

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

TELEPHONE (505) 982-4285
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JASON KELLAHIN (RETIRED 1991)

October 20, 1993

HAND DELIVERED

Mr. David R. Catanach
Hearing Examiner
Oil Conservation Division
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

Re: NMOCD Cases 10845 and 10846
Applications of Phillips Petroleum Company
for approval of its Vacuum Glorieta East Unit and
Unit Waterflood Project, Lea County, New Mexico.

Dear Mr. Catanach:

At the hearing held on October 7, 1993, you request I prepare draft orders for these two cases. Please find enclosed the two draft orders and the computer disk containing those drafts. Also enclosed is a tabulation of the injection wells for the Exhibit A to the waterflood order and the computer disk which contains that exhibit.

Finally, I have enclosed a copy of the injection pattern for the Texaco project so you can see the compatibility of the patterns.

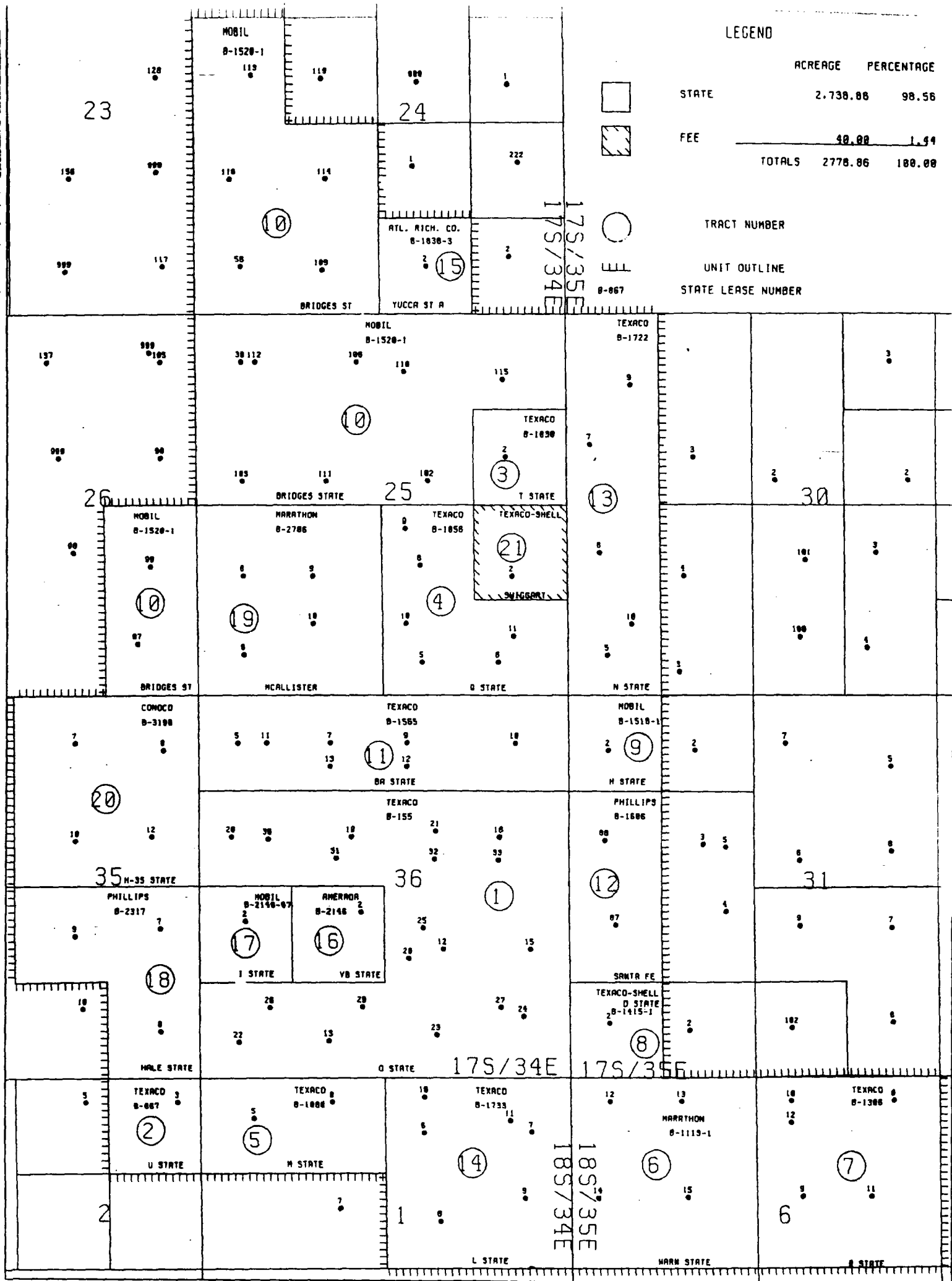
Please call me if you need anything further. Phillips would like to commence its project effective December 1, 1993.

Very truly yours,



W. Thomas Kellahin

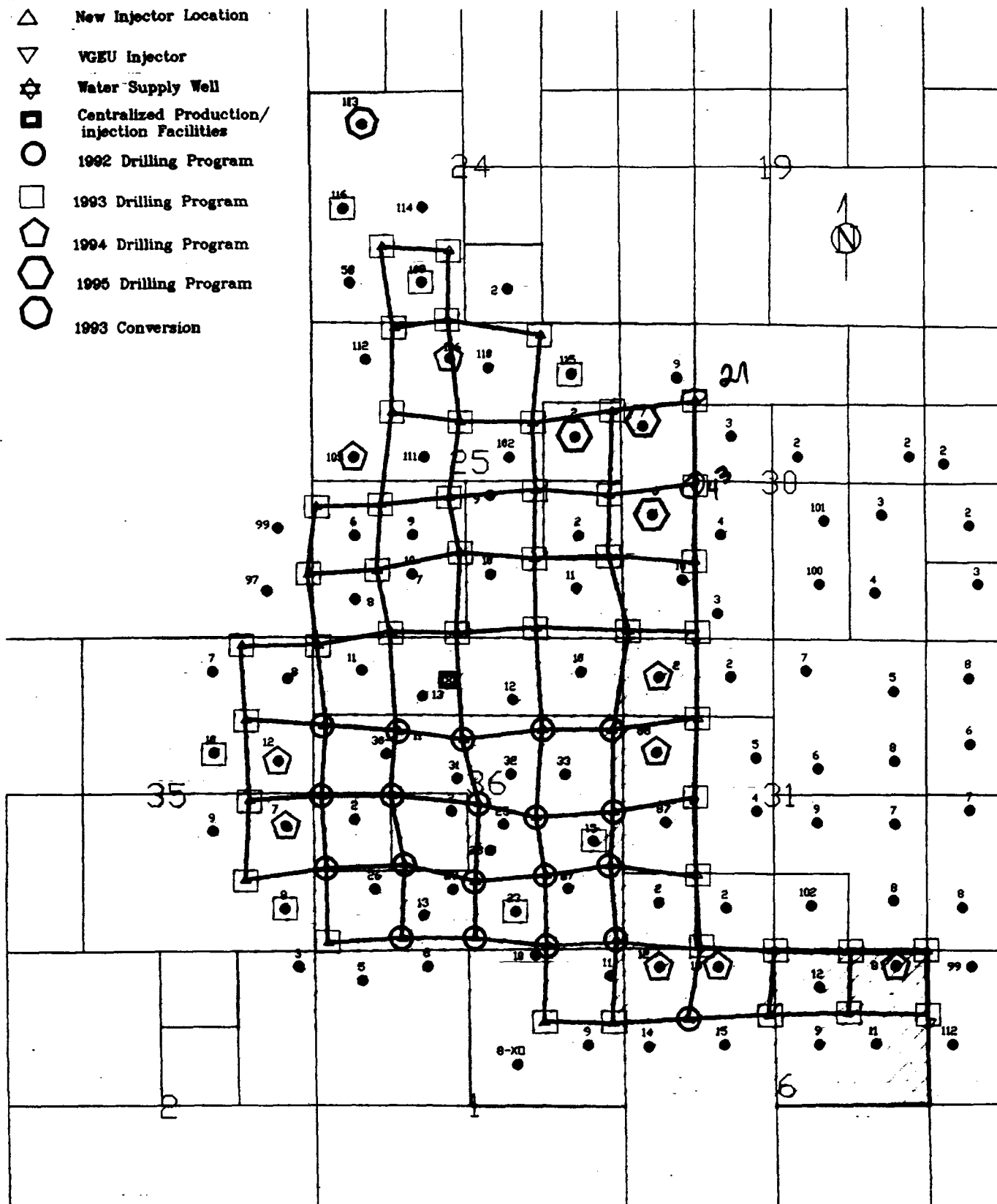
cc: Elizabeth C. Harris, Esq.
Phillips Petroleum Company (Odessa)



