dp
1117

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. 11924
ORDER NO. R-11058-A

APPLICATION OF SHAHARA OIL, L.L.C. FOR APPROVAL OF A WATERFLOOD/TERTIARY RECOVERY PROJECT, TO QUALIFY SAID PROJECT FOR THE RECOVERED OIL TAX RATE PURSUANT TO THE "NEW MEXICO OIL RECOVERY ACT," AND FOR TWO UNORTHODOX OIL WELL LOCATIONS, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on February 19, 1998, at Santa Fe, New Mexico, before Examiner Michael E. Stogner.

NOW, on this 23rd day of November, 1998 the Division Director, having considered 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) At the time of the hearing, Division Case Nos. 11923 and 11924 were consolidated for the purpose of testimony.

(3) By Division Order No. R-11058, issued in Case No. 11923, the Shahara State Unit Agreement was approved for an area comprising 320 acres, more or less, of State lands underlying the W/2 of Section 16, Township 17 South, Range 33 East, NMPM, Lea County, New Mexico (the "Unit Area"). The "Unitized Formation" for this unit is the Maljamar-Grayburg San Andres Pool that extends from an approximate depth of 4,100 feet to approximately 5,500 feet.

(4) The applicant in this matter, Shahara Oil, L.L.C. ("Shahara"), seeks the following:

(a) authority to institute a waterflood/tertiary recovery project within its Shahara State Unit by the injection of water and micro-organisms into the Maljamar Grayburg-San Andres Pool through the eight wells described in the attached Exhibit "A";

(b) approval for the drilling of two producing wells within the Unit Area at unorthodox oil well locations; and

(c) to qualify this waterflood/tertiary recovery project in the Unit Area (this same area also referred to as the "EOR Project Area") for the recovered oil tax rate pursuant to the New Mexico "Enhanced Oil Recovery Act" (Sections 7-29A-1 through 7-29A-5, NMSA 1978).

(5) Shahara, as the operator of the Shahara State Unit, intends to recover additional oil by the injection of water with micro-organisms into the Maljamar-Grayburg-San Andres Pool within the Unit Area. Shahara proposes to convert seven currently producing oil wells to injection wells; to continue utilizing its Shahara State Well No. 2 (**API No. 30-025-01429**), formerly the Phillips State Well No. 2, located 660 feet from the North line and 660 feet from the West line (Unit D) of Section 16, as an injection well (originally approved as a water injection well by Division Order No. R-3155, issued in Case No. 3486 and dated November 28, 1966); and to drill 12 new producing wells, the following two of which will be at unorthodox oil well locations:

(a) the Phillips State Well No. 100 (**API No. 30-025-34220**) to be drilled 1330 feet from the North line and 140 feet from the West line (Unit E) of Section 16; and

(b) the Phillips State Well No. 101 (**API No. 30-025-34219**) to be drilled 2630 feet from the North line and 140 feet from the West line (Unit E) of Section 16.

(6) The Phillips State Wells No. 100 and 101 are to be drilled along the western edge of the EOR Project Area under a cooperative unit line agreement with Wiser Oil Company, unit operator of the Caprock Maljamar Unit/Waterflood Project (See Division Orders No. R-10093 and R-10094).

(7) Current Maljamar-Grayburg San Andres oil production from the EOR Project Area is considered to be in an advanced state of depletion and should therefore be properly

classified as "stripper production."

(8) Shahara seeks to institute tertiary recovery operations within the proposed EOR Project Area by injecting micro-organisms along with water as the carrier fluid to: (i) remove scale, which should result in better sweep efficiency; and (ii) serve as a surfactant, which should reduce residual oil saturation. As proposed by Shahara, the initial 250,000 barrels of water to be injected into the EOR project will contain 1,500 gallons of these micro-organisms (150 parts per million by volume or six gallons per thousand barrels of water). Thereafter normal waterflood operations are to commence.

(9) Testimony presented by Shahara indicates that, as of February 1998, cumulative production from the west half of Section 16 has been 700,000 barrels of oil with an estimated additional 844,000 barrels of oil to be recovered under the proposed waterflood/tertiary recovery project.

(10) The estimated cost to institute this waterflood/tertiary recovery project is $6,257,000.00.

