as authorized previously by Division Order No. R-7766, as amended.

(8) Chevron submitted data on the proposed injection wells and on all water wells and water bearing formations and all other wells that penetrate the proposed injection interval within the 1/2-mile "area of review" of each of the proposed injection wells.

(9) The evidence indicates that there are no plugged and abandoned wells within 1/2 mile of any of the proposed injection wells.

(10) Doyle Hartman Oil Operator ("Hartman"), operator of the State "A" Com Well No. 4 (API No. 30-025-04567), located 660 feet from the North line and 660 from the East line (Unit A) of Section 8, Township 21 South, Range 36 East, NMPM, and the State "A" Com Well No. 5 (API No. 30-025-31117), located 1650 feet from the South line and 845 from the East line (Unit Q) of Section 5, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico, appeared at the hearing, through legal counsel, in opposition to Chevron's application. Both wells currently produce from the Eumont Yates-Seven Rivers-Queen Prorated Gas Pool.

(11) Hartman stated that he is not opposed to additional injection wells being added to the EMSU provided Chevron can demonstrate that its proposed injection wells can be installed and operated in accordance with industry-accepted injection practices and standards.

(12) Chevron presented evidence showing that it operates the Eunice Monument South Unit Waterflood Project in accordance with industry-accepted injection practices and standards and that:

(a) all necessary steps, including but not limited to injection profiles, will be taken to ensure that the injection fluid enters only the proposed injection interval and to prevent fluid from exiting the unitized interval into other formations or onto the surface from injection, production or plugged and abandoned wells;

(b) each of the proposed injection wells has been properly cemented with adequate volumes of API sulfate-resistant cement and the wells will be monitored to ensure that, if there is a problem with the cement in any of these wells, action can be promptly undertaken to correct the problem; and

(c) the wellhead injection pressures for the proposed injection wells will be at or below the pressures authorized by the Oil Conservation Division and constantly monitored to ensure that the injection pressure is kept below the reservoir fracture pressure and will not result in the migration of fluids from the injection formation.

(13) Hartman testified that the State "A" Com Well No. 4 and the State "A" Com Well No. 5 were originally non-productive of water, but are now producing water as a result of injection water migrating out of zone.

(14) Chevron testified that the water production in the State "A" Com Well No. 4 and the State "A" Com Well No. 5 is a result of fracture stimulation jobs performed by Hartman on both wells and not a result of injection water migrating out of zone due to improperly completed and operated wells in the EMSU.

(15) Chevron presented additional evidence and testimony indicating that injection pressures in the offset injectors have not exceeded fracture gradient pressure since they were converted to injection.

(16) Chevron further testified that it would be unlikely for any injected water to migrate out of zone in the offset injectors because the cumulative production from the offset injectors is greater than their cumulative injection, resulting in a voidage in the reservoir.

(17) Hartman did not present any further evidence to indicate that the fracture stimulation jobs on the State "A" Com Well No. 4 and the State "A" Com Well No. 5 were not the cause of water production or that injection operations in the EMSU were the cause of water production within the State "A" Com Well No. 4 and the State "A" Com Well No. 5.

(18) Chevron has demonstrated that the proposed injection wells will be installed and operated in accordance with the Division's requirements for conversions to injection and therefore should not adversely affect wells located within the "area of review."

(19) The unitized interval in the proposed waterflood expansion area is in an advanced state of depletion and the area is suitable for waterflooding.

(20) The application of Chevron for expansion of the EMSU by the conversion of five additional wells to injection should be approved.

(21) The proposed waterflood expansion should result in the recovery of otherwise unrecoverable oil and will not cause waste or impair correlative rights.

(22) The operator should take all steps necessary to ensure that the injected fluid enters only the unitized interval and is not permitted to escape to other formations or onto the surface from injection, production or plugged and abandoned wells.

(23) Injection into the proposed injection wells should be accomplished through 2 3/8-inch plastic-lined tubing set in a packer located within 100 feet of the uppermost

injection perforations or casing shoe.

(24) The casing-tubing annulus in each well should be loaded with an inert fluid and equipped with a pressure gauge at the surface or left open to the atmosphere to facilitate detection of leakage in the casing, tubing or packer.

