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. 14964
ORDER NO. R-10020-B

APPLICATION OF CONOCOPHILLIPS COMPANY FOR RE-AUTHORIZATION OF THE VACUUM GLORIETA EAST UNIT WATERFLOOD PROJECT AND TO QUALIFY SAID PROJECT FOR THE RECOVERED OIL TAX RATE PURSUANT TO THE NEW MEXICO ENHANCED OIL RECOVERY ACT, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on March 7, 2013, at Santa Fe, New Mexico, before Examiners David K. Brooks and Richard I. Ezeanyim.

NOW, on this 10th day of June, 2013, the Division Director, having considered the testimony, the record and the recommendations of the Examiners,

FINDS THAT:

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

(2) By this application, ConocoPhillips Company ("Applicant") seeks retroactive approval of an existing waterflood project in the Glorieta and Paddock formations [Vacuum-Glorieta Pool (Pool Code 62160)] within Unit Area described below, in Lea County, New Mexico:

Township 17 South, Range 35 East, NMPM
Section 26: N/2 of NW/4, SW/4 of NW/4, NW/4 of SW/4
Section 27: All
Section 28: E/2, E/2 and SW/4 of NW/4, SW/4
Section 29: S/2 of N/2, S/2
Section 30: E/2, E2 of W/2
Section 31: E/2, E2 of W/2

Section 32: All
Section 33: N/2, N/2 of S/2, SW/4 of SW/4
Section 34: N/2 & SW/4 of NW/4, NW/4 of SW/4

Township 18 South, Range 35 East, NMPM
Section 5: Lots 1-4 (N/2 of N/2), SW/4 of NW/4

(3) A voluntary unit comprising the above-described Unit Area was approved by Order No. R-10017, issued in Case No. 10845 on November 16, 1993, and designated the Vacuum Glorieta East Unit (hereinafter called "the Unit"). A waterflood project within the Unit was approved by Order No. R-10020, issued in Case No. 10846 on November 23, 1993. Additional injection wells in the Unit were authorized by Administrative Orders Nos. WFX-856, WFX-865, WFX 884 and SWD-937. However, injection was not commenced into any of the permitted wells until September, 2005. This application was filed because of concern that injection authority had lapsed due to the lengthy time interval from initial authorization until commencement of injection.

(4) Applicant has seven wells presently injecting in the Unit, for which Applicant seeks permitting retroactive to date of first injection, as follows:

Well Name & No.	**API No.**	**UL-S-T-R**	**Footages**	**Perforated Interval**
Vacuum Glorieta East Unit Tract 2 Well No. 21	30-025-37851	A-32-17S-35E	1200 FNL 525 FEL	5926-6101
Vacuum Glorieta East Unit Tract 2 Well No. 22	30-025-37852	G-32-17S-35E	1765 FNL 1585 FEL	5919-6017
Vacuum Glorieta East Unit Tract 5 Well No. 3	30-025-20829	O-29-17S-35E	460FSL 1980 FEL	5985-6122
Vacuum Glorieta East Unit Tract 17 Well No. 2	30-025-20864	I-31-17S-35E	2080 FSL 660 FEL	6033-6251
Vacuum Glorieta East Unit Tract 25 Well No. 2	30-025-20886	C-32-17S-35E	760 FNL 1980 FWL	5961-6140
Vacuum Glorieta East Unit Tract 37 Well No. 3	30-025-20290	G-31-17S-35E	2310 FNL 1980 FEL	5941-6095
Vacuum Glorieta East Unit Tract 38 Well No. 3	30-025-32368	N-29-17S-35E	1130 FSL 1405 FEL	5958-6077

(5) In addition to seeking re-authorization for the seven existing injectors, Applicant seeks approval of four proposed new injection wells for the Unit, as follows:

Well Name & No.	API No.	UL-S-T-R	Footages	Perforated Interval
Vacuum Glorieta East Unit Tract 19 Well No. 33	30-025-40739	M-32-17S-35E	968 FSL 733 FWL	5980-6220
Vacuum Glorieta East Unit Tract 19 Well No. 34	30-025-40738	K-32-17S-35E	2150 FSL 2233 FWL	5970-6170
Vacuum Glorieta East Unit Tract 25 Well No. 32	30-025-40737	E-32-17S-35E	1695 FNL 723 FWL	5934-6161
Vacuum Glorieta East Unit Tract 37 Well No. 31	30-025-40736	A-31-17S-35E	969 FNL 153 FEL	5928-6148

(6) In addition to seeking approval for the above-described injection wells, Applicant seeks:

(a) authority to set tubing in packers "within the Unitized Formation, and as close as practical to the highest perforation," in lieu of the customary requirement that such packers be set "within 100 feet of the highest perforation";

(b) provision for authorization of additional injection wells in the Unit by administrative order, without the necessity of a hearing; and

(c) certification of the Vacuum Glorieta East Waterflood Project pursuant to Enhanced Oil Recovery Act, NMSA 1978 Sections 7-29A-1 through 7-29A-5, as amended.

