

**CASE 3290: Application of Kewanee
OIL CO. for a waterflood project,
Eddy County, New Mexico.**

Case No.

3289

Unit Agreement
Active at time
of filming. See
Unit Agreement files.

CASE No.
3290

Application,
TRANSCRIPTS,
SMALL Exhibits
ETC.

BEFORE THE NEW MEXICO OIL CONSERVATION COMMISSION

APPLICATION OF KEWANEE OIL COMPANY
FOR APPROVAL OF A WATERFLOOD
PROJECT, ATOKA-GRAYBURG POOL,
EDDY COUNTY, NEW MEXICO

No. 3290

A P P L I C A T I O N

Comes now Kewanee Oil Company, by its attorneys, and applied to the New Mexico Oil Conservation Commission for permission to institute a waterflood project in the Atoka-Grayburg pool, Eddy County, New Mexico, and in support of its application states:

1. Applicant is the operator of the Atoka-Grayburg unit comprising the following lands in T. 18 S., R. 26 E., Eddy County, New Mexico:

Section 13: $W\frac{1}{2}NE\frac{1}{4}$, $NW\frac{1}{4}SE\frac{1}{4}$, $N\frac{1}{2}SW\frac{1}{4}$, $NW\frac{1}{4}$.

Section 14: $E\frac{1}{2}NE\frac{1}{4}$, $SW\frac{1}{4}NE\frac{1}{4}$, $N\frac{1}{2}SE\frac{1}{4}$.

2. Wells producing from the Grayburg formation on the above described lands are in an advanced state of depletion and are regarded as what is commonly referred to as "stripper" wells.

3. Applicant proposes to waterflood the above described lands by the injection of water into the Grayburg formation through two proposed injection wells to be located in Section 13, T. 18 S., R. 26 E., Eddy County, New Mexico, as follows:

Leavitt Well No. 3, 1650 feet from the north line and 990 feet from the west line.

Leavitt Well No. 11, 990 feet from the north line and 2310 feet from the west line.

4. Attached to and made a part of this application are the following exhibits:

Exhibit "A": Plat showing the location of the Atoka-Grayburg Unit (shaded in gray) and the producing and injection wells thereon.

Exhibit "B": Structure map of the Atoka-Grayburg Unit area contoured on the top of the Premier sand.

DOCKET MAILED

Date 7-30-65

Exhibit "C": Graph of oil production in the Atoka-Grayburg pool.

Exhibit "D": Plat showing ownership and development within a two mile radius of the proposed injection wells.

Exhibit "E": Typical electric log of a well in the Atoka-Grayburg pool showing the top of the Grayburg formation and the top of the Premier Sand.

Exhibits "F" and "G": Schematic diagrams of the proposed injection wells.

5. The proposed waterflood project will prevent waste and protect correlative rights.

WHEREFORE, Kewanee Oil Company requests that this application be set for hearing before the Commission or one of its examiners and that the Commission enter its order approving this application.