BEFORE EXAMINER CATANACH
OIL CONSERVATION DIVISION
TEXACO EXHIBIT NO. 2
CASE NO. 10515

TEXACO MIDLAND PRODUCING
MIDLAND TEXAS U.S.A.
VACUUM GLORIETA WEST UNIT
LEA COUNTY, NEW MEXICO
EXHIBIT "A"
SCALE 1"=1639' M. MULLINS/R. GOON 16-JAN-92

- Producing Well
- △ New Injector Location
- ▽ VGEU Injector
- ☆ Water Supply Well
- Centralized Production/ injection Facilities
- 1992 Drilling Program
- 1993 Drilling Program
- ◡ 1994 Drilling Program
- ⬡ 1995 Drilling Program
- ⬢ 1993 Conversion



Unit Boundary

Injection Pattern

TEXACO E & P INC.

MIDLAND TEXAS USA

VACUUM GLORIETA WEST UNIT
LEA COUNTY, NEW MEXICO

INJECTION PATTERNS

SCALE: 1" = 2325'

BY: R. N. GOON

FIG. 6

BEFORE EXAMINER CATANACH

OIL CONSERVATION DIVISION

TEXACO EXHIBIT NO. 17

CASE NO. 10515

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. 10846
Order No. R- _____

APPLICATION OF PHILLIPS PETROLEUM
COMPANY FOR APPROVAL OF A WATERFLOOD
PROJECT FOR ITS VACUUM GLORIETA EAST UNIT
AND TO QUALIFY SAID PROJECT FOR THE RECOVERED
OIL TAX RATE PURSUANT TO THE "NEW MEXICO ENHANCED
OIL RECOVERY ACT," LEA COUNTY, NEW MEXICO

PHILLIPS PETROLEUM COMPANY'S
PROPOSED
ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on
October 7, 1993, at Santa Fe, New Mexico, before Examiner
David R. Catanach.

NOW, on this _____ day of October, 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 cause and the subject matter thereof.

(2) The applicant, Phillips Petroleum Company ("Phillips") seeks authority to institute a waterflood project in its Vacuum Glorieta East Unit by the injection of water into the Glorieta and Paddock formations, Vacuum-Glorieta Pool, Lea County, New Mexico, through the gross perforated and/or open hole interval correlative to depths from 5,840 feet to 6,230 feet which depths are identified on the Schlumberger Sonic Log for the Socony Mobil Bridges State Well No. 95 located in Unit P of Section 26, T17S, R34E, NMPM, Lea County, New Mexico, in 48 existing and new wells to be drilled at standard and unorthodox locations as shown on Exhibit "A" attached hereto.

(3) By Order No. R-_____ issued in Case 10845 dated October __, 1993, the Division, upon application of Phillips, approved the Vacuum Glorieta East Unit which comprises some 4,239.80 acres, more or less, of State of New Mexico lands in all or portions of Sections 26-34, T17S, R35E and in part of Section 5, T18S, R35E, NMPM, Lea County, New Mexico.

(4) The vast majority of wells located within the Vacuum Glorieta East Unit Area are in an advanced state of depletion.

(5) The western boundary of the Vacuum Glorieta East Unit is contiguous with the eastern boundary of the Texaco operated Vacuum Glorieta West Unit and Waterflood Project which were approved by Division Order R-9714 and Order R-9710, respectively.

(6) An adequate Injection Lease-Line Agreement will be made between the two projects and each project's pattern of injection wells and producing wells is compatible with the objective of improving ultimate recovery from the reservoir.

CASE NO. 10846
Order No. R-____
Page 3

(7) Prior to commencing injection operations into the proposed Vacuum Glorietq East Unit Well Nos. 03W02, 08W02, 16W04, 20W02, 23W03 and 30W02, the applciant shold be required to submit to the Santa Fe Office of the Division an executed copy of an Injection Lease-Line Agreement.

(8) Within the Unit, the initial waterflood project area will consist of 3,080 acres, more or less.

(9) The working interest owners within the Unit have voluntarily agreed upon a waterflood plan the objective of which is to successfully recover an estimated additional 16.4 million barrels of oil from the Vacuum Glorieta Pool.

(10) The secondary oil potential from the pool within the Unit area will not be recovered in the absence of waterflood operations on a unit basis.

(11) The Vacuum Glorieta East Unit Waterflood Project will be developed on a 40-acre five spot injection pattern involving 8 new producing wells, 33 new injection wells, the conversion of 15 existing wells to water injection and the reactivation of 9 shut-in producers.

(12) The Forty-Eight (48) existing or new injection wells are all identified and located as set forth on Exhibit "A".

(13) Phillips anticipates that the success of the waterflood project will require that the Division provide administrative procedures to authorize Phillips to exceed the 0.2 psi per foot of depth Division guideline.

CASE NO. 10846
Order No. R-____
Page 4

(14) Phillips requests an administrative procedure be established for the waterflood project area to allow for the amendment of the location of either injection or producing wells in the event such changes in location, either standard or unorthodox, are deemed necessary by the operator.

(15) As of April, 1993, the cumulative primary oil recovery from the Project has been 38,292 MBBL.

(16) The Project is currently producing at a rate of 1863 BOPD and 4401 BWPD from 63 active producers. Approximately 4,440 MBBL of recoverable primary oil reserves remain under the current mode of operations.

(17) Phillips Petroleum Company seeks to recover additional oil from the Project Area by expanding the geologic area and by means of a significant change in the process used for the displacement of crude oil by 20-acre infill drilling, reworking, establishment of water injection and initiation of 40-acre, 5-spot injection patterns for the Unit.

(18) 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 16.4 million barrels of additional oil.

(19) The proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste and to qualify said project for the recovered oil tax rate for enhanced oil recovery projects.

CASE NO. 10846
Order No. R-____
Page 5

(20) The applicant should 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 from injection, production , or plugged and abandoned wells.

(21) In compliance with the Division Rule 701, the Applicant has submitted Division Form C-108 and has examined the integrity of all wells within the "Area of Review" using the Division criteria of 1.32 cubic feet of yield per sack of cement divided by two (2) to calculate the top of cement for wells without measured cement tops. Using that criteria, all wells with the exception of the following described wells, satisfy the Division guidelines:

(1) Vacuum Abo Unit Well No 5-02,
990 feet FSL & 2195 feet FEL
Section 26, T17S, R35E

(2) Vacuum Abo Unit Well No 11-05,
330 feet FSL & 1980 feet FEL
Section 33, T17S, R35E

(3) Vacuum Abo Unit Well No. 14-01
1980 feet FSL & 1980 feet FWL
Section 5, T18S, R35E

The applicant has determined that the volume of cement slurry that was actually used by Halliburton Services to complete each of these three wells is such that the calculated cement tops, using the actual slurry yeild divided by two (2), are at least 600 feet above the injection zone in each well and therefore the Division finds that each of these wells is adequately protected.

(22) The injection of water into each of the wells shown on Exhibit "A" should be accomplished through internally plastic coated tubing installed in a packer set within 100 feet of the uppermost injection perforation or casing shoe; the casing-tubing annulus should be filled with an inert fluid and a gauge or approved leak-detection device should be attached to the annulus in order to determine leakage in the casing, tubing or packer.

(23) Prior to commencing injection operations in the wells shown on Exhibit "A", the casing in each 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.

(24) The injection wells or pressurization system should be initially equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 1220 psi.

(25) The Division Director should have the authority to administratively authorize a pressure limitation in excess of the pressure limitation described in Finding No. (24) above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(26) The operator should give advance notification to 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 pressure tests in order that the same may be witnessed.

(27) The application should be approved and the project should be governed by the provisions of Rules Nos. 701 through 708 of the Oil Conservation Division Rules and Regulations.