(25) Before injection operations begin in each well, the casing should be pressure tested from the surface to the packer setting depth to ensure the integrity of the casing.

(26) Each injection well or system should be equipped with a pressure limiting device that will limit the wellhead injection pressure on each well to no more than .2 psi per foot of depth to the uppermost injection perforation.

(27) The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected fluid from the unitized interval. Such proper showing shall consist of a valid step-rate test run in accordance with and acceptable to the Division.

(28) The operator shall notify 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 tests so that the same may be inspected and witnessed.

(29) The operator shall immediately notify the supervisor of the Hobbs district office of the Division of the failure of the tubing, casing or packer in any well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(30) The subject wells should be governed by all provisions of Division Order No. R-7766, as amended, and Rules 701 through 708 of the Division rules.

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

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Chevron U.S.A. Production Company, is hereby authorized to expand its Eunice Monument South Unit Waterflood Project ("EMSU") as defined and authorized by Division Order No. R-7766, as amended, by converting the following wells to injection to improve recovery efficiency of the waterflood patterns and enhance

production of the EMSU:

<u>WELL NUMBER</u> <u>API NUMBER</u>	<u>WELL LOCATION</u>	<u>INJECTION</u> <u>INTERVAL</u>	<u>UNIT</u> <u>TOP</u>	<u>PACKER</u> <u>DEPTH</u>
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EMSU No. 258 30-025-21251	940' FSL & 940' FWL Unit U-Sec.4-0-T21S-R36E.	3659'-3817'	3633'	3637'

(2) Pursuant to Division Order No. R-7766, the unitized interval of the EMSU includes "the formations which extend from an upper limit of 100 feet below mean sea level or at the top of the Grayburg formation, which ever is higher, to a lower limit being the base of the San Andres formation," all within the Eunice Monument Grayburg-San Andres Pool, Lea County, New Mexico.

(3) Injection shall be limited to the Penrose, Grayburg and San Andres formations through the gross interval from approximately 3,400 feet to 4,500 feet.

(4) The operator shall take all steps necessary to ensure that the injected fluid enters only the unitized interval and to prevent fluid from exiting the unitized interval into other formations or onto the surface from injection, production or plugged and abandoned wells.

(5) Injection into each of the five injection wells shall be accomplished through 2 3/8-inch plastic lined tubing set in a packer located within 100 feet of the uppermost injection perforations or casing shoe.

(6) The casing-tubing annulus in each well shall be loaded with an inert fluid and equipped with a pressure gauge at the surface or left open to the atmosphere to facilitate

detection of leakage in the casing, tubing or packer.

(7) Before injection operations begin in each of the five wells, the casing shall be pressure tested from the surface to the packer setting depth to ensure the integrity of the casing.

(8) Each injection well or the system shall be equipped with a pressure limiting device that will limit the wellhead injection pressure on each well to no more than .2 psi per foot of depth to the uppermost injection perforation.

(9) The Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected fluid from the unitized interval. Such proper showing shall consist of a valid step-rate test run in accordance with and acceptable to the Division.

(10) The operator shall notify 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 tests so that the same may be inspected and witnessed.

(11) The operator shall immediately notify the supervisor of the Hobbs district office of the Division of the failure of the tubing, casing or packer in any well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(12) Chevron shall conduct injection operations in accordance with Division Order No. R-7766, as amended and Division Rules 701 through 708 and shall submit monthly progress reports in accordance with Division Rules 706 and 1115.

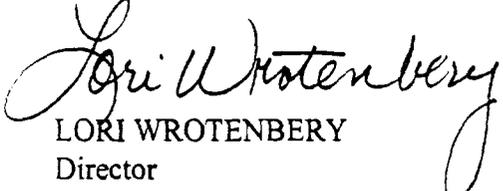
(13) The injection authority granted herein on each well shall terminate one year after the effective date of this order if the operator has not commenced injection operations into the wells, provided however the Division, upon written request by the operator, may grant an extension thereof for good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

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

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DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


LORI WROTENBERY
Director