SETH, MONTGOMERY, FEDERIGHI & ANDREWS

By

Richard J. Morris
P. O. Box 2307

Santa Fe, New Mexico

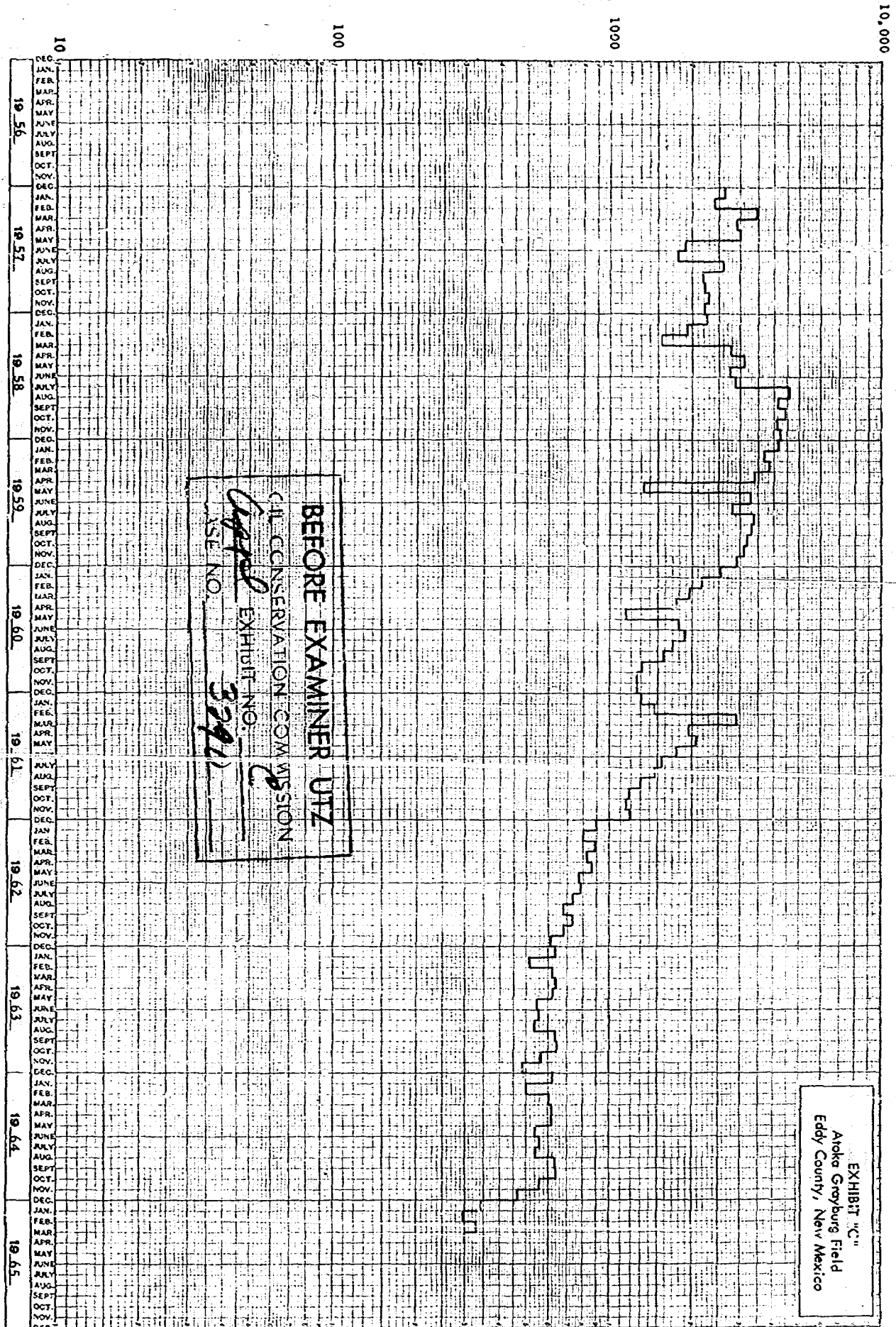
Attorneys for Kewanee Oil Company

CERTIFICATE OF MAILING

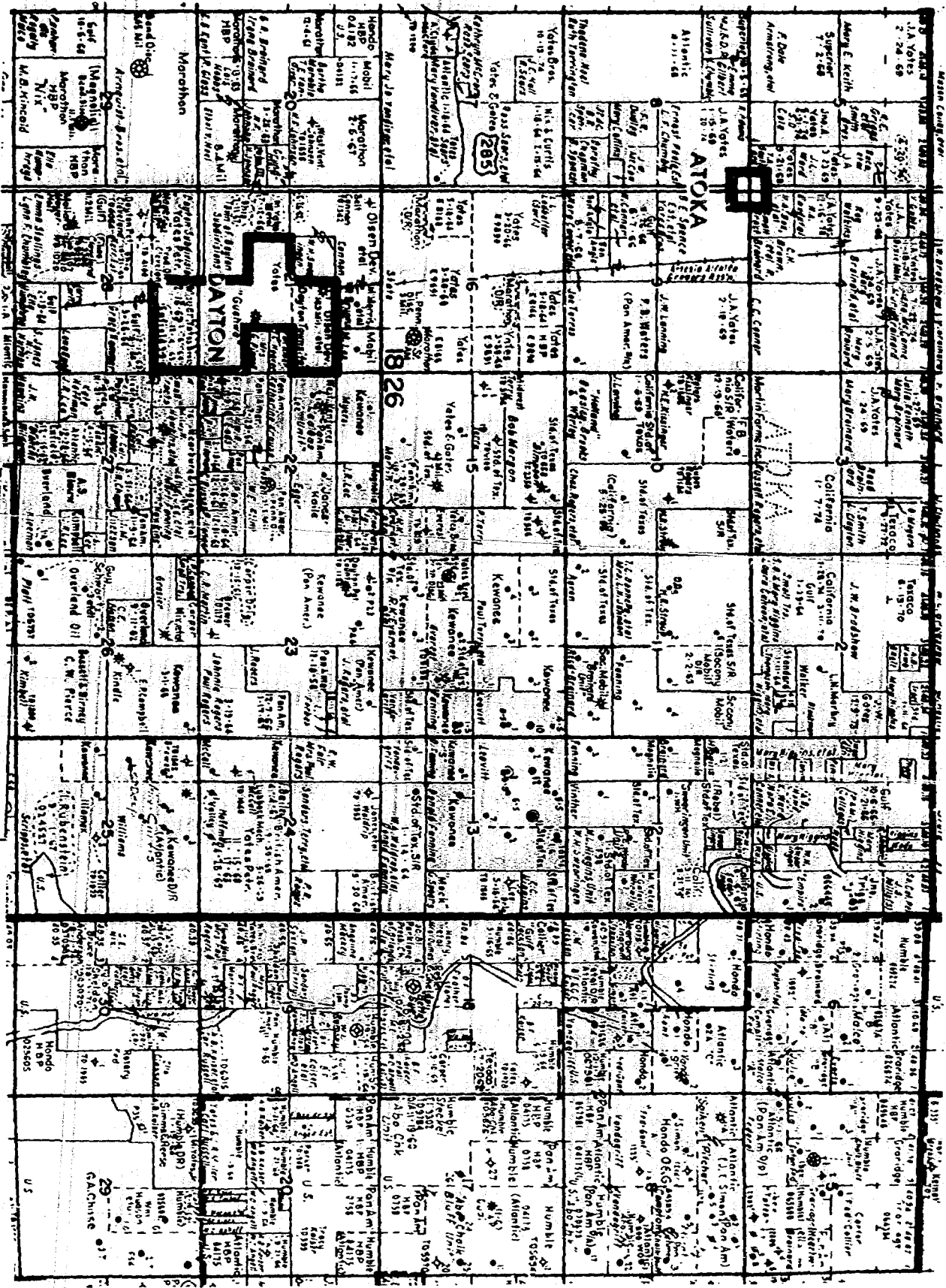
I hereby certify that a copy of this application, complete with all exhibits referred to therein, has been sent to Mr. Frank Irby, Office of the State Engineer, Capitol Building, Santa Fe, New Mexico, on this 20th day of July, 1965.

Richard J. Morris

OIL PRODUCTION - BOPM



Page 3290

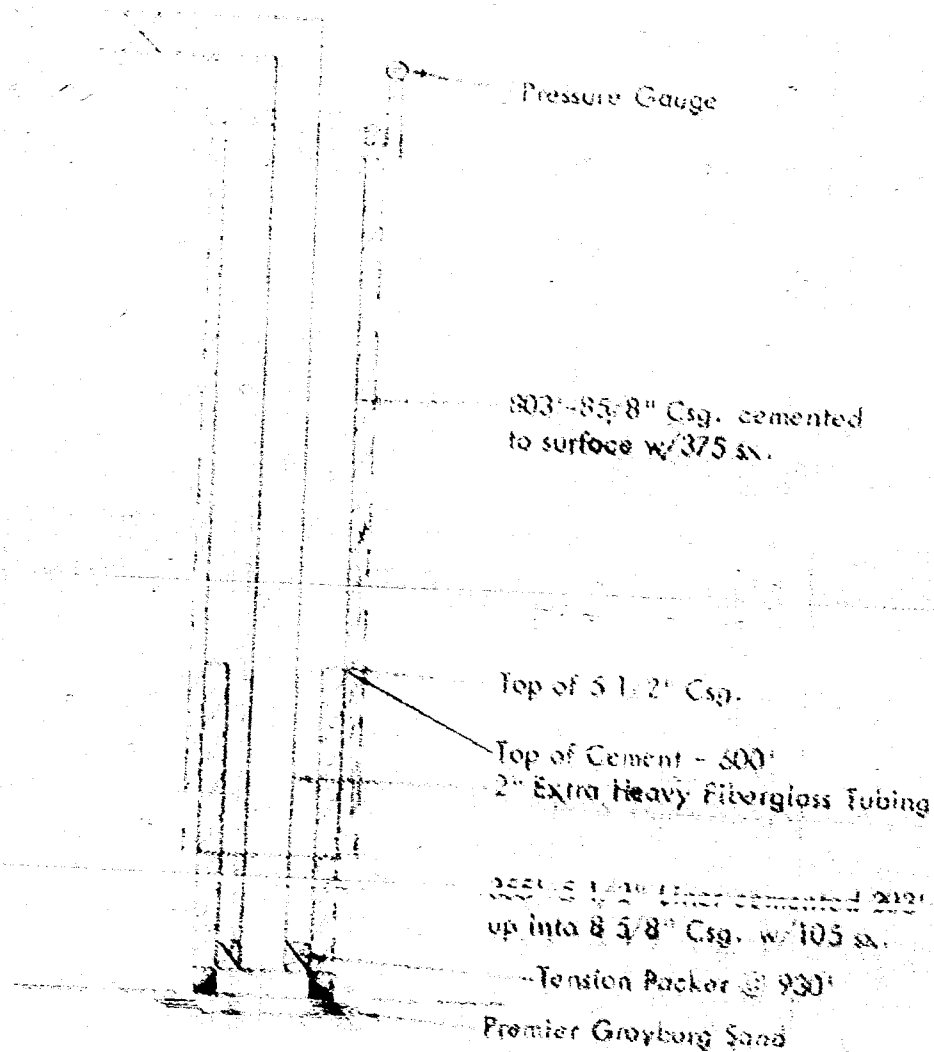


BEFORE EXAMINER UTZ
 OIL CONSERVATION COMMISSION
 EXHIBIT NO. 3290
 CASE NO. 3290

EXHIBIT "D"
 Regional Ownership and Development
 Atoka Grayburg Field
 Eddy County, New Mexico