CASE NO. 10846
Order No. R-____
Page 7

(28) The applicant has requested that the subject waterflood be certified by the Division as a qualified "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 5).

(29) The evidence presented indicates that the subject waterflood meets all of the criteria for certification.

(30) The certified "project area" should initially comprise the area described as follows, provided however, the "project area" and/or the producing wells eligible for the recovered oil tax rate may be contracted and reduced dependent upon the evidence presented by the applicant in its demonstration of the occurrence of a positive production response:

TOWNSHIP 17 SOUTH, RANGE 35 EAST, NMPM

Section 27: W/2
Section 28: E/2, SW/4, E/2NW/4, SW/4NW/4
Section 29: S/2, S/2N/2
Section 30: SE/4, S/2NE/4, E/2SW/4, SE/4NW/4
Section 31: N/2NE/4, E/2NW/4, E/2SW/4, S/2SE/4
Section 32: NE/4, NW/4, N/2SE/4, SW/4SW/4
Section 33: N/2, N/2S/2

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM

Section 5: NW/4NW/4 (lot 4): SW/4NW/4

(31) The approved waterflood injection formation should be the interval described in Finding No. (2) above.

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Order No. R-____
Page 8

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Phillips Petroleum Company ("Phillips"), is hereby authorized to institute a waterflood project in its Vacuum Glorieta East Unit by the injection of water into the Glorieta and Paddock formations, Vacuum-Glorieta Pool, Lea County, New Mexico through the gross perforated and/or open hole interval correlative to depths from 5,840 feet to 6,230 feet which depths are identified on the Schlumberger Sonic Log for the Socony Mobil Bridges State Well No. 95 located in Unit P of Section 26, T17S, R34E, NMPM, Lea County, New Mexico, in 48 existing and new injection wells to be located at standard and unorthodox well locations 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 from injections, production, or plugged and abandoned wells.

(3) Injection into each of the wells shown on Exhibit "A" shall be accomplished through internally protected tubing installed in a packer set within 100 feet of the uppermost injection perforation or casing shoe; 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 determine leakage in the casing, tubing or packer.

(4) Prior to commencing injection operations into the wells shown on Exhibit "A", the casing in each 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.

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Order No. R-____
Page 9

(5) Prior to commencing injection operations into the proposed Vacuum Glorietq East Unit Well Nos. 03W02, 08W02, 16W04, 20W02, 23W03 and 30W02, the applciant shold be required to submit to the Santa Fe Office of the Division an executed copy of an Injection Lease-Line Agreement.

(6) The injection wells or pressurization system shall be initially equipped with a pressure control device or acceptable substitute which will limit the surface injection pressure to no more than 1200psi.

(7) The Division Director shall have the authority to administratively authorize a pressure limitation in excess of the pressure limitation described in Finding No. (24) above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

(8) The operator shall give advance notification to 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 pressure tests in order that the same may be witnessed.

(9) The applicant shall immediately notify the supervisor of the Hobbs District Office of the Division of the failure of the tubing, casing or packer in any of the injection wells, the leakage of water or oil from or around any producing wells, or the leakage of water or oil from any plugged and abandoned well within the project area, and shall take such steps as may be timely and necessary to correct such failure or leakage.

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(10) The subject waterflood is hereby designated the Vacuum Glorieta East Unit Waterflood Project and shall be governed by the provisions of Rules Nos 701 through 708 of the Oil Conservation Division Rules and Regulations.

(11) Monthly progress reports of the waterflood project herein authorized shall be submitted to the Division in accordance with Rules Nos 706 and 1115 of the Division Rules and Regulations.

(12) Other than the injection wells approved and listed on Exhibit "A", the applicant shall be required to obtain Division approval subsequent to the entry of this order, to drill any additional injection wells located at an unorthodox location closer than 330 feet from the outer boundary of the Vacuum Glorieta East Unit.

(13) The Division Director shall have the authority to administratively authorize the amendment of the location of either injection and/or producing wells or the addition of either injection and/or producing wells within the waterflood project area in the event such changes in location, either standard or unorthodox, are deemed necessary by the operator.

(14) The subject waterflood is a qualified "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (Laws 1992, Chapter 38, Sections 1 through 54).

(15) To be eligible for the EOR credit, the operator must advise the Division when injection operations will commence and request the Division certify the project to the Taxation and Revenue Department.

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Order No. R-____
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(16) The certified "project area" shall comprise the area described as follows, provided however, the "project area" and/or the producing wells eligible for the recovered oil tax rate may be contracted and reduced dependent upon the evidence presented by the applicant in its demonstration of the occurrence of a positive production response:

TOWNSHIP 17 SOUTH, RANGE 35 EAST, NMPM

Section 27: W/2
Section 28: E/2, SW/4, E/2NW/4, SW/4NW/4
Section 29: S/2, S/2N/2
Section 30: SE/4, S/2NE/4, E/2SW/4, SE/4NW/4
Section 31: N/2NE/4, E/2NW/4, E/2SW/4, S/2SE/4
Section 32: NE/4, NW/4, N/2SE/4, SW/4SW/4
Section 33: N/2, N/2S/2

TOWNSHIP 18 SOUTH, RANGE 35 EAST, NMPM

Section 5: NW/4NW/4 (lot 4); SW/4NW/4

(17) 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

EXHIBIT A

VACUUM GLORIETA EAST UNIT

WATERFLOOD PROJECT AREA

TABULATION OF PROPOSED INJECTION WELLS

New Well Designation	Former Lease Name & Well No.	API Number	Unit	Sec-Tn-R	Rg	Footage *	Former Operator	Proposed Well Status
VGEU 01W05	New Mexico K State	3002530436	L	28	17S	35E	1286 FS, 1333 FW	Exxon
VGEU 01W06	New Mexico K State	3002530437	O	28	17S	35E	1195 FS, 2518 FE	Exxon
VGEU 01 – 13			P	28	17S	35E	1320 FS, 1320 FE	NEW DRILL CONV
VGEU 01W12			L	28	17S	35E	1320 FS, 100 FW	NEW DRILL INJ
VGEU 01W14			M	28	17S	35E	100 FS, 1320 FW	NEW DRILL INJ
VGEU 01W15			P	28	17S	35E	100 FS, 1320 FE	NEW DRILL INJ
VGEU 02 – 11			A	32	17S	35E	1200 FN, 1320 FE	NEW DRILL CONV
VGEU 02W09			B	32	17S	35E	1320 FN, 2650 FW	NEW DRILL INJ
VGEU 02W12			H	32	17S	35E	2640 FN, 1320 FE	NEW DRILL INJ
VGEU 03W02			C	31	17S	35E	100 FN, 1320 FW	NEW LL INJ
VGEU 04W03			D	33	17S	35E	1200 FN, 100 FW	NEW DRILL INJ
VGEU 04W04			C	33	17S	35E	1310 FN, 1320 FW	NEW DRILL INJ
VGEU 05 – 06			O	29	17S	35E	1330 FS, 1330 FE	NEW DRILL CONV
VGEU 05W05			J	29	17S	35E	1320 FS, 2650 FW	NEW DRILL INJ
VGEU 05W07			O	29	17S	35E	100 FS, 2650 FW	NEW DRILL INJ
VGEU 05W08			P	29	17S	35E	100 FS, 1320 FE	NEW DRILL INJ
VGEU 06W01	State T	3002520232	J	33	17S	35E	2310 FS, 1980 FE	Shell
VGEU 08W02			N	31	17S	35E	300 FS, 1320 FW	NEW LL INJ
VGEU 09W03			P	30	17S	35E	1320 FS, 1310 FE	NEW DRILL INJ
VGEU 09W04			P	30	17S	35E	100 FS, 1310 FE	NEW DRILL INJ