(7) At the hearing, Applicant presented land and engineering testimony and exhibits to the effect that:

(a) The Unit Area described in Finding Paragraph (2) above is all State of New Mexico mineral land and has been voluntarily unitized by agreement of all owners of interests in the oil and gas in and under said lands. The Unit Agreement was approved by the Division in Order No. R-10017.

(b) The Unitized Interval, as defined in the Unit Agreement, corresponds to the Glorieta and Paddock formations, at the depth range from 5838 to 6235 feet below the surface.

(c) There are currently 68 producing wells in the Unit Area, and 11 injection wells. The 11 injection wells include the seven wells described in Finding Paragraph (4) above, which were authorized for injection by previous orders, and four wells, described in Finding Paragraph (5) above, which were recently drilled for the purpose of injection, but are currently awaiting approval.

(d) The wells authorized for injection by prior orders, other than the seven wells described in Finding Paragraph (4), have either been converted to production or plugged and abandoned.

(e) Current production from the Unit Area is approximately 980 barrels of oil per day and 250 mcf of gas per day.

(f) This reservoir is a solution gas drive reservoir with some assistance from water influx from the south and east. There is no naturally occurring water drive in the western part of the Unit Area where the waterflood project will be focused.

(g) Original bottomhole pressure in this reservoir was approximately 2200 psi. Current pressure is approximately 1300 psi, with bubble pressure point being approximately 1331 psi. Average porosity is approximately 10%, and average permeability is approximately four miledarcies.

(h) In the western part of the Unit Area, current bottomhole pressures are extremely low, in the vicinity of 100 to 300 psi. Thus there is a need for waterflooding to increase pressures in these wells.

(i) Based on positive response to waterflooding in the adjacent Vacuum Glorieta West Unit, operated by Chevron, Applicant projects an additional 7.85 million barrels of oil can be recovered from the Unit Area by waterflooding.

(j) The proposed four new injectors are in the lowest pressured area and are considered critical to the viability of this project.

(k) No fluid movement is expected out of the Unit Area. All of the present and proposed injectors are ringed by producing wells, and there are no lease-line injectors.

(l) The Ogallala fresh water formation is present in the area above 300 feet below the surface. However, all of the wells in the area are adequately cased to prevent communication with any fresh water formation. Casing in the injection wells is set into the salt section.

(m) Upward movement of water from the injection formation to fresh water is precluded by more than 5,000 feet of intervening strata, including a 1500-foot thick salt section. All available geologic information has been scrutinized, and there is no evidence of any fault or fracture that could allow upward movement of fluids out of the injection formation.

(n) The wells in the one-half mile Area of Review ("AOR") surrounding each of the existing and proposed injectors are adequately cased and

cemented to prevent any of these wells serving as a conduit for movement of fluids out of the injection formation. No remedial work is needed on any of these wells.

(o) Certain AOR wells of concern were identified on Exhibit B to Order No. R-10020 ("the Exhibit B wells"). The concerns as to three of those wells were subsequently resolved, as acknowledged by the Division in a letter dated December 9, 1993.

(p) The top of cement in the NM AB State Well No. 4 (one of the Exhibit B wells) has been re-calculated to be 5909 feet below the surface, above the permitted injection interval in any of the existing or proposed injectors.

(q) The remaining Exhibit B wells have been properly plugged.

(r) Capital costs of the waterflood project incurred to date amount to approximately $10.8 million. Total project costs over projected 20-year project life are estimated at $81.4 million.

(s) Additional production due to enhanced recovery is conservatively estimated at 6.7 million barrels of oil, which at $80 per barrel, would produce additional revenues of $536 million.

(8) Concho Resources, Inc. and COG Operating LLC appeared at the hearing through counsel but did not present evidence and did not oppose the application.

The Division concludes that:

(9) The proposed waterflood project within the Unit is feasible and will, in reasonable probability, result in production of additional hydrocarbons that would not otherwise be produced.