Case 3290

PLATE III
Unit, SW/4 of NW/4 Sec. 13, T-18-S, R-26-E

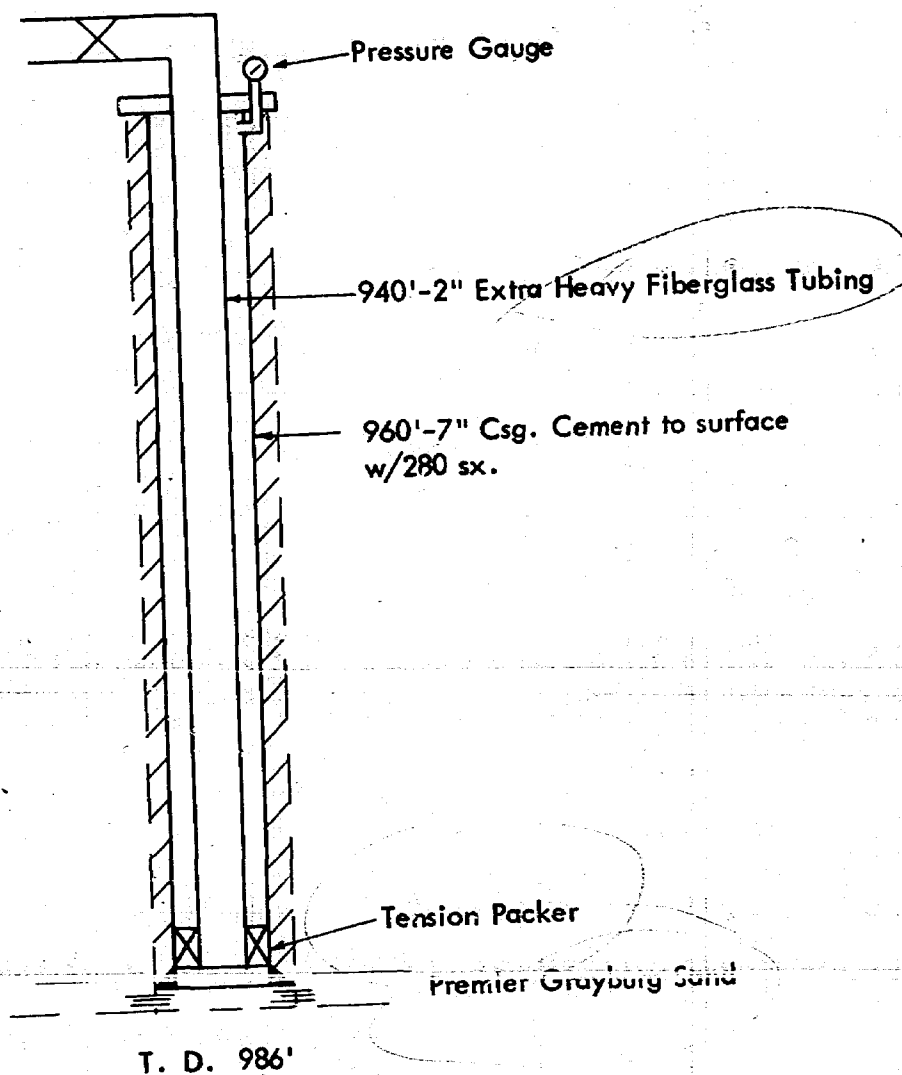


T. D. 975'

BEFORE EXAMINER UTZ
OIL AND GAS COMMISSION
Case No. 1274

EXHIBIT OF
Pressure Injection Well

LEAVITT #11
NE/4 of NW/4, Unit "C", Sec. 13, T-18-S, R-26-E



BEFORE EXAMINER UTZ	
OIL CONSERVATION COMMISSION	
Appd	EXHIBIT NO. <i>GL</i>
CASE NO. <i>3290</i>	

KEWANEE OIL COMPANY
Atoka Grayburg Field
Eddy County, New Mexico

EXHIBIT "G"
Proposed Water Injection Well

Case 3290

GOVERNOR
JACK M. CAMPBELL
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
GUYTON B. HAYS
MEMBER

P. O. BOX 2088
SANTA FE

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

August 16, 1965

Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

Re: Case No. 3290
Order No. R-2954 & R-2955
Applicant:

Kewanee Oil Company

Dear Sir:

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

Very truly yours,

A. L. Porter, Jr.
A. L. PORTER, Jr.
Secretary-Director

ir/

Carbon copy of order also sent to:

Hobbs OCC x

Artesia OCC x

Aztec OCC

OTHER Frank J. [unclear]

UNIT AGREEMENT

ATOKA GRAYBURG UNIT

EDDY COUNTY, NEW MEXICO

Section

Page

ARTICLE 3
CREATION AND EFFECT OF UNIT

3.1	Oil and Gas Rights Unitized	4
3.2	Personal Property Excepted	4
3.3	Amendment of Leases and Other Agreements	5
3.4	Continuation of Leases and Term Royalties	5
3.5	Titles Unaffected by Unitization	5
3.6	Injection Rights	5
3.7	Development Obligation	5

ARTICLE 4
PLAN OF OPERATIONS

4.1	Unit Operator	5
4.2	Operating Methods	6
4.3	Change of Operating Methods	6

ARTICLE 5
TRACT PARTICIPATION

5.1	Tract Participation	6
5.2	Relative Tract Participations	6

ARTICLE 6
ALLOCATION OF UNITIZED SUBSTANCES

6.1	Allocation to Tracts	6
6.2	Distribution Within Tracts	7
6.3	Taking Unitized Substances in Kind	7
6.4	Failure to Take in Kind	7
6.5	Responsibility for Royalty Settlements	8
6.6	Royalty on Outside Substances	8

ARTICLE 7
PRODUCTION AS OF THE EFFECTIVE DATE

7.1	Oil in Lease Tanks	8
7.2	Overproduction	9

ARTICLE 8
USE OF LOSS OF UNITIZED SUBSTANCES

8.1	Use of Unitized Substances	9
8.2	Royalty Payments	9

UNIT AGREEMENT
ATOKA GRAYBURG UNIT
EDDY COUNTY, NEW MEXICO

TABLE OF CONTENTS

<u>Section</u>		<u>Page</u>
	Preliminary Recitals	1
	 ARTICLE 1 DEFINITIONS	
1.1	Unit Area	1
1.2	Unitized Formation	1
1.3	Unitized Substances	2
1.4	Working Interest	2
1.5	Royalty Interest	2
1.6	Royalty Owner	2
1.7	Working Interest Owner	2
1.8	Tract	2
1.9	Unit Operating Agreement	2
1.10	Unit Operator	2
1.11	Tract Participation	2
1.12	Unit Participation	2
1.13	Outside Substances	3
1.14	Oil and Gas Rights	3
1.15	Unit Operations	3
1.16	Unit Equipment	3
1.17	Unit Expense	3
1.18	Singular and Plural Gender	3
1.19	Productive Acre-Feet	3
	 ARTICLE 2 EXHIBITS	
2.1	Exhibits	3
	2.1.1 Exhibit A: Tracts and Tract Description	3
	2.1.2 Exhibit B: Map of Unit Area	3
2.2	Reference to Exhibits	4
2.3	Exhibits Considered Correct	4
2.4	Correcting Errors	4
2.5	Filing Revised Exhibits	4

SectionPage

ARTICLE 9
TRACTS TO BE INCLUDED IN UNIT

9.1	Qualification of Tracts	9
9.2	Determination of Ownership and Location	11
9.3	Subsequent Commitment of Interest or Tract to Unit	11
9.4	Acquisition of Interest	11
9.5	Revision of Exhibits	11

ARTICLE 10
TITLES

10.1	Removal of Tract from Unit Area	12
10.2	Revision of Exhibits	12
10.3	Working Interest Titles	12
10.4	Royalty Owner Titles	12
10.5	Production Where Title is in Dispute	12
10.6	Payment of Taxes to Protect Title	13

ARTICLE 11
EASEMENTS OR USE OF SURFACE

11.1	Grant of Easements	13
11.2	Use of Water	13
11.3	Surface Damages	14

ARTICLE 12
ENLARGEMENTS OF UNIT AREA

12.1	Enlargements of Unit Area	14
12.2	Determination of Tract Participation	14
12.3	Effective Date	14

ARTICLE 13
CHANGE OF TITLE

13.1	Covenant Running With the Land	15
13.2	Notice of Transfer	15
13.3	Waiver of Rights to Partition	15

Section

Page

ARTICLE 14
RELATIONSHIP OF PARTIES

14.1	No Partnership	15
14.2	No Sharing of Market	15
14.3	Royalty Owners Free of Costs	16
14.4	Information to Royalty Owners	16

ARTICLE 15
LAWS AND REGULATIONS

15.1	Laws and Regulations	16
------	----------------------	----

ARTICLE 16
FORCE MAJEURE

16.1	Force Majeure	16
------	---------------	----

ARTICLE 17
EFFECTION DATE

17.1	Effective Date	16
17.2	Election to Reduce Unit Area Prior to Effective Date	17
17.3	Certificate of Effectiveness	17

ARTICLE 18
TERM

18.1	Term	18
18.2	Termination by Working Interest Owners	18
18.3	Effect of Termination	18
18.4	Salvaging Equipment Upon Termination	18
18.5	Certificate of Termination	18

ARTICLE 19
EXECUTION

19.1	Separate Counterparts of Ratifications	19
19.2	Joinder in Dual Capacity	19

ARTICLE 20
GENERAL

20.1	Amendments Affecting Working Interest Owners	19
20.2	Lien of Unit Operator	19

UNIT AGREEMENT
ATOKA GRAYBURG UNIT
EDDY COUNTY, NEW MEXICO

THIS AGREEMENT, entered into as of the 1st day of January, 1965,
by the parties who have signed the original of this instrument, a counter-
part thereof, or other instrument agreeing to be bound by the provisions
hereof.