EXHIBIT A

VACUUM GLORIETA EAST UNIT

WATERFLOOD PROJECT AREA

TABULATION OF PROPOSED INJECTION WELLS

<u>New Well Designation</u>	<u>Former Lease Name & Well No.</u>	<u>API Number</u>	<u>Unit</u>	<u>Sec-Tn-Rg</u>	<u>Footage *</u>	<u>Former Operator</u>	<u>Proposed Well Status</u>
VGEU 10W04	Santa Fe	109	H	28 17S 35E	1500 FN, 1320 FE	Phillips	NEW DRILL INJ
VGEU 10W05			G	28 17S 35E	2630 FN, 2650 FW		NEW DRILL INJ
VGEU 10W06			H	28 17S 35E	2630 FN, 1320 FE		NEW DRILL INJ
VGEU 14W01			G	29 17S 35E	2323 FN, 2213 FE		CONV TO INJ
VGEU 15W03			J	30 17S 35E	2650 FN, 2650 FW		NEW DRILL INJ
VGEU 15W04			O	30 17S 35E	1320 FS, 2650 FW		NEW DRILL INJ
VGEU 15W05			O	30 17S 35E	100 FS, 2650 FW		NEW DRILL INJ
VGEU 16W04			E	5 18S 35E	1320 FN, 100 FW		NEW LL INJ
VGEU 20W02			F	30 17S 35E	2640 FN, 1320 FW		NEW LL INJ
VGEU 23W03			K	31 17S 35E	2640 FN, 1320 FW		NEW LL INJ
VGEU 24W01	Warn State AC 3	8	H	33 17S 35E	1650 FN, 990 FE	Marathon	CONV TO INJ
VGEU 24-06			K	33 17S 35E	1330 FN, 2640 FW		NEW DRILL CONV
VGEU 25W06			C	32 17S 35E	1320 FN, 1320 FW		NEW DRILL INJ
VGEU 26-06			F	27 17S 35E	1500 FN, 1320 FW		NEW DRILL CONV
VGEU 26W07			F	27 17S 35E	2630 FN, 1320 FW		NEW DRILL INJ
VGEU 27W01	State 4 27	10	L	27 17S 35E	1650 FS, 330 FW	Chevron	CONV TO INJ
VGEU 29-02			K	29 17S 35E	1320 FS, 1330 FW		NEW DRILL CONV
VGEU 30W02			O	31 17S 35E	100 FS, 1320 FE		NEW LL INJ
VGEU 32W01	Santa Fe	106	H	29 17S 35E	2323 FN, 660 FE	Phillips	CONV TO INJ
VGEU 36W02			L	29 17S 35E	1330 FS, 100 FW		NEW DRILL INJ

EXHIBIT A

VACUUM GLORIETA EAST UNIT

WATERFLOOD PROJECT AREA

TABULATION OF PROPOSED INJECTION WELLS

<u>New Well Designation</u>	<u>Former Lease Name & Well No.</u>	<u>API Number</u>	<u>Unit</u>	<u>Sec-Tn-R</u>	<u>Rg</u>	<u>Footage *</u>	<u>Former Operator</u>	<u>Proposed Well Status</u>
VGEU 38W03			M	29	17S	35E	100 FS, 100 FW	NEW DRILL INJ
VGEU 38W04			N	29	17S	35E	100 FS, 1320 FW	NEW DRILL INJ
VGEU 41W02	Santa Fe	105	E	28	17S	35E	2322 FN, 660 FW	CONV TO INJ
VGEU 42W03			E	33	17S	35E	2640 FN, 100 FW	NEW DRILL INJ
VGEU 43W01	Santa Fe	92	K	33	17S	35E	2105 FS, 1980 FW	CONV TO INJ
VGEU 45W02			G	30	17S	35E	1330 FN, 2650 FW	NEW DRILL INJ
VGEU 46W01	State CG NCT 2	1	F	29	17S	35E	2310 FN, 1750 FW	REPLACE INJ
VGEU 47W01	State CG NCT 1	2	H	30	17S	35E	2310 FN, 400 FE	REPLACE INJ

* Approximate footage given for new wells

KELLAHIN AND KELLAHIN

ATTORNEYS AT LAW

EL PATIO BUILDING

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SANTA FE, NEW MEXICO 87504-2265

TELEPHONE (505) 982-4285

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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)

September 13, 1993

OIL CONSERVATION DIVISION

HAND DELIVERED

Mr. William J. LeMay
Oil Conservation Division
State Land Office Building
310 Old Santa Fe Trail, 2nd Floor
Santa Fe, New Mexico 87501

Re: Application of Phillips Petroleum Company
for Approval of a Waterflood Project for
its Vacuum Glorieta East Unit and to Qualify
Said Project for the Recovered Oil Tax Rate
Pursuant to the "New Mexico Enhanced Oil Recovery
Act," Lea County, New Mexico

Dear Mr. LeMay:

On behalf of Phillips Petroleum Company, please find enclosed our referenced application which we request be set for hearing on the next available Examiner's docket now scheduled for October 7, 1993.

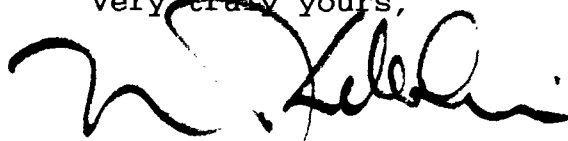
By copy of this letter and application, sent certified mail, we are notifying all interested parties within a 1/2 mile radius of the subject well of their right to appear at the hearing and participate in this case, including the right to present evidence either in support of or in opposition to the application and that failure to appear at the hearing may preclude them from any involvement in this case at a later date.

Mr. William J. LeMay
September 13, 1993
Page Two

Pursuant to the Division's Memorandum 2-90, all parties are hereby informed that if they appear in this case, then they are requested to file a Pre-Hearing Statement with the Division not later than 4:00 PM on Friday, August 27, 1993, with a copy delivered to the undersigned.

Also enclosed is our proposed advertisement of this case for the NMOCD docket.

Very truly yours,

A handwritten signature in black ink, appearing to read 'W. Thomas Kellahin', written over the typed name.

W. Thomas Kellahin

WTK/mg
Enclosure

cc: Phillips Petroleum Company and
By Certified Mail - Return Receipt
All Parties Listed on Exhibit "H" of Application

PROPOSED ADVERTISEMENT

CASE 10876 Application of Phillips Petroleum Company for approval of a waterflood project, Lea County, New Mexico. Applicant seeks approval of its Vacuum Glorieta East Unit Waterflood Project by injection of water into the Glorieta and Paddock formations, Vacuum Glorieta Pool, in an area being portions of Sections 26-34, T17S, R35E and in part of Section 5, T18S, R35E, NMPM. The applicant requests that the Division establish procedures for the administrative approval of additional injection wells within the unit area without the necessity of further hearings and the adoption of any provision necessary for such other matters as may be appropriate for said waterflood operations. Applicant further seeks to qualify this project for the recovered oil tax rate pursuant to the "New Mexico Enhanced Oil Recovery Act" (Law 1992, Chapter 38, Sections 1 through 5). Said project is located approximately 10 miles southeast from Lovington, New Mexico.

KELLAHIN AND KELLAHIN

ATTORNEYS AT LAW

EL PATIO BUILDING

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SANTA FE, NEW MEXICO 87504-2265

W. THOMAS KELLAHIN*

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JASON KELLAHIN (RETIRED 1991)

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

March 29, 1994

HAND DELIVERED

David R. Catanach
Oil Conservation Division
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

MAR 29 1994

Re: Request for Nunc Pro Tunc Order
Case 10846, Order R-10020
Phillips Petroleum Company
Vacuum Glorieta East Unit Waterflood Project
Lea County New Mexico

Dear David:

On January 18, 1994, in response to my request, you advised me you would have a nunc pro tunc order issued in the referenced matter as outlined in my letter of December 1, 1993.

Order R-10020 approved the interval from 5,983 feet to 6,202 feet but did not tie it to a specific well nor identify it as being the stratigraphic equivalent formation in other wells. Because the project area has a structural component to it, Phillips will be injecting into the Glorieta and Paddock formations but in certain wells will be outside of the approved footage interval.

I have enclosed for your consideration a proposed nun pro tunc order which corrects the approved injection interval by "tying" it to that interval correlative to the Shell State T Well No 10.

