

STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION



BRUCE KING  
GOVERNOR

ANITA LOCKWOOD  
CABINET SECRETARY

POST OFFICE BOX 3088  
STATE LAND OFFICE BUILDING  
SANTA FE, NEW MEXICO 87504  
(505) 827-5800

April 27, 1994

OXY USA, Inc.  
P.O. Box 50250  
Midland, TX 79710

Attention: Scott E. Gengler

**RE: *Injection Pressure Increase Skelly Penrose "B"  
Unit, Lea County, New Mexico***

Dear Mr. Gengler:

Reference is made to your request dated April 5, 1994 to increase the surface injection pressure on seven wells in the Skelly Penrose "B" Unit. This request is based on step rate tests conducted between February 14 and 18, 1994. The results of the tests have been reviewed by my staff and we feel an increase in injection pressure on these wells is justified at this time.

You are therefore authorized to increase the surface injection pressure on the following wells:

<b>Well and Location</b>	<b>Maximum Injection Surface Pressure</b>
SPBU Well No. 18 Unit A, Section 5, Township 23 South, Range 37 East	1235 PSIG
SPBU Well No. 26 Unit E, Section 5, Township 23 South, Range 37 East	1570 PSIG
SPBU Well No. 28 Unit G, Section 5, Township 23 South, Range 37 East	1330 PSIG
SPBU Well No. 30 Unit E, Section 4, Township 23 South, Range 37 East	1595 PSIG
SPBU Well No. 31 Unit I, Section 5, Township 23 South, Range 37 East	1620 PSIG



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POST OFFICE BOX 2088  
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SANTA FE, NEW MEXICO 87504  
(505) 827-5800

September 7, 1993

RE: CASE NO. 10771  
Order No. R-9955

Mr. Thomas Kellahin  
Kellahin & Kellahin  
Attorneys at Law  
Post Office Box 2265  
Santa Fe, New Mexico 87504-2265

Dear Mr. Carr:

Enclosed herewith are two copies of the above-referenced Division order recently entered in the subject case.

Sincerely,

Florene Davidson  
OC Staff Specialist

A handwritten signature in cursive script that reads "Florene Davidson".

Copy of order also sent to:

Hobbs OCD   x    
Artesia OCD   x    
Aztec OCD

**KELLAHIN AND KELLAHIN**

ATTORNEYS AT LAW

EL PATIO BUILDING

117 NORTH GUADALUPE

POST OFFICE BOX 2265

SANTA FE, NEW MEXICO 87504-2265

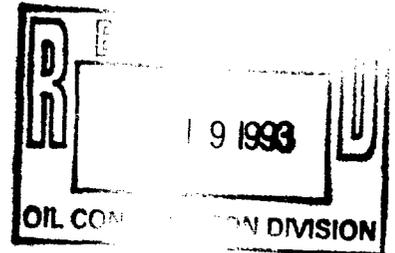
W. THOMAS KELLAHIN\*

\*NEW MEXICO BOARD OF LEGAL SPECIALIZATION  
RECOGNIZED SPECIALIST IN THE AREA OF  
NATURAL RESOURCES-OIL AND GAS LAW

JASON KELLAHIN (RETIRED 1991)

TELEPHONE (505) 982-4285  
TELEFAX (505) 982-2047

July 19, 1993



**HAND DELIVERED**

Mr. David R. Catanach  
Oil Conservation Division  
310 Old Santa Fe Trail  
Santa Fe, New Mexico 87504

Re: NMOCD Case 10771  
OXY USA Inc.

Dear Mr. Catanach:

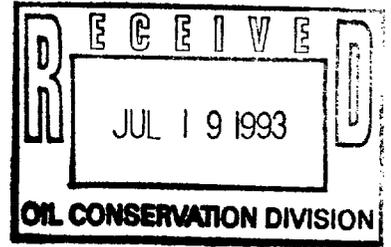
On behalf of Oxy USA Inc., please find enclosed a proposed order in the referenced case for your consideration. I have also enclosed a floppy disk containing this order. Finally, I have enclosed a copy of Division letter dated July 8, 1993 which corrects the description for the Exhibit "A" attached to the order.

Please call me if you have any questions.

Very truly yours,

W. Thomas Kellahin

cc: Richard Foppiano (OXY USA Inc.)



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. 10771  
Order No. R\_\_\_\_\_

APPLICATION OF OXY USA INC. TO AUTHORIZE  
THE EXPANSION OF A PORTION OF ITS SKELLY  
PENROSE "B" UNIT WATERFLOOD PROJECT AND  
TO QUALIFY SAID EXPANSION FOR THE RECOVERED  
OIL TAX RATE PURSUANT TO THE "NEW MEXICO ENHANCED  
OIL RECOVERY ACT," LEA COUNTY, NEW MEXICO

OXY USA INC.'S  
PROPOSED  
ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 A.M. on July 15, 1993,  
at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this \_\_\_ of July, 1993, 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 case and the subject matter thereof.