WITNESSETH

WHEREAS, in the interest of the public welfare and to promote
conservation and increase the ultimate recovery of oil, gas, and associated
minerals from the Atoka Grayburg Field, in Eddy County, New Mexico, and
to protect the rights of the owners of interest therein, it is deemed necessary
and desirable to enter into this agreement to unitize the Oil and Gas Rights
in and to the Unitized Formation in order to conduct a secondary recovery
pressure maintenance, or other recovery program as herein provided;

NOW, THEREFORE, in consideration of the premises and of the
mutual agreements herein contained, it is agreed as follows:

ARTICLE 1

DEFINITIONS

As used in this agreement, the terms herein contained shall have the
following meaning:

1.1 Unit Area means the lands described by Tracts in Exhibit A and
shown on Exhibit B as to which this agreement becomes effective or to which
it may be extended as herein provided.

1.2 Unitized Formation means that subsurface portion of the Unit
Area commonly known as the Grayburg Formation, which formation is
encountered between the subsurface depths of 740 feet and 1100 feet in
Kewanee Oil Company's Leavitt "S" No. 6 well (originally drilled as
Illamex Oil, Inc. Leavitt No. 6 well) located 1650 feet from North and
West Lines, Section 13, T 18 S, R 26 E, Eddy County, New Mexico, as
shown on the Welex Radioactivity Log of said well dated November 17, 1957.

1.3	<u>Unitized Substances</u> means all oil, gas, gaseous substances, sulphur contained in gas, condensate, distillate, and all associated and constituent liquid or liquefiable hydrocarbons within or produced from the Unitized Formation.	1 2 3 4
1.4	<u>Working Interest</u> means an interest in Unitized Substances by virtue of a lease, operating agreement, fee title, or otherwise, including a carried interest, which interest is chargeable with and obligated to pay or bear, either in cash or out of production or otherwise, all or a portion of the cost of drilling, developing, producing, and operating the Unitized Formation.	5 6 7 8 9
1.5	<u>Royalty Interest</u> means a right to or interest in any portion of the Unitized Substances or proceeds thereof other than a Working Interest.	10 11
1.6	<u>Royalty Owner</u> means a party hereto who owns a Royalty Interest.	12
1.7	<u>Working Interest Owner</u> means a party hereto who owns a Working Interest. The owner of oil and gas rights that are free of lease or other instrument conveying the Working Interest to another shall be regarded as a Working Interest Owner to the extent of seven-eighths (7/8) of his interest in Unitized Substances, and as a Royalty Owner with respect to his remaining one-eighth (1/8) interest therein.	13 14 15 16 17 18
1.8	<u>Tract</u> means each parcel of land described as such and given a Tract number in Exhibit A.	19 20
1.9	<u>Unit Operating Agreement</u> means the agreement entitled "Unit Operating Agreement, Aloka Grayburg Unit, Eddy County, New Mexico", of the same effective date as the effective date of this agreement, and which is entered into by Working Interest Owners.	21 22 23 24
1.10	<u>Unit Operator</u> means the Working Interest Owner designated by Working Interest Owners under the Unit Operating Agreement to develop and operate the Unitized Formation, acting as operator and not as a Working Interest Owner.	25 26 27 28
1.11	<u>Tract Participation</u> means the percentage shown on Exhibit A for allocating Unitized Substances to a Tract under this agreement.	29 30
1.12	<u>Unit Participation</u> of each Working Interest Owner means the sum of the percentages obtained by multiplying the Working Interest of such Working Interest Owner in each Tract by the Tract Participation of such Tract.	31 32 33

2.2 Reference to Exhibits. When reference herein is made to an exhibit, the reference is to the Exhibit as originally attached or, if revised, to the latest revision.

2.3 Exhibits Considered Correct. An exhibit shall be considered to be correct until revised as herein provided.

2.4 Correcting Errors. The shapes and descriptions of the respective Tracts have been established by using the best information available. If it subsequently appears that any Tract, because of diverse royalty or working interest ownership on the effective date hereof, should be divided into more than one Tract, or that any mechanical miscalculation has been made, Unit Operator, with the approval of Working Interest Owners, may correct the mistake by revising the exhibits to conform to the facts. The revision shall not include any re-evaluation of engineering or geological interpretations used in determining Tract Participation. Each such revision of an exhibit shall be effective at 7:00 a. m. on the first day of the calendar month next following the filing for record of the revised exhibit or on such other date as may be determined by Working Interest Owners and set forth in the revised exhibit.

2.5 Filing Revised Exhibits. If an exhibit is revised pursuant to this agreement, Unit Operator shall certify and file the revised exhibit for record in the County in which this agreement is filed.

ARTICLE 3

CREATION AND EFFECT OF UNIT

3.1 Oil and Gas Rights Unitized. Subject to the provisions of this agreement, all Oil and Gas Rights of Royalty Owners in and to the lands described in Exhibit A, and all Oil and Gas Rights of Working Interest Owners in and to said lands, are hereby unitized insofar as the respective Oil and Gas Rights pertain to the Unitized Formation, so that operations may be conducted as if the Unitized Formation had been included in a single lease executed by all Royalty Owners, as lessors, in favor of all Working Interest Owners, as lessees, and as if the lease had been subject to all of the provisions of this agreement.

3.2 Personal Property Excepted. All lease and well equipment, materials, and other facilities heretofore or hereafter placed by any of the Working Interest Owners on the lands covered hereby shall be deemed to be and shall remain personal property belonging to and may be removed by the Working Interest Owners. The rights and interests therein as among Working Interest Owners are covered by the Unit Operating Agreement.

1.13 <u>Outside Substances</u> means all substances obtained from any source other than the Unitized Formation and which are injected into the Unitized Formation.	1 2 3
1.14 <u>Oil and Gas Rights</u> means the right to explore, develop, and operate lands within the Unit Area for the production of Unitized Substances, or to share in the production so obtained or the proceeds thereof.	4 5 6
1.15 <u>Unit Operations</u> means all operations conducted by Working Interest Owners or Unit Operator pursuant to this agreement and the Unit Operating Agreement for or on account of the development and operation of the Unitized Formation for the production of Unitized Substances.	7 8 9 10
1.16 <u>Unit Equipment</u> means all personal property, lease and well equipment, plants, and other facilities and equipment taken over or otherwise acquired for the joint account for use in Unit Operations.	11 12 13
1.17 <u>Unit Expense</u> means all cost, expense, or indebtedness incurred by Working Interest Owners or Unit Operator pursuant to this agreement and the Unit Operating Agreement for or on account of Unit Operations.	14 15 16
1.18 Unless the context otherwise clearly indicates, words used in the singular include the plural, the plural include the singular, and the neuter gender include the masculine and the feminine.	17 18 19
1.19 <u>Productive Acre-Feet</u> means the volume of Unitized Formation containing Unitized Substances; provided that, only that portion of the Unitized Formation containing Unitized Substances and having porosity of eight percent (8%) or more and permeability of one-tenth of one millidarcy (0.1 md) or more shall be used in determining the Productive Acre-Feet underlying each Tract.	20 21 22 23 24 25
ARTICLE 2	26
EXHIBITS	27
2.1 <u>Exhibits</u> . Attached hereto are the following exhibits which are incorporated herein by reference:	28 29
2.1.1 <u>Exhibit A</u> , which is a schedule that describes each Tract in the Unit Area and shows its Tract Participation.	30 31
2.1.2 <u>Exhibit B</u> , which is a map that shows the boundary lines of the Unit Area and the Tracts therein.	32 33

3.3 Amendment of Leases and Other Agreements. The provisions of the various leases, agreements, division and transfer orders, or other instruments covering the respective Tracts or the production therefrom are amended to the extent necessary to make them conform to the provisions of this agreement, but otherwise shall remain in effect.