Best regards,


W. Thomas Kellahin

cc: By telecopier:

Elizabeth A. Harris, Esq.
(Phillips Petroleum Company-Odessa)



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



BRUCE KING
GOVERNOR

ANITA LOCKWOOD
CABINET SECRETARY

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

November 23, 1993

KELLAHIN AND KELLAHIN
Attorneys at Law
P. O. Drawer 2265
Santa Fe, New Mexico 87504

RE: CASE NO. 10846
ORDER NO. R-10020

Dear Sir:

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

Sincerely,


Sally E. Martinez
Administrative Secretary

cc: BLM - Carlsbad
Rick Brown - OCD
David Abbey - DFA

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

December 1, 1993

VIA TELECOPIER
(505) 827-5741

David R. Catanach
Oil Conservation Division
310 Old Santa Fe Trail
Santa Fe, New Mexico 87501

Re: Request for Nunc Pro Tunc Order
Case 10846, Order R-10020
Phillips Petroleum Company
Vacuum Glorieta East Unit Waterflood Project
Lea County New Mexico

Dear David:

I appreciated receiving the referenced order which, with one minor exception, provided Phillips Petroleum Company with the necessary Division authority for this project.

However, in reviewing the order with Keith Maberry Elizabeth Harris and Mary Tisdale of Phillips, I am concerned that the intended injection zone for the project was not adequately described in the order.

The Division approved the interval from 5,983 feet to 6,202 feet but did not tie it to a specific well nor identify it as being the stratigraphic equivalent formation in other wells. Because the project area has a structural component to it, Phillips will be injecting into the Glorieta and Paddock formations but in certain wells will be outside of the approved footage interval.

That generic footage limitation could cause us problems and I assume was not your intention. The footage you used in the order appears to Keith to have come from the Shell State #10 Well.

David R. Catanach
December 1, 1993
Page 2.

We think this is easily corrected if we can persuade you to issue a Nunc Pro Tunc Order which adds the underlined additions to both Finding (3) and Decretory (1) to state:

The applicant, Phillips Petroleum Company, (seeks authority to institute) (is hereby authorized to institute) a waterflood project in its Vacuum Glorieta East Unit by the injection of water into the Glorieta and Paddock formations, Vacuum-Glorieta Pool, Lea County, New Mexico, through the gross perforated and/or open hole interval correlative to depths from 5,983 feet to 6,202 feet as identified in the Shell State T Well No. 10 located in Unit J of Section 33, T17S, R35E, NMPM, Lea County, New Mexico, in nine existing and thirty-nine wells to be drilled at orthodox and unorthodox locations as shown on Exhibit "A" attached hereto.

Please call me if you have any questions,

Best regards,



W. Thomas Kellahin

cc: By telecopier:
Elizabeth A. Harris, Esq.
(Phillips Petroleum Company-Odessa)

KELLAHIN AND KELLAHIN

ATTORNEYS AT LAW

EL PATIO BUILDING

117 NORTH GUADALUPE

POST OFFICE BOX 1265

SANTA FE, NEW MEXICO 87504-2265

W. THOMAS KELLAHIN*

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

JASON KELLAHIN (RETIRED 1991)

TELEPHONE (505) 982-4285
TELEFAX (505) 982-2047**FACSIMILE COVER SHEET**

DATE: December 1, 1993
TIME: 11:55 AM
TO: David Catanach
OF: Oil Conservation Division
FAX NO: (505) 827-5741
RE: Case 10846
Order R-10020
Phillips Petroleum Co.

NUMBER OF PAGES: -3-
(including cover sheet)

FROM: W. Thomas Kellahin, Esq.

SPECIAL INSTRUCTIONS:

URGENT
FOR YOU INFORMATION
FOR YOUR REVIEW
FOR YOUR APPROVAL
FOR YOUR REPLY
PER YOUR REQUEST

☒ XX

MESSAGE: David: Please see attached request.

Regards,

A HARD COPY XXX WILL WILL NOT FOLLOW BY U.S. MAIL.

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PHILLIPS PETROLEUM COMPANY

ODESSA, TEXAS 79762
4001 PENBROOK

EXPLORATION AND PRODUCTION GROUP
Permian Basin Region

November 4, 1993

**Vacuum Glorieta East Unit
C-108 Application to Inject
NMOCD Case Number 10846
Vacuum Abo Unit Well Completions**

Mr. David R. Catanach, Examiner
New Mexico Oil Conservation Division
State Land Office Building
310 Old Santa Fe Trail
Santa Fe, New Mexico 87504

Mr. Catanach,

Per our telephone conversations on October 28th and 29th, I have enclosed a report that summarizes my examination of thirty-five (35) Vacuum Abo Unit well completions within the Vacuum Glorieta East Unit Waterflood Project "Area of Review". These wells required further review because their production casings were cemented with relatively small volumes of high yield cement. Based on my examination, I conclude that all thirty-five wells examined do have sufficient cement behind the production casing to protect the wellbores from collapse and to contain the pressured fluid within the proposed waterflood interval within the Glorieta Pool. Please refer any questions concerning the enclosed report to my attention at (915) 368-1232.

Sincerely,

K. H. Maberry, EOR Specialist
Reservoir Engineering
Permian Basin Region

CC: Elizabeth Harris
Thomas Kellahin, Santa Fe, NM
Read file

VACUUM GLORIETA EAST UNIT

N.M.O.C.D HEARING NUMBER 10846

ANALYSIS OF THIRTY-FIVE VACUUM ABO UNIT WELL COMPLETIONS WITHIN THE VACUUM GLORIETA EAST UNIT WATERFLOOD PROJECT "AREA OF REVIEW"

SCOPE :

This report was prepared to document and verify the cement tops behind the production casing and to determine the integrity of this cement for thirty-five Vacuum Abo Unit wells that are in the Vacuum Glorieta East Unit Waterflood "Area of Review". The selected wells were all cemented with less than 700 sacks of cement and thus appear to have insufficient cement to cover the proposed Glorieta injection interval. This report will answer the following two questions; 1) Is the top of cement behind the production casing sufficiently above the proposed Vacuum Glorieta East Unit Waterflood interval? 2) Is this cement of sufficient integrity to contain the pressured fluids within the proposed Vacuum Glorieta East Unit Waterflood injection interval?

CONCLUSIONS :

The Vacuum Abo Unit wells in question were cemented with high yield, light weight cement slurries. All thirty-five of the wells examined have sufficient primary cement behind the production casing to protect the wells from casing collapse and to contain the pressured fluid within the proposed Glorieta Waterflood Project interval from approximately 5840' - 6230'. Further, the thirty-five well bores have been adequately cemented so that they will protect the Ogallala freshwater aquifer at 234' from the pressured fluid in the proposed Waterflood Project interval. These findings are further evidenced by the fact that these wells have effectively contained a pressured waterflood in the East Vacuum Grayburg San Andres Unit from 4300' - 4700' since 1978.

BACKGROUND :

The Vacuum Abo Reef Pool underlies the Vacuum Glorieta Pool and the East Vacuum Grayburg San Andres Pool along the south east flank of the Vacuum Field in Lea County, New Mexico. The wells contained in this report were completed in the Vacuum Abo Reef Pool from 1961 to 1963. All thirty-five wells penetrate the Glorieta Pool within one-half mile of the proposed Vacuum Glorieta East Unit Area and as such are within the Vacuum Glorieta East Unit Waterflood Project "Area of Review" (See Exhibit 1).

Analysis of thirty-five Vacuum Abo Unit well
completions within the Vacuum Glorieta East Unit
Waterflood Project "Area of Review"

The typical Vacuum Abo Unit well is a 7 7/8" hole drilled to 9100' completed with 5 1/2 production casing set to total depth. The production casing was cemented with 500 to 700 sacks of high yield, light weight cement. These light weight cement slurries were used because the Abo Reef formation has layers of very high permeability and a relatively low bottom hole pressure. The formation could not hold a 6000' column of class "C" cement, weighing 14.8 ppg. The high yield, light weight slurries weighed only 10 to 11 ppg and were light enough to be raised to the intermediate casing at approximately 3200'. The cement weight was reduced, and volume extended, using either diatomaceous earth (Diacel "D") or bentonite clay gels. This was typical of the cement technology of the time.

EXAMINATION OF INDIVIDUAL WELL COMPLETIONS :

Exhibit 1 : Plat of Vacuum Abo Unit Wells Examined

This is a plat locating the thirty-five Vacuum Abo Unit wells. The Vacuum Glorieta East Unit boundary is outlined in red and the 1/2 mile "Area of Review" is outlined in black. The Vacuum Abo Unit wells are highlighted and identified by well number in red. All of the wells lie along the south east flank of the Vacuum Glorieta East Unit and the majority of the wells lie outside the Vacuum Glorieta East Unit boundary.