(11) The proposed waterflood/tertiary recovery project should result in the recovery of otherwise unrecoverable oil thereby preventing waste, exhibits sound engineering practices, is in the best interest of conservation, and will not impair correlative rights.

(12) The applicant submitted data on the seven producing wells proposed to be converted to injection wells, the existing injection well, water wells in the area, and all other wells (including plugged wells) that penetrate the zone of interest within the ½-mile "area-of-review" of the eight proposed Shahara State Unit injection wells (See Exhibit "A"). 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.

(13) The operator should take all steps necessary 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.

(14) Injection into each of the eight wells described in Exhibit "A" should be accomplished through 2-3/8 inch internally plastic-lined tubing installed in a packer set no higher than 100 feet above the top of the uppermost perforation; 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 in each well.

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

(16) The injection wells or pressurization system for each well should be initially equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure at the wellhead to no more than 820 psi.

(17) The Division Director 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 Maljamar-Grayburg San Andres Pool.

(18) The operator should give advance notification to the supervisor of the Division's Hobbs District Office of the date and time of the installation of any new injection equipment and of the mechanical integrity pressure tests in order that the same may be witnessed.

(19) This application should be approved and the project should be governed by the provisions of Division Rules 701 through 708.

(20) The approved EOR Project Area should be designated the "*Shahara State Unit Waterflood/Tertiary Recovery Project*" and is to comprise the 320 acres described in Finding Paragraph No. (3).

(21) Further evidence presented by Shahara indicated that the proposed EOR Project Area meets all the criteria for certification by the Division as a qualified "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Sections 7-29A-1 through 7-29A-5, NMSA 1978).

(22) Prior to commencing injection operations, the operator requested from the Division a Certificate of Qualification that specifies the proposed EOR Project Area described above.

(23) At such time as a positive production response occurs from the injection of water and micro-organisms and within five years from the date of the Certificate of Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced

recovery operations. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Taxation and Revenue Department those lands eligible for the reduced tax rate.

(24) The injection authority granted herein for the eight injection wells described in Exhibit "A" should terminate one year after the effective date of this order if the operator has 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.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Shahara Oil, L.L.C. ("Shahara"), is hereby authorized to institute a waterflood/tertiary recovery project on its Shahara State Unit by the injection of water and micro-organisms into the unitized interval that is the Maljamar-Grayburg San Andres Pool through the eight existing wells described in the attached Exhibit "A".

(2) The subject waterflood/tertiary recovery project area ("EOR Project Area"), herein designated the "*Shahara State Unit Waterflood/Tertiary Recovery Project,*" shall coincide with the boundary established for the Shahara State Unit Area in Lea County, New Mexico, described below, approved by Division Order No. R-11058, issued in Case 11923, which was consolidated and heard with this case:

TOWNSHIP 17 SOUTH, RANGE 33 EAST, NMPM
Section 16: W/2.

(3) Shahara, as operator of the Shahara State Unit, shall take all steps necessary to ensure that the injected water enters only and remains confined to the unitized interval authorized by this order and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(4) Injection into each of the eight injection wells (See Exhibit "A") shall be accomplished through 2-3/8 inch internally plastic-lined tubing installed in a packer set within approximately 100 feet of the uppermost injection perforation; the casing-tubing annulus in each well 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 pressure leak detection device in order to determine leakage in the casing, tubing, or packer in each well.

(5) The eight injection wells herein authorized and/or the injection pressurization system shall be equipped with a pressure-limiting switch or other acceptable device that will

limit the surface injection pressure at the wellhead to no more than 820 psi.

(6) Prior to commencing injection operations, the casing in each of the eight injection wells described in Exhibit "A" shall be pressure-tested throughout the interval from the surface down to the proposed packer setting depth to ensure the integrity of such casing in a manner that is satisfactory to the supervisor of the Division's Hobbs District Office.

(7) The 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 EOR Project Area injection wells; the leakage of water, natural gas, or oil from or around any producing well within the EOR Project Area; or the leakage of water, natural gas, or oil from any plugged and abandoned well within the EOR Project Area. The operator shall take such steps as may be necessary to correct such failure or leakage.