3.4 Continuation of Leases and Term Royalties. Operations, including drilling operations, conducted with respect to the Unitized Formation on any part of the Unit Area, or production from any part of the Unitized Formation, except for the purpose of determining payments to Royalty Owners, shall be considered as operations upon or production from each Tract, and such operations or production shall continue in effect each lease or term royalty interest as to all lands covered thereby just as if such operations had been conducted and a well had been drilled on and was producing from each Tract.

3.5 Titles Unaffected by Unitization. Nothing herein shall be construed to result in the transfer of title to the Oil and Gas Rights by any party hereto to any other party or to Unit Operator. The intention is to provide for the cooperative development and operation of the Tracts and for the sharing of Unitized Substances as herein provided.

3.6 Injection Rights. Royalty Owners hereby grant unto Working Interest Owners the right to inject into the Unitized Formation any substances in whatever amounts Working Interest Owners deem expedient for Unit Operations, including the right to drill and maintain injection wells on the Unit Area and to use producing or abandoned oil or gas wells for such purposes.

3.7 Development Obligation. Nothing herein shall relieve Working Interest Owners from the obligation to develop reasonably as a whole the lands and leases committed hereto.

ARTICLE 4

PLAN OF OPERATIONS

4.1 Unit Operator. Working Interest Owners are, as of the effective date of this agreement, entering into the Unit Operating Agreement designating Kewanee Oil Company as Unit Operator. Unit Operator shall have the exclusive right to conduct Unit Operations. The operations shall conform to the provisions of this agreement and the Unit Operating Agreement. If there is any conflict between such agreements, this agreement shall govern.

Substances were produced. The amount of Unitized Substances allocated to each Tract, regardless of whether it is more or less than the actual production of Unitized Substances from the well or wells, if any, on such Tract, shall be deemed for all purposes to have been produced from such Tract.

6.2 Distribution Within Tracts. The Unitized Substances allocated to each Tract shall be distributed among, or accounted for to, the parties entitled to share in the production from such Tract in the same manner, in the same proportions, and upon the same conditions as they would have participated and shared in the production from such Tract, or in the proceeds thereof, had this agreement not been entered into, and with the same legal effect.

6.2.1 If the amount of production or the proceeds thereof accruing to any Royalty Owner in a Tract depends upon the average production per well or the average pipe line runs per well from such Tract during any period of time, then such production shall be determined from and after the effective date hereof by dividing the quantity of Unitized Substances allocated hereunder to such Tract during such period of time by the number of wells located thereon capable of producing as of the effective date hereof.

6.2.2 If any Oil and Gas Rights in a Tract hereafter become divided and owned in severalty as to different parts of the Tract, the owners of the divided interests shall share in the Unitized Substances allocated to the Tract, or in the proceeds thereof, in proportion to the surface acreage of their respective parts of the Tract.

6.3 Taking Unitized Substances in Kind. The Unitized Substances allocated to each Tract shall be delivered in kind to the respective parties entitled thereto by virtue of the ownership of Oil and Gas Rights therein or by purchase from such owners. Such parties shall have the right to construct, maintain, and operate within the Unit Area all necessary facilities for that purpose, provided that they are so constructed, maintained, and operated as not to interfere with Unit Operations. Any extra expenditures incurred by Unit Operator by reason of the delivery in kind of any portion of the Unitized Substances shall be borne by the receiving party. If a Royalty Owner has the right to take in kind a share of Unitized Substances and fails to do so, the Working Interest Owner whose Working Interest is subject to such Royalty Interest shall be entitled to take in kind such share of the Unitized Substances.

6.4 Failure to Take in Kind. If any party fails to take in kind or separately dispose of its share of Unitized Substances, Unit Operator shall

Substances were produced. The amount of Unitized Substances allocated to each Tract, regardless of whether it is more or less than the actual production of Unitized Substances from the well or wells, if any, on such Tract, shall be deemed for all purposes to have been produced from such Tract.

6.2 Distribution Within Tracts. The Unitized Substances allocated to each Tract shall be distributed among, or accounted for to, the parties entitled to share in the production from such Tract in the same manner, in the same proportions, and upon the same conditions as they would have participated and shared in the production from such Tract, or in the proceeds thereof, had this agreement not been entered into, and with the same legal effect.

6.2.1 If the amount of production or the proceeds thereof accruing to any Royalty Owner in a Tract depends upon the average production per well or the average pipe line runs per well from such Tract during any period of time, then such production shall be determined from and after the effective date hereof by dividing the quantity of Unitized Substances allocated hereunder to such Tract during such period of time by the number of wells located thereon capable of producing as of the effective date hereof.

6.2.2 If any Oil and Gas Rights in a Tract hereafter become divided and owned in severalty as to different parts of the Tract, the owners of the divided interests shall share in the Unitized Substances allocated to the Tract, or in the proceeds thereof, in proportion to the surface acreage of their respective parts of the Tract.

6.3 Taking Unitized Substances in Kind. The Unitized Substances allocated to each Tract shall be delivered in kind to the respective parties entitled thereto by virtue of the ownership of Oil and Gas Rights therein or by purchase from such owners. Such parties shall have the right to construct, maintain, and operate within the Unit Area all necessary facilities for that purpose, provided that they are so constructed, maintained, and operated as not to interfere with Unit Operations. Any extra expenditures incurred by Unit Operator by reason of the delivery in kind of any portion of the Unitized Substances shall be borne by the receiving party. If a Royalty Owner has the right to take in kind a share of Unitized Substances and fails to do so, the Working Interest Owner whose Working Interest is subject to such Royalty Interest shall be entitled to take in kind such share of the Unitized Substances.

6.4 Failure to Take in Kind. If any party fails to take in kind or separately dispose of its share of Unitized Substances, Unit Operator shall

have the right, for the time being and subject to revocation at will by the party owning the share, to purchase for its own account or sell to others such share at not less than the market price prevailing in the area and not less than the price Unit Operator receives for its share of Unitized Substances; provided that, all contracts of sale by Unit Operator of any other party's share of Unitized Substances shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the circumstances, but in no event shall any such contract be for a period in excess of one year. The proceeds of the Unitized Substances so disposed of by Unit Operator shall be paid to the party entitled thereto.

6.5 Responsibility for Royalty Settlements. Any party receiving in kind or separately disposing of all or part of the Unitized Substances allocated to any Tract or receiving the proceeds therefrom shall be responsible for the payment thereof to the persons entitled thereto, and shall indemnify all parties hereto, including Unit Operator, against any liability for all royalties, overriding royalties, production payments, and all other payments chargeable against or payable out of such Unitized Substances or the proceeds therefrom.