(2) Oxy USA Inc. ("OXY") is the current operator of the Skelly Penrose "B" Unit Waterflood Project ("The Unit") which was approved by Division Order R-2915 issued effective June 1, 1965.

(3) At the time of unitization on July 1, 1965, the Unit comprised 63 wells encompassing 2612 acres. Waterflood operations were initiated during mid-1966 on 80-acre five-spot injection patterns.

(4) The Unit have remained unchanged and is currently producing at 80 BOPD and 959 BWPD from 20 active producers. Only 7 injectors are currently active. Approximately 75 MBBL of reserves remain under the current 80-acre five-spot mode of operations.

(5) OXY seeks authority to expand the waterflood operations in a portion of its Skelly Penrose "B" Unit Waterflood Project ("EOR Project") and authorization to make the necessary changes to convert the EOR Project from 80-acre five spot patterns to 20-acre infill with 40-acre 5-spot patterns.

(6) In order to expand the EOR Project and to recover oil that otherwise will not be recovered, it is necessary to convert nine producers to injection wells. as shown on Exhibit "A" attached hereto.

(7) OXY has submitted satisfactory evidence on Division Form C-108 in compliance with Division Rule 701.

(8) The injection of water into each of the injection wells shown on Exhibit "A" should be accomplished under the terms and conditions of Division Rule 701.

(9) In addition, OXY seeks an order of the Division pursuant to the New Mexico " Enhanced Oil Recovery Act" and to Division Rule 701(G) to expand a portion of its Skelly Penrose "B" Unit Waterflood Project and for the recovered oil tax rate for enhanced oil recovery for the expanded use of enhanced oil recovery technology in a portion of said waterflood project, an existing EOR project.

(10) The proposed "Expanded Use Area" contains 760 acres, more or less, and is specifically described as follows:

Township 23 South, Range 37 East, NMPM

Section 4: W/2NW/4

Section 5: E/2; SW/4; S/2NW/4

Section 8: NW/4NE/4; N/2NW/4

(11) To date, ultimate primary oil recovery from the entire Unit has been 1775 MBBL. As of April 1, 1993, total oil production from the Unit was 3,441,632 barrels. Under the current 80-acre five-spot patterns, ultimate secondary oil recovery is estimated at 1742 MBBL.

(12) OXY seeks to expand a portion of this Unit (the EOR Project") by means of a significant change in the process used for the displacement of crude oil and by increasing the size of the geologic area representing a unique area of activity to be accomplished by a 20-acre infill drilling, reworking, establishment of water injection and initiation of 40-acre, 5-spot patterns.

(13) The estimated amount of recoverable oil attributable to a Positive Production Response from the Expanded Use of enhanced oil recovery technology for this EOR Project is 971,780 barrels of additional oil from the Queen (Penrose) formation of the Langlie Mattix Seven Rivers Queen Grayburg Pool.

(14) The geologic evidence presented by the applicant including structure maps and net pay isopach map supports the conclusion that while the various pay sections in the Queen (Penrose) formation of the pool are generally present, the reservoir is generally heterogeneous resulting in lateral discontinuity of pay and great variations in thickness, uniformity, porosity and permeability. The result is that the original method of 80-acre five spot injection patterns has left unrecovered substantial volumes of oil.

(15) Applicant's engineering evidence concludes that changing or modifying the injection patterns by drilling additional producers and converting existing producing wells to injection should result in an estimated additional 971,780 barrels of oil to be recovered, with a current undiscounted value of \$16 million dollars.

(16) While new producers are to be drilled in the EOR Project as infill wells, none of those producers will be recovering enough primary oil to pay for their costs. Instead, these producers are an integral part of the EOR project being necessary in order to close the injection patterns and improve sweep efficiency for the secondary recovery project.

(17) The costs of the required additional facilities is estimated to be \$2,055,000 and the total project costs is estimated to be \$2,055,000.

(18) Oxy's Exhibit 8 is an accurate and reliable engineering projection of the performance of the existing producing wells within the Expanded Use Area and should be used by the Division for certification of a positive production response for the Expanded Use Area.

(19) The geologic evidence presented by Oxy demonstrated that the Queen reservoir in the Expanded Use Area contains distinct stringers each vertically isolated from the others with permeability and porosity being highly variable over this entire portion of the unit resulting in the existing 80-acre waterflood pattern being too large to overcome the areal discontinuities found in the Queen sands.