(10) The operator should squeeze all perforations not utilized in the waterflood operations in the seven existing wells that were converted to injection wells.

(11) The operator should run a cement bond log (CBL) or temperature survey (TS) on the following wells to determine the actual top of cement in these wells:

Vacuum Glorieta East Unit (VEGU) Well No. 005-03W (API No. 30-025-20829)
Vacuum Glorieta East Unit (VEGU) Well No. 017-02W (API No. 30-025-20864)
Vacuum Glorieta East Unit (VEGU) Well No. 025-02W (API No. 30-025-20886)
Vacuum Glorieta East Unit (VEGU) Well No. 037-03W (API No. 30-025-20290)

The operator should report the results of the CBL and TS to the Engineering Bureau in the Santa Fe Office of the Oil Conservation Division.

(12) There are a total of 182 wells in the area of review (AOR) surrounding the 11 injection wells. Of these wells, 20 are plugged and abandoned, and two are temporarily abandoned, while 160 are active.

(13) All of the wells located in the one-half mile area of review ("AOR") surrounding each of the existing and proposed injection wells appear to be adequately cased, cemented, and/or plugged, so that none of them will become a conduit for the escape of injected fluid from the permitted injection formation. Accordingly no remedial work on wells in the AOR need be required.

(14) Applicant should be authorized to inject fluids at a surface injection pressure not to exceed 1184 psi; provided that Applicant may apply to the Division for a higher injection pressure upon satisfactorily demonstrating that an increase in injection pressure will not result in fracturing of the injection formation or confining strata.

(15) The proposed waterflood project will prevent waste, and will not impair correlative rights, contaminate any underground source of drinking water, or harm public health or the environment.

(16) Accordingly, the proposed project should be approved, and named the Vacuum East Glorieta Waterflood Project.

(17) Because there is sufficient formation thickness in the Glorieta within the Unit above the existing and proposed injection formation, setting of injection tubing in packers more than 100 feet above the highest perforation, so long as such packers are set within the Unitized Formation, and as close as practical to the highest perforation, will not cause migration of the injected fluids out of the injection zone, and should be authorized where necessary.

(18) The Division Director should be authorized to permit additional injection wells within the Unit by administrative order, without the necessity for a hearing, in the absence of objection.

(19) The evidence establishes that the Vacuum East Glorieta Waterflood Project meets all the criteria for certification by the Division as a qualified "Enhanced Oil Recovery (EOR) Project" pursuant to the Enhanced Oil Recovery Act. The certified project area should consist of the entire Vacuum East Glorieta Unit Area, subject to contraction as herein below provided.

IT IS THEREFORE ORDERED THAT:

(1) Pursuant to the application of ConocoPhillips Company (OGRID 217817) the Vacuum East Glorieta Waterflood Project is hereby re-authorized. The project area shall consist of the lands described in Finding Paragraph (2) of this order, and the Unitized Formation shall consist of the Glorieta and Paddock formations, as more specifically defined in the Vacuum East Glorieta Unit Agreement, approved by Order No. R-10017, within the project area.

(2) ConocoPhillips Company (OGRID 217817) is designated operator of the project. The term "Operator" in this Order shall include ConocoPhillips Company or any successor operator.

(3) Operator is authorized to inject produced water into the Unitized Formation through the wells described in Finding Paragraphs (4) and (5) of this order, within the perforated interval identified for each well in said paragraphs. For the wells identified in Finding Paragraph (4), the authority hereby granted shall apply retroactively to the date of first injection into each such well.

(4) The operator shall squeeze all perforations not utilized in the waterflood operations in the seven existing wells that were converted to injection wells as described in Finding Paragraph (4).

(5) The operator shall run a cement bond log (CBL) or temperature survey (TS) on the following wells to determine the actual top of cement in these wells:

Vacuum Glorieta East Unit (VEGU) Well No. 005-03W (API No. 30-025-20829)
Vacuum Glorieta East Unit (VEGU) Well No. 017-02W (API No. 30-025-20864)
Vacuum Glorieta East Unit (VEGU) Well No. 025-02W (API No. 30-025-20886)
Vacuum Glorieta East Unit (VEGU) Well No. 037-03W (API No. 30-025-20290)

The operator shall report the results of the CBL and TS to the Engineering Bureau in the Santa Fe Office of the Oil Conservation Division.