6.6 Royalty on Outside Substances. If any Outside Substances consisting of natural gases are injected into the unitized formation, fifty percent (50%) of any like substances contained in Unitized Substances subsequently produced and sold, or used for other than operations hereunder, shall be deemed to be Outside Substances until the aggregate of said fifty percent (50%) equals the accumulated volume of such natural gases injected into the Unitized Formation, and no payments shall be due or payable to Royalty Owners on said fifty percent (50%). If the Outside substances injected be liquefied petroleum gases, or other liquid hydrocarbons, as distinguished from natural gases prior to injection, the Working Interest Owners shall have the right, beginning one (1) year after injection of such liquefied petroleum gases is commenced, to recover all such hydrocarbons without payment of royalty. To provide a reasonable and practical basis of accounting for the same, it is agreed that ten percent (10%) of the entire production produced and sold from the Unitized Formation shall be deemed to be Outside Substances until the aggregate value of said ten percent (10%) of said production equals the entire accumulated cost to the Working Interest Owners of such Outside Substances.

ARTICLE 7

PRODUCTION AS OF THE EFFECTIVE DATE

7.1 Oil in Lease Tanks. Unit Operator shall gauge all lease and other tanks within the Unit Area to ascertain the amount of merchantable oil produced

9.1.1 Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest have become parties to this agreement and as to which Royalty Owners owning sixty-five percent (65%) or more of the Royalty Interest have become parties to this agreement.

9.1.2 Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest have become parties to this agreement, and as to which Royalty Owners owning less than Sixty-five percent (65%) of the Royalty Interest have become parties to this agreement, and as to which the Working Interest Owners in such Tract have executed and delivered an indemnity agreement indemnifying and agreeing to hold harmless the other Working Interest Owners in the Unit Area, their successors and assigns against a portion of all claims and demands that may be made by nonsubscribing owners of Royalty Interest in such Tract on account of the inclusion of the Tract in the Unit Area. The portion of such claims and demands covered by the indemnity shall, as to each such Tract, be the fraction thereof in which the numerator is the difference between the percentage of the Royalty Interest signed and sixty-five percent (65%) of the Royalty Interest in the Tract; and the denominator is the difference between the percentage of the Royalty Interest signed and one hundred percent (100%) of the Royalty Interest in the Tract.

9.1.3 Each Tract as to which Working Interest Owners owning less than one hundred percent (100%) of the Working Interest have become parties to this agreement; and Royalty Owners owning sixty-five percent (65%) or more of the Royalty Interest have become parties to this agreement, or the indemnity with reference to the claims of non-subscribing owners of Royalty Interest on such Tract is given under the provisions of Section 9.1.2; and as to which (a) the Working Interest Owner who operates the Tract and all of the other Working Interest Owners in such Tract who have become parties to this agreement have joined in a request for inclusion of such Tract in the Unit Area, and have executed and delivered an indemnity agreement indemnifying and agreeing to hold harmless the other Working Interest Owners in the Unit Area, their successors and assigns, against all claims and demands that may be made by the owners of Working Interest in such Tract who are not parties to this agreement and which arise out of the inclusion of the Tract in the Unit Area; and as to which (b) seventy-five percent (75%) of the combined voting interest of the Working Interest Owners in all Tracts that meet the requirements of Sections 9.1.1 and 9.1.2 have voted in favor of the inclusion of such Tract and to accept the indemnity agreement. For the purposes of this Section 9.1.3, the voting interest

from the Unitized Formation in such tanks, above the pipe line connections, as of 7:00 a.m. on the effective date hereof. The oil that is a part of the prior allowable of the wells from which it was produced shall remain the property of the parties entitled thereto the same as if the Unit had not been formed. Any such oil not promptly removed may be sold by the Unit Operator for the account of the parties entitled thereto, subject to the payment of all royalties, overriding royalties, production payments, and all other payments under the provisions of the applicable lease or other contracts. The oil that is in excess of the prior allowable of the wells from which it was produced shall be regarded as Unitized Substances produced after effective date hereof.

7.2 Overproduction. If, as of the effective date hereof, any Tract is overproduced with respect to the allowable of the wells on that Tract and the amount of overproduction has been sold or otherwise disposed of, such overproduction shall be regarded as a part of the Unitized Substances produced after the effective date hereof and shall be charged to such Tract as having been delivered to the parties entitled to Unitized Substances allocated to such Tract.

ARTICLE 8

USE OR LOSS OF UNITIZED SUBSTANCES

8.1 Use of Unitized Substances. Working Interest Owners may use as much of the Unitized Substances as they deem necessary for Unit Operations, including but not limited to the injection thereof into the Unitized Formation.

8.2 Royalty Payments. No royalty, overriding royalty, production, or other payments shall be payable upon, or with respect to, Unitized Substances used or consumed in Unit Operations, or which otherwise may be lost or consumed in the production, handling, treating, transportation, or storing of Unitized Substances.

ARTICLE 9

TRACTS TO BE INCLUDED IN UNIT

9.1 Qualification of Tracts. On and after the effective date hereof and until the enlargement or reduction thereof, the Unit Area shall be composed of the Tracts listed in Exhibit A that corner or have a common boundary (Tracts separated only by a public highway or a railroad right of way shall be considered to have a common boundary), and that otherwise qualify as follows:

of each Working Interest Owner shall be equal to the ratio that its Unit Participation attributable to Tracts that qualify under Sections 9.1.1 and 9.1.2 bears to the total Unit Participation of all Working Interest Owners attributable to all Tracts that qualify under Sections 9.1.1 and 9.1.2. Upon the inclusion of such a Tract in the Unit Area, the Unit Participation that would have been attributed to the nonsubscribing owners of the Working Interest in such Tract, had they become parties to this agreement and the Unit Operating Agreement, shall be attributed to the Working Interest Owners in such Tract who have become parties to such agreements, in proportion to their respective Working Interest in the Tract.

9.2 Determination of Ownership and Location. For the purposes of Section 9.1, determinations concerning ownership of Royalty Interests and Working Interests in the several Tracts and location of the Tracts with respect to one another shall be made in such manner as Working Interest Owners determine to be suitable. Tracts included in the Unit Area on the basis of such determinations shall be deemed validly included therein notwithstanding any errors that may have occurred in the making of such determinations, but a Tract erroneously included shall be subject to exclusion in accordance with Section 10.1. Inclusion of a Tract in the Unit Area shall not preclude any party hereto from questioning the title of any other party to any interest claimed by such other party in such Tract.

9.3 Subsequent Commitment of Interest or Tract to Unit. In the event any interest, Tract, or Tracts within the Unit Area fails to qualify for inclusion in accordance with Sections 9.1.1, 9.1.2, or 9.1.3, but within six (6) months following the effective date of said Unit Agreement, does qualify as provided in said Sections, such interest, Tract, or Tracts so qualifying may be admitted, upon the request of the affected Working Interest Owners, to the Unit Area on the basis of participation as originally provided in this agreement. After said six (6) months period, the commitment of any interest or Tract to the Unit Area shall be upon such terms and conditions as may be negotiated by Working Interest Owners and the owner, or owners, of such interest or Tract.

9.4 Acquisition of Interest. In the event at any time after the effective date hereof any party bound by this agreement acquires an uncommitted interest in any Tract included within the Unit Area, such interest upon being so acquired shall be subject to this agreement and, where the interest acquired is a Working Interest, shall also be subject to the Unit Operating Agreement.

9.5 Revision of Exhibits. If any of the Tracts described in Exhibit A fail to qualify for inclusion in the Unit Area, Unit Operator shall recompute,

using the original basis of computation, the Tract Participation of each of the qualifying Tracts, and shall revise Exhibits A and B accordingly. The revised exhibits shall be effective as of the effective date hereof.

ARTICLE 10

TITLES

10.1 Removal of Tract from Unit Area. If a Tract ceases to have sufficient Working Interest Owners or Royalty Owners committed to this agreement to meet the conditions of Article 9 because of failure of title of any party hereto, such Tract shall be removed from the Unit Area effective as of the first day of the calendar month in which the failure of title is finally determined; however, the Tract shall not be removed from the Unit Area if, within ninety (90) days of the date of final determination of the failure of title, the Tract requalifies under a Section of Article 9.