(8) The Division Director shall have the authority to administratively authorize an increase in the injection pressure limitation placed upon any well upon a proper showing by the operator that such higher pressure will not result in the migration of the injected water from its respective interval or fracture the confining strata.

(9) The operator of the Shahara State Unit Waterflood/Tertiary Recovery Project shall conduct injection operations in accordance with all applicable Division rules, regulations, and policies, including Division Rules 701 through 708. Further, the Unit operator shall submit monthly progress reports in accordance with Rules 706 and 1115.

IT IS FURTHER ORDERED THAT:

(10) The subject waterflood/tertiary recovery project is hereby certified as a qualified "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Sections 7-29A-1 through 7-29A5, NMSA 1978) as of June 23, 1998.

(11) The approved EOR Project Area is hereby designated the "*Shahara State Unit Waterflood/Tertiary Recovery Project*" and comprises the 320 acres described above in Finding Paragraph (3).

(12) The Division will issue a Certificate of Qualification, effective June 23, 1998, which will specify the proposed EPR Project Area described above.

(13) At such time as a positive production response occurs from the injection of water and micro-organisms and within five years from the date of the Certificate of

Qualification, the applicant must apply to the Division for certification of positive production response, which application shall identify the area actually benefitting from enhanced recovery operations. The Division may review the application administratively or set it for hearing. Based upon evidence presented, the Division will certify to the Taxation and Revenue Department those lands eligible for the reduced tax rate.

(14) The injection authority granted herein for the eight injection wells described in Exhibit "A" shall terminate one year after the effective date of this order if the operator has 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.

IT IS FURTHER ORDERED THAT:

(15) The following two producing wells, to be drilled at unorthodox oil well locations along the west edge of the EOR Project Area under a cooperative unit line agreement with Wiser Oil Company, are hereby approved:

(a) the Phillips State Well No. 100 **(API No. 30-025-34220)** to be drilled 1330 feet from the North line and 140 feet from the West line (Unit E) of Section 16; and

(b) the Phillips State Well No. 101 **(API No. 30-025-34219)** to be drilled 2630 feet from the North line and 140 feet from the West line (Unit E) of Section 16.

(16) This order shall supersede that portion of Division Order No. R-3155, issued in Case No. 3486 dated November 28, 1966, authorizing injection into the Shahara State Well No. 2 **(API No. 30-025-01429)**, formerly the Phillips State Well No. 2, located 660 feet from the North line and 660 feet from the West line (Unit D) of Section 16.

(17) Jurisdiction of this case is hereby 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

LORI WROTENBERY
Director

SEAL

Exhibit "A"
Case No. 11924
Order No. R-11058-A

Shahara Oil, L.L.C.
Proposed Injection Wells
Shahara State Unit Waterflood/Tertiary Recovery Project Area
Section 16, Township 17 South, Range 33 East, NMPM, Maljamar-Grayburg San Andres Pool, Lea County, New Mexico.

Well Name and Number (Former Well Name and No.)	API Number	Footage Location	Unit	Injection Interval	Type of Well
Shahara State Unit Well No. 1 Phillips State Well No. 1	30-025-01428	1980' FNL & 660' FWL	E	4240' - 4396'	Conversion
Shahara State Unit Well No. 2 Phillips State Well No. 2	30-025-01429	660' FN & WL	D	4271' - 4412'	Active Injector
Shahara State Unit Well No. 3 Phillips State Well No. 3	30-025-01430	1980' FN & WL	F	4250' - 4411'	Conversion
Shahara State Unit Well No. 4 Phillips State Well No. 4	30-025-01431	660' FNL & 1980' FWL	C	4270' - 4428'	Conversion
Shahara State Unit Well No. 5 Phillips State Well No. 5	30-025-01432	1980' FSL & 660' FWL	L	4178' - 4380'	Conversion
Shahara State Unit Well No. 6 Phillips State Well No. 6	30-025-01433	1960' FSL & 1650' FWL	K	4278' - 4430'	Conversion
Shahara State Unit Well No. 7 Phillips State Well No. 7	30-025-01434	660' FSL - 1980' FWL	N	4304' - 4457'	Conversion
Shahara State Unit Well No. 8 Phillips State Well No. 8	30-025-01438	660' FS & WL	M	4120' - 4430'	Conversion