(6) Operator shall take all steps necessary to ensure that the injected fluid enters only the 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 plastic-lined steel tubing installed in a packer set in the casing below the top of the Injection Formation and within 100 feet of, or as close as practical to, the uppermost injection perforations. The casing-tubing annulus shall be filled with an inert fluid, and a gauge or approved leak-detection device shall be attached to the annulus in order to detect leakage in the casing, tubing or packer.

(8) If the Operator finds it necessary to set the injection packer in any well farther than 100 feet uphole from the uppermost injection perforation, the Operator shall file Form C-103 with the Division's Hobbs District Office setting forth the packer setting depth and explaining the reasons why it is not practical to set the packer within 100 feet of the uppermost perforation. No packer shall be set outside the unitized interval.

(9) Each of the new injection wells described in Finding Paragraph (5) shall pass a mechanical integrity test prior to initial commencement of injection. Each injection well in the project shall pass a mechanical integrity test at least every five years, and prior to resumption of injection each time the injection packer is unseated. All testing procedures and schedules shall conform to the requirements of Division Rule

19.15.26.11.A NMAC. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths.

(10) Each injection well shall be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to no more than 1184 psi.

(11) The Division Director shall have the authority to administratively authorize an increase in injection pressure for any injection well upon a showing by Operator that such higher pressure will not result in fracturing of the injection formation or confining strata.

(12) For each injection well, Operator shall give at least 72 hours advance notice to the supervisor of the Division's Hobbs District Office of the date and time (i) injection equipment will be installed, and (ii) the mechanical integrity pressure tests will be conducted, so these operations may be witnessed.

(13) Operator shall provide written notice of the date of commencement of injection into each well to the Division's Hobbs District Office.

(14) Operator shall immediately notify the supervisor of the Division's Hobbs District Office of the failure of the tubing, casing or packer in any of the injection wells, or the leakage of water, oil, gas or other fluid from or around any producing or abandoned well within one-half mile of any injection well, and shall take all steps as may be timely and necessary to correct such failure or leakage.

(15) The project shall be governed by applicable provisions of Division Rules 19.15.26.8 through 26.15 NMAC. Operator shall submit monthly reports of the injection operations on Division Form C-115, in accordance with Division Rules 19.15.26.13 and 19.15.7.28 NMAC.

(16) In accordance with Division Rule 19.15.26.12.C NMAC, the injection authority granted herein shall terminate, if after injection commences, any continuous period of one year elapses during which no reported injection occurs into any permitted injection well in the project; provided, however, the Division, upon written request by Operator filed prior to the expiration of the one-year period of non-injection, may grant an extension for good cause.

(17) Operator shall provide written notice to the Division upon permanent cessation of injection into the Project.

(18) This order does not relieve Operator of responsibility should its operations cause any actual damage or threat of damage to protectable fresh water, human health or the environment; nor does it relieve Operator of responsibility for complying with applicable Division rules or other state, federal or local laws or regulations.

(19) Upon failure of the operator to conduct operations (1) in such manner as will protect fresh water or (2) in a manner consistent with the requirements in this order, the Division may, after notice and hearing, (or without notice and hearing in event of an emergency, subject to the provisions of NMSA 1978 Section 70-2-23), terminate the injection authority granted herein.

(20) Order No. R-10020, and Administrative Orders WFX-856, WFX-865, WFX-884 and SWD-937, are hereby rescinded insofar as they purport to authorize injection into any well in the Unit other than the injection wells specifically authorized herein.

(21) The Vacuum Glorieta East Waterflood Project is hereby certified to the New Mexico Taxation and Revenue Department as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act."

(22) The area to be affected by the enhanced oil recovery project shall consist of the area within the Vacuum Glorieta East Unit; provided, the area and/or the producing wells eligible for the enhanced oil recovery (EOR) tax rate may be contracted or expanded based upon the evidence presented by the Operator in its demonstration of a positive production response.

(23) At such time as a positive production response occurs, and within five years from the date the project was certified to the New Mexico Taxation and Revenue Department, the Operator must apply to the Division for certification of a "positive production response." This application for "positive production response" shall identify the area benefiting from enhanced oil recovery operations and the specific wells eligible for the EOR tax rate.

(24) The Division may review the application administratively or set it for hearing. Based upon the evidence presented, the Division will certify to the New Mexico Taxation and Revenue Department those wells that are eligible for the EOR tax rate.

(25) The injection authority granted under this order is not transferable except upon Division approval. The Division may require the Operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

(26) Jurisdiction of this case 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

JAMI BAILEY
Director

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