10.2 Revision of Exhibits. If a Tract is removed from the Unit Area because of the failure of title, Unit Operator, subject to Section 5.2, shall recompute the Tract Participation of each of the Tracts remaining in the Unit Area and shall revise Exhibits A and B accordingly. The revised exhibits shall be effective as of the first day of the calendar month in which such failure of title is finally determined.

10.3 Working Interest Titles. If title to a Working Interest fails, the rights and obligations of Working Interest Owners by reason of the failure of title shall be governed by the Unit Operating Agreement.

10.4 Royalty Owner Titles. If title to a Royalty Interest fails, but the Tract to which it relates is not removed from the Unit Area, the party whose title failed shall not be entitled to share hereunder with respect to such interest.

10.5 Production Where Title is in Dispute. If the title or right of any party claiming the right to receive in kind all or any portion of the Unitized Substances allocated to a Tract is in dispute, Unit Operator at the discretion of Working Interest Owners shall either:

- (a) require that the party to whom such Unitized Substances are delivered or to whom the proceeds thereof are paid, furnish security for the proper accounting therefor to the rightful owner if the title or right of such party fails in whole or in part, or

(b) withhold and market the portion of Unitized Substances with respect to which title or right is in dispute, and impound the proceeds thereof until such time as the title or right thereto is established by a final judgment of a court of competent jurisdiction or otherwise to the satisfaction of Working Interest Owners, whereupon the proceeds so impounded shall be paid to the party rightfully entitled thereto.

10.6 Payment of Taxes to Protect Title. The owners of (1) the surface rights to lands within the Unit Area, (2) the severed mineral or Royalty Interests in the lands, and (3) the improvements not utilized for Unit Operations, shall individually be responsible for the rendition and assessment for ad valorem tax purposes of all such property, and for the payment of such taxes, except as otherwise provided in any contract or agreement between such owners and a Working Interest Owner. If any ad valorem taxes are not paid by such owner responsible therefor when due, Unit Operator may, with approval of Working Interest Owners, at any time prior to tax sale, or expiration of period of redemption after tax sale, pay the same, redeem such property, and discharge such tax liens as may arise through non-payment. Any such payment shall be treated as an item of Unit Expense. Unit Operator shall, if possible, withhold from any proceeds derived from the sale of Unitized Substances otherwise due to any delinquent taxpayer or taxpayers an amount sufficient to defray the costs of such payment or redemption, such withholding to be credited to the joint account. Such withholding shall be without prejudice to any other remedy, either at law or at equity, which may be available for exercise by the Unit Operator or by the Working Interest Owners.

ARTICLE 11

EASEMENTS OR USE OF SURFACE

11.1 Grant of Easements. The parties hereto, to the extent of their rights and interests, hereby grant to Working Interest Owners the right to use as much of the surface of the land within the Unit Area as may reasonably be necessary for Unit Operations; provided that, nothing herein shall be construed as leasing or otherwise conveying to Working Interest Owners a site for a water, gas injection, processing or other plant, or camp site.

11.2 Use of Water. Working Interest Owners shall have free use of water from the Unit Area for Unit Operations except that the use of fresh water for injection purposes shall be governed by separate contracts and agreements made and entered into by and between Unit Operator and the owner or owners of water rights subject, however, to approval by the State

Engineer. Nothing herein contained shall be construed as a relinquishment by the Working Interest Owners of any rights granted to them under the provisions of the various leases covering the respective tracts insofar as they pertain to the use of water.

11.3 Surface Damages. Working Interest Owners shall pay the rightful owners who are parties to this agreement for damages to growing crops, timber, fences, improvements, and structures on the Unit Area that result from Unit Operations.

ARTICLE 12

ENLARGEMENTS OF UNIT AREA

12.1 Enlargements of Unit Area. The Unit Area may be enlarged to include acreage reasonably proved to be productive of Unitized Substances, upon such terms as may be determined by Working Interest Owners, including but not limited to, the following:

12.1.1 The acreage shall qualify under a Section of Article 9.

12.1.2 The participation to be allocated to the acreage shall be reasonable, fair, and based on all available information.

12.1.3 There shall be no retroactive allocation or adjustment of operating expenses or of interests in the Unitized Substances produced, or proceeds thereof; however, this limitation shall not prevent an adjustment of investment, including intangible investment, by reason of the enlargement.

12.1.4 The execution or ratification of this agreement by a person owning a Royalty Interest in any acreage being brought into the Unit Area by an enlargement shall have the effect of committing to the Unit all of the Royalty Interest of such person in such acreage being added to the Unit Area as well as the Royalty Interest of such person in any Tract previously included in the Unit Area.

12.2 Determination of Tract Participation. Unit Operator, subject to Section 5.2, shall determine the Tract Participation of each Tract within the Unit Area as enlarged, and shall revise Exhibits A and B accordingly.

12.3 Effective Date. The effective date of any enlargement of the Unit Area shall be 7:00 a.m. on the first day of the calendar month following

compliance with conditions for enlargement as specified by Working Interest Owners, approval of the enlargement by the appropriate governmental authority, if required, and the filing for record of revised Exhibits A and B in the records of the County in which this agreement is recorded.

ARTICLE 13
CHANGE OF TITLE

13.1 Covenant Running With the Land. This agreement shall extend to, be binding upon, and inure to the benefit of, the respective heirs, devisees, legal representatives, successors, and assigns of the parties hereto, and shall constitute a covenant running with the lands, leases, and interests covered hereby.

13.2 Notice of Transfer. Any conveyance of all or any part of any interest owned by any party hereto with respect to any Tract shall be made expressly subject to this agreement. No change of title shall be binding on the Unit Operator, or upon any party hereto other than the party so transferring, until the first day of the calendar month next succeeding the date of receipt by Unit Operator of a photocopy or a certified copy of the recorded instrument evidencing such change in ownership.

13.3 Waiver of Rights to Partition. Each party hereto covenants that during the existence of this agreement, it will not resort to any action to partition the Unit Area or the Unit Equipment, and to that extent waives the benefits of all laws authorizing such partition.

ARTICLE 14
RELATIONSHIP OF PARTIES

14.1 No Partnership. The duties, obligations, and liabilities of the parties hereto are intended to be several and not joint or collective. This agreement is not intended to create, and shall not be construed to create, an association or trust, or to impose a partnership duty, obligation, or liability with regard to any one or more of the parties hereto. Each party hereto shall be individually responsible for its own obligations as herein provided.

14.2 No Sharing of Market. This agreement is not intended to provide, and shall not be construed to provide, directly or indirectly, for any cooperative refining, joint sale, or marketing of Unitized Substances.

14.3 Royalty Owners Free of Costs. This agreement is not intended to impose, and shall not be construed to impose, upon any Royalty Owner any obligation to pay for Unit Expense unless such Royalty Owner is otherwise so obligated.

14.4 Information to Royalty Owners. Each Royalty Owner shall be entitled to all information in possession of Unit Operator to which such Royalty Owner is entitled by an existing agreement with any Working Interest Owner.

ARTICLE 15

LAWS AND REGULATIONS

15.1 Laws and Regulations. This agreement shall be subject to the conservation laws of the State of New Mexico; to the valid rules, regulations, and orders of the Conservation Commission of the State of New Mexico; and to all other applicable federal, state, and municipal laws, rules, regulations, and orders.

ARTICLE 16

FORCE MAJEURE

16.1 Force Majeure. All obligations imposed by this agreement on each party, except for the payment of money, shall be suspended while compliance is prevented, in whole or in part, by a strike, fire, war, civil disturbance, act of God; by federal, state or municipal laws; by any rule, regulation, or order of a governmental agency; by inability to secure materials; or by any other cause or causes beyond reasonable control of the party. No party shall be required against its will to adjust or settle any labor dispute. Neither this agreement nor any lease or other instrument subject hereto shall be terminated by reason of suspension of Unit Operations due to any one or more of the causes set forth in this Article.