Exhibit 2 : Summary of Cement Slurries Used in Vacuum Abo Unit Wells.

This exhibit is a table of the eleven (11) different slurries used to complete the wells in question. The slurry name, slurry yield and slurry weight are noted. The slurry yields vary from 1.06 cuft/sk to 4.75 cuft/sk and slurry weights vary from 16.4 ppg to 10.83 ppg. The majority of Vacuum Abo Wells were cemented using Incore cement with 40 % Diacel "D" as a volume extender. This cement slurry has a yield of 4.48 cuft/sk and weighs 10.83 ppg. Its yield is 3.4 times greater, and slurry weight is 27 % lighter than the 1.32 cuft/sk at 14.8 ppg slurry used in NMOCD calculations.

Exhibit 3 : Comparison of Calculated and Measured Cement Tops

This exhibit illustrates the wide variance in the calculated cement tops when they are calculated using the actual slurry yield versus using a yield of 1.32 cuft/sk. This exhibit also compares the calculated cement tops to the cement tops measured upon the completion of the well.

The first four columns identify each Vacuum Abo Unit well by well number, API number, legal location and well type. The next column records the measured cement tops. The cement tops of all thirty-five wells were measured by either a temperature survey or cement bond log.

Analysis of thirty-five Vacuum Abo Unit well completions within the Vacuum Glorieta East Unit Waterflood Project "Area of Review"

Exhibit 3 (cont.) :

The next column notes whether a copy of the temperature survey or cement bond log was found in the well log file. Fourteen of the wells had surveys in their well file. Copies of these logs are included in the attached packet (**Packet 2**). Next is a description of the actual cement slurry design pumped behind the production casing. Following this is a column recording the volume of the actual cement slurry used. These volumes were calculated using the cement slurry yields presented in Exhibit 2. The last two columns record the calculated cement tops using the cement volume calculated from the actual slurry yield and the volume calculated using the NMOCD recommended yield of 1.32 cuft/sk. In both cases, the cement tops were calculated assuming that 50 % of the cement slurry volume did not build height behind the production casing.

In every well except two, the calculated cement top, using the 1.32 cuft/sk yield method, was well below the proposed Glorieta injection interval of 5840' to 6230'. Calculated cement tops ranged from 6455' to 7133'. In contrast, the calculated cement tops using the actual slurry yield were well above the injection interval. In this later case, the calculated tops ranged from 2207' to 4538', a minimum of 1300 feet above the proposed Glorieta injection interval. In addition, the calculated cement tops from the actual slurry yields compared favorably to the measured cement top in every case. This was not true for the tops calculated using 1.32 cuft/sk. The average difference between the measured cement tops and calculated tops using actual yields was 661 feet. This is in contrast to an average of difference of 3883 feet between the measured tops and the tops calculated from 1.32 cuft/sk. These findings confirm that the measured cement tops are correct and that the correct cement tops are well above the proposed injection interval of 5840' to 6230'.

Exhibit 4 : Summary of Casing Leak History

This table was prepared to demonstrate the strength and integrity of the light weight cement slurries pumped in the Abo wells. Most of these light weight slurry designs are outdated. Many of these slurries have not been pumped in the last 25 years. Little published cement strength data is available. What little strength data that is available from Halliburton Research in Duncan, Oklahoma is included in the attached packet (**Packet 3**).

However, the strength and integrity of a cement can be deduced by examining its historical performance under actual field conditions. Exhibit 4 documents the cement performance in each well by recording the number and location of every casing leak since the wells completion. The first four columns identify the wells. The next three columns record the measured and calculated cement tops that were discussed in Exhibit 3. The next column records the number of casing leaks found and repaired since the well was drilled.

Analysis of thirty-five Vacuum Abo Unit well
completions within the Vacuum Glorieta East Unit
Waterflood Project "Area of Review"

Exhibit 4 (cont.) :

The last column records any remarks that relate to the casing condition. Included in this column is the location of any leaks or waterflows, a description of any remedial cement work, and the date and pressure of any recent casing integrity tests.

All thirty-five of the wells examined have been in service for over 30 years. All are exposed to the East Vacuum Grayburg San Andres EOR project from 4300' - 4700'. This interval has been under a pressured waterflood since 1978 and a miscible CO₂ flood since 1985. Despite this extreme service, only one well (VAU # 14-03) has experienced a casing leak, and only one well (VAU # 13-12) experienced a waterflow. Both were repaired in a prudent manner and returned to service. The remaining thirty-three wells have never had any casing problems. This finding could only be true if a competent sheath of cement was protecting the casing and preventing waterflow from the pressured San Andres EOR flood at 4300' to 4700'. It can further be concluded that this same competent cement sheath will also protect the casing and prevent waterflow from the proposed Glorieta waterflood from 5840' to 6230'.

Packet 1 : Copy of the cement report for each well

Packet 2 : Copy of all available Temperature Surveys and Cement Bond Logs

Packet 3 : Copy of Halliburton Cement Strength Data

24

N



Phillips Petroleum Company

VGEU Waterflood Project
Area of Review
Vacuum Abo Unit Wells Examined

Prof. S. McCollum

Scale 1:40000.

11/1/93

EXHIBIT 2

VACUUM GLORIETA EAST UNIT

APPLICATION FOR AUTHORIZATION TO INJECT WATER NMOCD CASE NUMBER 10846

SUMMARY OF CEMENT SLURRIES USED IN VACUUM ABO UNIT WELLS

<u>CEMENT SLURRY NAME</u>	<u>SLURRY YIELD & WEIGHT</u>
INCOR NEAT :	1.32 cuft/sk @ 14.8 ppg
INCOR WITH 20 % DIACEL "D" :	2.69 cuft/sk @ 12.0 ppg
INCOR WITH 40 % DIACEL "D" :	4.48 cuft/sk @ 10.83 ppg
INCOR WITH 40 % DD & 1/4 CUFT STRATA-CRETE 6:	4.75 cuft/sk @ 10.86 ppg
INCOR WITH 40 % DD, 0.4 % LWL, & 3 % DIACEL "A":	4.48 cuft/sk @ 10.83 ppg
INCOR WITH 2 % GEL :	1.51 cuft/sk @ 14.1 ppg
INCOR WITH 4 % GEL :	1.72 cuft/sk @ 13.5 ppg
SLOSET :	1.12 cuft/sk @ 16.0 ppg
TRINITY INFERNO NEAT :	1.06 cuft/sk @ 16.4 ppg
TRINITY LITE-WATE :	1.33 cuft/sk @ 13.18 ppg
BYS - 400 :	UNKNOWN (NO RECORD)

VACUUM GLORIETA EAST UNIT

APPLICATION TO INJECT WATER (NMOCD CASE NO. 10846)

COMPARISON OF MEASURED AND CALCULATED CEMENT TOPS FROM SELECTED VACUUM ABO UNIT WELLS WITHIN THE VGEU WATERFLOOD "AREA OF REVIEW"