(20) The reduction in the waterflood pattern from 80-acre to 40-acre pattern will improve the sweep efficiency by increasing in size the geologic area being affected by this new activity and increasing ultimate recovery from the Expanded Use Area of the pool.

(21) Based on the testimony presented in this case:

- (a) the reduction in the waterflood injection well pattern in the Expanded Use Area should result in a substantial increase in the amount of crude oil ultimately recovered therefrom;
- (b) the Expanded Use Area has been so depleted that it is prudent to implement a waterflood injection well pattern reduction to maximize the ultimate recovery of crude oil from the project area; and,
- (c) the proposed enhanced oil recovery project is economically and technically feasible and has not been prematurely filed.

(22) The subject Expanded Use Area within the Skelly Penrose "B" Unit Waterflood Project should be qualified an "Enhanced Oil Recovery Project" (EOR) pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).

(23) To be eligible for the EOR credit, the operator should advise the Division when the water injection into each additional injection wells commences and at such time, request the Division certify the project to the New Mexico Taxation and Revenue Department.

(24) The "enhanced oil recovery project area" should initially comprise the region to be affected by injection on 40-acre patterns which includes the following area:

Township 23 South, Range 37 East, NMPM

Section 4: W/2NW/4

Section 5: E/2; SW/4; S/2NW/4

Section 8: NW/4NE/4; N/2NW/4

(25) The application should be approved and the EOR Project should be governed by the provision of the "Rules and Procedures for Qualifications of Enhanced Oil Recovery Projects" and "Certification for Recovered Oil Tax Rate" as promulgated by Division Order No. R-9708.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, OXY USA Inc. is hereby authorized to expand its Skelly Penrose "B" Unit Waterflood Project and to institute waterflood injection into the Queen (Penrose) formation at approximately 3505 feet to approximately 3744 feet through 2-3/8 inch plastic lined tubing set in a packer located within 100 feet of the uppermost injection perforations in the following described wells for purposes of secondary recovery as shown on Exhibit "A" attached hereto.

(2) The applicant 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,

(3) Prior to commencing injection operations into the wells, the casing shall be pressure tested from the surface to the packer setting depth to assure the integrity of said casing.

(4) The Casing-tubing annulus 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.

(5) The injection wells or system shall be equipped with a pressure limiting device which will limit the wellhead pressure on the injection wells to no more than 0.2 psi/ft of depth to the uppermost injection perforations.

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

(7) 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.

(8) 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 said wells and shall take such steps as may be timely and necessary to correct such failure or leakage.

(9) The subject wells shall be governed by all provision of Division Rule 702-706.

IT IS FURTHER ORDERED THAT:

(10) The application of OXY USA INC. to qualify its Expanded Use Area within a portion of its Skelly Penrose "B" Unit Waterflood Project, which was the subject of Division Order No. R-2915, as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5), is hereby approved.

(12) The subject "enhanced oil recovery project area" shall initially comprise the following described areas in Lea County, New Mexico:

Township 23 South, Range 37 East, NMPM

Section 4: W/2NW/4

Section 5: E/2; SW/4; S/2NW/4

Section 8: NW/4NE/4; N/2NW/4

(13) The operator shall advise the Division when the additional water injection phase of the project commences into any of the new injection wells.

(14) Said EOR project shall be governed by the provisions of the "Rules and Procedures for Qualifications of Enhanced Oil Recovery Projects" and "Certification for Recovered Oil Tax Rate" as promulgated by Division Order No. R-9708.

(15) That Oxy's Hearing Exhibit 8 shall be used by the Division as the "baseline" data from which to determine a positive production response.

(16) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

Case No. 10771

Page 9

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

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

WILLIAM J. LEMAY  
Director

SEAL

ord719.009



STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
OIL CONSERVATION DIVISION



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(505) 827-5800

BRUCE KING  
GOVERNOR

ANITA LOCKWOOD  
CABINET SECRETARY

July 8, 1993

Oxy USA, Inc.  
P.O. Box 50250  
Midland, Texas 79710

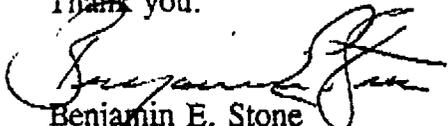
Attn: Richard Foppiano

*RE: Division Order No. WFX-643*

Dear Mr. Foppiano,

The above Division Order was issued just recently, which authorized the expansion of your Skelly Penrose "B" Unit Waterflood. The application had several errors in well locations and were subsequently reflected in the order. Enclosed is the corrected "Exhibit A". Please file this with the your original order.

Thank you.