VAU Well No.	API Number	WELL LOCATION		WELL TYPE	MEASURED TOC	RECORD OF MEASUREMENT ON FILE	DESIGN OF ACTUAL SLURRY PUMPED		ACTUAL SLURRY VOLUME (CU.FT.)	CALC TOC*		CALC TOC** USING NMOCD SLURRY YIELD	
										USING ACTUAL SLURRY YIELD		USING NMOCD SLURRY YIELD	
01-09	3002520879	27	17S 35E 1650 FS, 1650 FE	PROD	2875'	YES CBL	200 sx Incor 20% DD, 150 sx Incor 40% DD, 150 sx Incor 2% gel		1437	3391'		6455'	
04-05	3002502888	26	17S 35E 990 FN, 330 FE	PROD	3434'	NO	660 sx Trinity Lite Wate, 50 sx Trinity Inferno Neat		931	3527'		3489'	
06-57	3002502990	33	17S 35E 330 FS, 1980 FW	PROD	3300'	NO	340 sx Incor w/40 % Diacel "D", 200 sx Slosel		1747	3951'		6935'	
06-59	3002503061	5	18S 35E 2310 FN, 1980 FW	SI PROD	3600'	NO	345 sx Incor w/40 % Diacel "D", 200 sx Slosel		1770	3874'		6905'	
06-61	3002503003	34	17S 35E 2080 FN, 2080 FE	PROD	1100'	NO	456 sx Incor w/40 % Diacel "D", 200 sx Slosel		2267	2557'		6600'	
06-63	3002503062	5	18S 35E 2310 FN, 990 FW	PROD	2300'	NO	355 sx Incor w/40 % Diacel "D", 200 sx Slosel		1814	3764'		6885'	
06-64	3002503004	34	17S 35E 760 FN, 760 FE	T&A	1600'	NO	320 sx Incor w/40 % Diacel "D", 200 sx Slosel		1658	4315'		7119'	
06-65	3002503005	34	17S 35E 987 FN, 1980 FE	PROD	3100'	NO	344 sx Incor w/40 % Diacel "D", 200 sx Slosel		1765	4006'		7028'	
06-66	3002502885	26	17S 35E 510 FS, 510 FW	PROD	1700'	NO	415 sx Incor w/40 % Diacel "D", 200 sx Slosel		2083	3120'		6789'	
06-67	3002508541	26	17S 35E 1882 FS, 660 FW	PROD	2700'	NO	320 sx Incor w/40 % Diacel "D", 200 sx Slosel		1658	4248'		7052'	
06-68	3002520528	34	17S 35E 1735 FN, 990 FE	WI	3950'	YES CBL	295 sx Incor w/40 % Diacel "D", 200 sx Slosel		1546	4538'		7114'	
06-69	3002508542	26	17S 35E 1980 FS, 1890 FW	PROD	2600'	NO	400 sx Incor w/40 % Diacel "D", 200 sx Slosel		2116	2993'		6714'	
06-70	3002508523	26	17S 35E 2080 FN, 1980 FE	PROD	3150'	NO	425 sx Incor w/40 % Diacel "D", 200 sx Slosel		2128	2924'		6685'	
06-74	3002502871	26	17S 35E 760 FS, 1980 FW	SI PROD	750 '	NO	325 sx Incor w/40 % Diacel "D", 200 sx Slosel		1680	4251'		7099'	
06-76	3002520200	26	17S 35E 2310 FN, 2270 FW	PROD	1700'	NO	480 sx Incor w/40 % Diacel "D", 200 sx Slosel		2374	2207'		6467'	
06-78	3002520021	35	17S 35E 350 FN, 350 FW	PROD	2500'	NO	313 sx Incor w/40 % Diacel "D", 200 sx Slosel		1626	4307'		7045'	
06-79	3002520527	26	17S 35E 2311 FN, 992 FW	PROD	2200'	NO	388 sx Incor w/40 % Diacel "D", 200 sx Slosel		1962	3313'		6735'	
06-85	3002520054	35	17S 35E 380 FN, 1650 FW	WI	2200'	NO	390 sx Incor w/40 % Diacel "D", 200 sx Slosel		1971	3262'		6702'	
08-10	3002503025	34	17S 35E 2310 FN, 990 FW	PROD	3540'	NO	450 sx Trinity Lite Wate, 100 sx Trinity Inferno Neat		705	4735'		4221'	
10-06	3002503012	34	17S 35E 1650 FS, 330 FW	PROD	3280'	YES T.S.	429 sx Incor w/40 % Diacel "D", 250 sx Incore Neat		2252	2600'		6513'	
10-08	3002503014	34	17S 35E 990 FS, 1650 FW	WI	3185'	YES T.S.	429 sx Incor w/40 % Diacel "D", 250 sx Incore Neat		2252	2599'		6512'	
10-09	3002503015	34	17S 35E 1980 FS, 2310 FE	WI	570'	YES T.S.	429 sx Incor w/40 % Diacel "D", 250 sx Incore Neat		2252	2600'		6513'	

VACUUM GLORIETA EAST UNIT

APPLICATION TO INJECT WATER (NMOC D CASE NO. 10846)

COMPARISON OF MEASURED AND CALCULATED CEMENT TOPS FROM SELECTED VACUUM ABO UNIT WELLS WITHIN THE VGEU WATERFLOOD "AREA OF REVIEW"

VAU Well No.	API Number	WELL LOCATION		WELL TYPE	MEASURED TOC	RECORD OF MEASUREMENT ON FILE	DESIGN OF ACTUAL SLURRY PUMPED	ACTUAL SLURRY VOLUME (CU.FT.)	CALC TOC* USING ACTUAL SLURRY YIELD	CALC TOC** USING NMOC D SLURRY YIELD
11-06	3002502992	33	17S 35E 330 FS, 660 FE	TA	3575'	NO	325 sx Inc. w/40% DD & 1/4 ft3 Strata-crete, 200 sx Inc. 4% gel	1888	3656'	7099'
13-05	3002503067	5	18S 35E 1980 FN, 660 FE	PROD	3265'	YES T.S.	375 sx Inc. w/40% DD 0.4% LWL & 3% Diacel A, 200 sx Inc. Nt	1944	3490'	6910'
13-06	3002503047	4	18S 35E 330 FN, 660 FE	PROD	3290'	YES T.S.	328 sx Inc. w/40% DD 0.4% LWL & 3% Diacel A, 160 sx Inc. Nt	1680	4295'	7133'
13-07	3002503069	5	18S 35E 2080 FN, 1980 FE	WI	3212'	YES T.S.	309 sx Inc. w/40% DD 0.4% LWL & 3% Diacel A, 220 sx Inc. Nt	1675	4137'	6956'
13-08	3002503048	4	18S 35E 330 FN, 990 FW	TA	3242'	NO	390 sx Incor w/40 % Diacel "D", 250 sx Incore Neat	2077	3817'	6473'
13-09	3002503040	3	18S 35E 330 FN, 660 FW	WI	3300'	NO	390 sx Incor w/40 % Diacel "D", 250 sx Incore Neat	2077	3145'	6701'
13-10	3002503070	5	18S 35E 1980 FS, 2310 FE	TA	3250'	NO	390 sx Incor w/40 % Diacel "D", 250 sx Incore Neat	2077	2962'	6518'
13-11	3002503049	4	18S 35E 1650 FN, 1980 FW	PROD	3240'	YES T.S.	429 sx Incor w/40 % Diacel "D", 250 sx Incore Neat	2252	2601'	6513'
13-12	3002503050	4	18S 35E 1650 FN, 1980FE	WI	3080'	YES CBL	429 sx Incor w/40 % Diacel "D", 250 sx Incore Neat	2252	2601'	6513'
13-13	3002503071	5	18S 35E 2310 FS, 660 FE	PROD	3200'	YES T.S.	429 sx Incor w/40 % Diacel "D", 250 sx Incore Neat	2252	2600'	6512'
13-16	3002503072	5	18S 35E 990 FN, 330 FE	PROD	2790'	YES T.S.	429 sx Incor w/40 % Diacel "D", 250 sx Incore Neat	2252	2601'	6513'
13-18	3002503053	4	18S 35E 2310 FS, 1980 FW	WI	3250'	YES T.S.	429 sx Incor w/40 % Diacel "D", 250 sx Incore Neat	2252	2600'	6512'
14-03	3002503065	5	18S 35E 660 FS, 1980 FW	SI PROD	1700'	YES CBL	250 Units BYS-400, 200 sx Incore 4% gel	UNKNOWN	UNKNOWN	UNKNOWN

* TOP OF CEMENT CALCULATED BY USING ACTUAL YIELD AND ASSUMING 50 % EXCESS CEMENT

** TOP OF CEMENT CALCULATED BY USING 1.32 CUFT/SK YIELD AND ASSUMING 50 % EXCESS CEMENT

VACUUM GLORIETA EAST UNIT

APPLICATION TO INJECT WATER (NMOCD CASE NO. 10846)

SUMMARY OF CASING LEAKS FOR SELECTED WELLS IN THE PHILLIPS' OPERATED VACUUM ABO UNIT WITHIN THE VGEU WATERFLOOD 'AREA OF REVIEW'