  
Benjamin E. Stone  
Engineering Tech II

:enc  
/BES

**CORRECTED EXHIBIT "A"**  
**DIVISION ORDER NO. WFX-643**  
**SKELLY PENROSE "B" UNIT WATERFLOOD PROJECT**  
**APPROVED INJECTION WELLS**  
**ALL IN LEA COUNTY, NEW MEXICO**

<i>Well No.</i>	<i>Location</i>	<i>Unit</i>	<i>S-T-R</i>	<i>Injection Perforations</i>	<i>Packer Depth</i>	<i>Tubing Size</i>	<i>Injection Pressure (PSIG)</i>
18	660' FNL - 660' FEL	A	5-23S-37E	3614' - 3744'	3550'	2 3/8"	723
26	1980' FNL - 990' FWL	E	5-23S-37E	3659' - 3768'	3600'	2 3/8"	732
28	1980' FSL - 1980' FEL	G	5-23S-37E	3638' - 3724'	3050'	2 3/8"	726
30	1980' FNL - 660' FWL	E	4-23S-37E	3505' - 3666' (open hole)	3450'	2 3/8"	701
31	1980' FSL - 660' FEL	I	5-23S-37E	3580' - 3698'	3500'	2 3/8"	716
33	1980' FSL - 1980' FWL	K	5-23S-37E	3610' - 3719'	3550'	2 3/8"	722
37	660' FSL - 660' FWL	M	5-23S-37E	3606' - 3730'	3550'	2 3/8"	721
39	660' FSL - 1980' FEL	O	5-23S-37E	3554' 3685'	3500'	2 3/8"	711
44	660' FNL - 1980' FWL	C	8-23S-37E	3544' - 3655'	3500'	2 3/8"	709

KELLAHIN AND KELLAHIN

ATTORNEYS AT LAW

EL PATIO BUILDING

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W. THOMAS KELLAHIN\*

\*NEW MEXICO BOARD OF LEGAL SPECIALIZATION  
RECOGNIZED SPECIALIST IN THE AREA OF  
NATURAL RESOURCES-OIL AND GAS LAW

JASON KELLAHIN (RETIRED 1991)

FACSIMILE COVER SHEET

DATE: June 14th, 1993

NUMBER OF PAGES: -1-  
(including cover sheet)

TIME: 9:50 AM

TO: Robert G. Stovall

FROM: W. Thomas Kellahin, Esq.

OF: NMOCE

SPECIAL INSTRUCTIONS:

FAX NO: 827-5741

- \_\_\_\_\_ URGENT
- \_\_\_\_\_ FOR YOU INFORMATION
- \_\_\_\_\_ FOR YOUR REVIEW
- \_\_\_\_\_ FOR YOUR APPROVAL
- \_\_\_\_\_ FOR YOUR REPLY
- \_\_\_\_\_ PER YOUR REQUEST

RE: Application of Oxy USA Inc  
for EOR credit.

MESSAGE: Dear Bob: In response to your letter of June 8th,

based upon my conversation with David Catanach on May 20th

I had understood that David would have the Oxy case set for

hearing on the July 1st Examiner's docket and that nothing

further was required of Rick or me to accomplish that.

Please let me know the status of this case.

Best regards,

*Tom will file application*

*RS*

*Tom*

A HARD COPY \_\_\_\_\_ WILL  WILL NOT FOLLOW BY U.S. MAIL.

\*\*\*\*\*  
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STATE OF NEW MEXICO  
ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT  
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BRUCE KING  
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(505) 827-5800

June 8, 1993

W. Thomas Kellahin, Esq.  
Kellahin & Kellahin  
P.O. Box 2265  
Santa Fe, NM 87504-2265

RE: Application of OXY USA, INC. for EOR Credit

Dear Tom:

Sally Leichtle gave me this morning a package from Rick Foppiano requesting an EOR Tax Credit Certification with a note from David Catanach to set for hearing. Rick's letter also stated that an administrative expansion application was enclosed.

This is an expansion of an existing flood pursuant to an administrative WFX process authorized under a order issued prior to the EOR credit legislation. In order to qualify for the tax rate, the statute requires the approval of the project or the expansion after the effective date of the Act. A new hearing approving the expansion itself is necessary in order to qualify for the credit. We are particularly careful to follow the letter of the law and procedure in the case of expansions.

I attempted to call both you and Rick this morning and was informed that both of you are on vacation. When you return please let me know whether you wish to proceed with the hearing on the expansion in order to qualify for the tax rate, or whether you wish the expansion to be handled administratively without consideration of the EOR tax rate qualification.

Sincerely,

A handwritten signature in cursive script, appearing to read "Bob".

Robert G. Stovall,  
Division Counsel