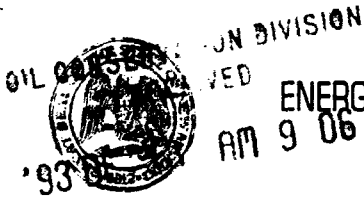
VAU Well No.	API Number	WELL LOCATION		WELL TYPE	MEASURED TOC	CALC TOC USING ACTUAL SLURRY YIELD		CALC TOC USING NMOCD SLURRY YIELD	RECORD OF CASING LEAKS	REMARKS
01-09	3002520879	27	17S 35E 1650 FS, 1650 FE	PROD	2875'	3391'		6455'	NONE	Perf 4000', CMT w/125sx, TOC @ 2875' Per NMOCD for EVGSAU
04-05	3002502888	26	17S 35E 990 FN, 330 FE	PROD	3434'	3527'		3489'	NONE	
06-57	3002502990	33	17S 35E 330 FS, 1980 FW	PROD	3300'	3951'		6935'	NONE	
06-59	3002503061	5	18S 35E 2310 FN, 1980 FW	SI PROD	3600'	3874'		6905'	NONE	
06-61	3002503003	34	17S 35E 2080 FN, 2080 FE	PROD	1100'	2557'		6600'	NONE	
06-63	3002503062	5	18S 35E 2310 FN, 990 FW	PROD	2300'	3764'		6885'	NONE	
06-64	3002503004	34	17S 35E 760 FN, 760 FE	T&A	1600'	4315'		7119'	NONE	CASING TESTED 500 # 03/16/92
06-65	3002503005	34	17S 35E 987 FN, 1980 FE	PROD	3100'	4006'		7028'	NONE	
06-66	3002502885	26	17S 35E 510 FS, 510 FW	PROD	1700'	3120'		6789'	NONE	
06-67	3002508541	26	17S 35E 1882 FS, 660 FW	PROD	2700'	4248'		7052'	NONE	CASING TESTED 500 # 02/22/92
06-68	3002520528	34	17S 35E 1735 FN, 990 FE	WI	3950'	4538'		7114'	NONE	
06-69	3002508542	26	17S 35E 1980 FS, 1890 FW	PROD	2600'	2993'		6714'	NONE	
06-70	3002508523	26	17S 35E 2080 FN, 1980 FE	PROD	3150'	2924'		6685'	NONE	CASING TESTED 500 # 11/29/90
06-74	3002502871	26	17S 35E 760 FS, 1980 FW	SI PROD	750 '	4251'		7099'	NONE	
06-76	3002520200	26	17S 35E 2310 FN, 2270 FW	PROD	1700'	2207'		6467'	NONE	
06-78	3002520021	35	17S 35E 350 FN, 350 FW	PROD	2500'	4307'		7045'	NONE	CASING TESTED 500 # 02/13/92
06-79	3002520527	26	17S 35E 2311 FN, 992 FW	PROD	2200'	3313'		6735'	NONE	
06-85	3002520054	35	17S 35E 380 FN, 1650 FW	WI	2200'	3262'		6702'	NONE	
08-10	3002503025	34	17S 35E 2310 FN, 990 FW	PROD	3540'	4735'		4221'	NONE	
10-06	3002503012	34	17S 35E 1650 FS, 330 FW	PROD	3280'	2600'		6513'	NONE	
10-08	3002503014	34	17S 35E 990 FS, 1650 FW	WI	3185'	2599'		6513'	NONE	
10-09	3002503015	34	17S 35E 1980 FS, 2310 FE	WI	570'	2600'		6513'	NONE	

VACUUM GLORIETA EAST UNIT

APPLICATION TO INJECT WATER (NMOCD CASE NO. 10846)

SUMMARY OF CASING LEAKS FOR SELECTED WELLS IN THE PHILLIPS' OPERATED VACUUM ABO UNIT WITHIN THE VGEU WATERFLOOD "AREA OF REVIEW"

VAU Well No.	API Number	WELL LOCATION		WELL TYPE	MEASURED TOC	CALC TOC USING ACTUAL SLURRY YIELD	CALC TOC USING NMOCD SLURRY YIELD	RECORD OF CASING LEAKS	REMARKS
11-06	3002502992	33	17S 35E 330 FS, 660 FE	TA	3575'	3656'	7099'	NONE	CASING TESTED 500 # 07/21/93
13-05	3002503067	5	18S 35E 1980 FN, 660 FE	PROD	3265'	3490'	6910'	NONE	
13-06	3002503047	4	18S 35E 330 FN, 660 FE	PROD	3290'	4295'	7133'	NONE	
13-07	3002503069	5	18S 35E 2080 FN, 1980 FE	WI	3212'	4137'	6956'	NONE	CASING TESTED 500 # 10/22/92
13-08	3002503048	4	18S 35E 330 FN, 990 FW	TA	3242'	3817'	6473'	NONE	
13-09	3002503040	3	18S 35E 330 FN, 660 FW	WI	3300'	3145'	6701'	NONE	
13-10	3002503070	5	18S 35E 1980 FS, 2310 FE	TA	3250'	2962'	6518'	NONE	CASING TESTED 500 # 06/22/93
13-11	3002503049	4	18S 35E 1650 FN, 1980 FW	PROD	3240'	2601'	6513'	NONE	
13-12	3002503050	4	18S 35E 1650 FN, 1980 FE	WI	3080'	2601'	6513'	NONE	
13-13	3002503071	5	18S 35E 2310 FS, 660 FE	PROD	3200'	2600'	6512'	NONE	Flow Between 5 1/2 X 8 5/8 Annulus, Perf @ 3120', Sqx w/75 sx (1/81)
13-16	3002503072	5	18S 35E 990 FN, 330 FE	PROD	2790'	2601'	6513'	NONE	
13-18	3002503053	4	18S 35E 2310 FS, 1980 FW	WI	3250'	2600'	6512'	NONE	
14-03	3002503065	5	18S 35E 660 FS, 1980 FW	SI PROD	1700'	UNKNOWN	UNKNOWN	TWO	Leaks @ 2329' -60' & 4899' -4930', Sqz'd w/ 525 sx & 20 sx (2/90)



STATE OF NEW MEXICO

ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT

OIL CONSERVATION DIVISION
HOBBS DISTRICT OFFICE

BRUCE KING
GOVERNOR

December 9, 1993

POST OFFICE BOX 1980
HOBBS, NEW MEXICO 88241-1980
(505) 393-6161

*File
10846*

Keith Maberry
Phillips Petroleum Company
4001 Penbrook
Odessa, Texas 79762

Re: Division Order R-10020
Vacuum Glorieta East Unit

Dear Mr. Maberry:

We appreciate the opportunity to meet with you and review the information you presented on the Area of Review wells listed in the above referenced order as needing additional cement coverage or confirming the top of cement.

The additional information you presented confirms sufficient cement coverage, necessary to comply with the provisions of the order, on the following wells:

Shell Western E & P Inc.	State "E" #2-N	31-17-35
Phillips Petroleum Co.	Santa Fe #125-N	20-17-35
Phillips Petroleum Co.	VAU Tr 14 #2-M	5-18-35

I will evaluate the cement bond log on the Vacuum Abo Unit Tract 9, Well No. 5, located in Unit H of Section 33, Township 17 South, Range 35 East, and make a determination on possible action needed to bring the well into compliance. We will advise you of the findings in the near future.

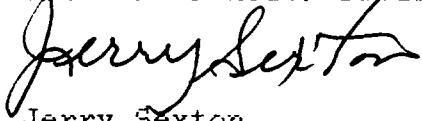
The information on the Texaco Exploration & Production Inc. N.M. "AB" State Well No. 4 located in Unit I of Section 6, Township 18 South, Range 35 East, is insufficient. You are authorized to inject into the affected area wells for a period of six months before taking further action. We request that you submit a cement bond log on this well, either during or at the end of the six month period.

The cement coverage on the Vacuum Abo Unit Tract 14 Well No. 3 located in Unit N of Section 5, Township 18 South, Range 35 East, is insufficient to meet the requirements of the order. It was indicated there is a possibility that the well may be plugged and abandoned. Please advise us of your plans when a decision has been made.

If you have any questions, feel free to call (505) 393-6161.

Very truly yours

OIL CONSERVATION DIVISION

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

Jerry Sexton
Supervisor, District I

JS:bp

cc: David Catanach
File