ARTICLE 17

EFFECTIVE DATE

17.1 Effective Date. This agreement shall become binding upon each party who executes or ratifies it as of the date of execution or ratification by such party and shall become effective as of 7:00 o'clock a.m. on the first day of the calendar month next following:

(a) the qualification of Tracts comprising seventy-five percent (75%) or more of the Unit Area as shown on the original Exhibit B which have qualified under the provisions of Article 9, or a lesser Unit Area as may be formed by use of the procedure of Section 17.2;

(b) the approval of this agreement by the appropriate governmental authority if required;

(c) the filing for record by Unit Operator of at least one counterpart of this agreement in Eddy County, New Mexico;

and provided further that if (a), (b) and (c) above are not accomplished on or before January 1, 1966, this agreement shall ipso facto terminate on said date (hereinafter called "termination date") and thereafter be of no further force or effect, unless prior thereto all Working Interest Owners who have executed this agreement have agreed, in writing, to form a Unit covering a lesser area as provided in Section 17.2 hereof, or Working Interest Owners owning a combined Unit Participation of at least seventy-five percent (75%) committed to this agreement have decided to extend said termination date for a period not to exceed twelve (12) months. If said termination date is so extended and (a), (b) and (c) above are not accomplished on or before said extended termination date, this agreement shall ipso facto terminate on said extended termination date and thereafter be of no further force or effect.

17.2 Election to Reduce Unit Area Prior to Effective Date. Working Interest Owners of Tracts qualifying hereunder may, prior to the effective date hereof, elect to form a lesser Unit composed of such Tracts less in area than one hundred percent (100%) of the total acreage within the Unit Area by an affirmative vote of at least ninety percent (90%) of the Working Interest Owners on a Unit Participation basis in the qualifying Tracts. The election to form a lesser Unit shall be evidenced by a written agreement between the Working Interest Owners so electing, which agreement shall designate the lands to be included in such lesser Unit Area and shall provide that this Unit Agreement shall be effective as to such lesser Unit area. Working Interest Owners joining therein shall revise Exhibits A and B attached hereto to conform to such lesser Unit Area so formed. Said exhibits, as so revised, shall be attached as exhibits to such election agreement and shall be filed for record by Unit Operator in Eddy County, New Mexico.

17.3 Certificate of Effectiveness. Unit Operator shall within thirty (30) days after the effective date of this agreement file for record in the office or offices where a counterpart of this agreement is recorded, a certificate to the effect that this agreement has become effective according to its terms and

stating further the book and page in which a counterpart of this agreement has been recorded and the effective date. A copy of the certificate shall be furnished to each Working Interest Owner and Royalty Owner.

ARTICLE 18

TERM

18.1 Term. The term of this agreement shall be for the time that Unitized Substances are produced in paying quantities and as long thereafter as Unit Operations are conducted without a cessation of more than ninety (90) consecutive days, unless sooner terminated by Working Interest Owners in the manner herein provided.

18.2 Termination by Working Interest Owners. This agreement may be terminated by Working Interest Owners having a combined Unit Participation of at least ninety percent (90%) whenever such Working Interest Owners determine that Unit Operations are no longer profitable or feasible.

18.3 Effect of Termination. Upon termination of this agreement, the further development and operation of the Unitized Formation as a Unit shall be abandoned, Unit Operations shall cease, and thereafter the parties shall be governed by the provisions of the leases and other instruments affecting the separate Tracts. Upon termination of this agreement in the manner set out herein, the Royalty Owners hereby agree to a ninety (90) day extension of their leases and contracts covering the lands which were committed to the Unit Area to permit the lessees holding such lands to resume operations thereupon, and if so resumed, such lease or contract shall remain in force and effect in accordance with the provisions thereof.

18.4 Salvaging Equipment Upon Termination. If not otherwise granted by the leases or other instruments affecting each Tract unitized under this agreement, Royalty Owners hereby grant Working Interest Owners a period of six (6) months after the date of termination of this agreement within which to salvage and remove Unit Equipment.

18.5 Certificate of Termination. Upon termination of this agreement as provided in either Section 18.1 or Section 18.2 above, the Unit Operator shall file for record in Eddy County, New Mexico, a certificate evidencing such termination.

ARTICLE 19

EXECUTION

19.1 Separate Counterparts or Ratifications. This agreement may be executed in any number of counterparts and each executed counterpart shall have the same force and effect as an original instrument and as if all of the parties to the aggregate counterparts had signed the same instrument; or, may be ratified by a separate instrument, in writing, referring to this agreement. Each such ratification shall have the force and effect of an executed counterpart hereof and of adopting, by reference, all of the provisions hereof.

19.2 Joinder in Dual Capacity. Execution as herein provided by any party as either a Working Interest Owner or a Royalty Owner shall commit all interests that may be owned or controlled by such party.

ARTICLE 20

GENERAL

20.1 Amendments Affecting Working Interest Owners. Amendments hereto relating wholly to Working Interest Owners may be made if signed by all Working Interest Owners.

20.2 Lien of Unit Operator. Unit Operator shall have a lien upon the interests of Working Interest Owners in the Unit Area to the extent provided in the Unit Operating Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this agreement on the dates opposite their respective signatures.

WORKING INTEREST OWNERS

<u>Name</u>	<u>Date Signed</u>	<u>Attest - Corporation</u> <u>Witness - Individual</u>
CALIFORNIA OIL COMPANY		
By _____	_____	
Attorney in Fact		
By _____	_____	
Attorney in Fact		

WORKING INTEREST OWNERS (Continued)

<u>Name</u>	<u>Date Signed</u>	<u>Attest - Corporation</u> <u>Witness - Individual</u>
KEWANEE OIL COMPANY		ATTEST:
By _____ Vice President	_____	By _____ Assistant Secretary

PRODUCTION PAYMENT OR OTHER OWNERS

<u>Name</u>	<u>Date Signed</u>	<u>Attest - Corporation</u> <u>Witness - Individual</u>
CONTINENTAL ILLINOIS NATIONAL BANK AND TRUST COMPANY OF CHICAGO		ATTEST:
By _____	_____	By _____
MARTH OIL COMPANY		ATTEST:
By _____	_____	By _____

ROYALTY OWNERS

<u>Name</u>	<u>Date Signed</u>	<u>Witness</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

STATE OF OKLAHOMA)
)
COUNTY OF TULSA)

The foregoing instrument was acknowledged before me this _____ day of _____, 1965, by J. M. Harbison, Vice President of KEWANEE OIL COMPANY, a corporation, on behalf of said corporation.

Notary Public

My Commission Expires:

STATE OF)
)
COUNTY OF)

The foregoing instrument was acknowledged before me this _____ day of _____, 1965, by _____ as Attorney in Fact on behalf of CALIFORNIA OIL COMPANY, a corporation.

Notary Public

My Commission Expires:

STATE OF)
)
COUNTY OF)

The foregoing instrument was acknowledged before me this _____ day of _____, 1965, by _____ as Attorney in Fact on behalf of CALIFORNIA OIL COMPANY, a corporation.

Notary Public

My Commission Expires:

STATE OF)
COUNTY OF)

The foregoing instrument was acknowledged before me this _____ day
of _____, 1965, by _____,
President of CONTINENTAL ILLINOIS NATIONAL BANK AND TRUST
COMPANY OF CHICAGO, a corporation, on behalf of said corporation.

Notary Public

My Commission Expires:

STATE OF ILLINOIS)
COUNTY OF COOK) SS

I, the undersigned, a notary public in and for said County, in the State
aforesaid, do hereby certify that GERALD MARTH, personally known to me to
be the Sole General Partner of MARTH OIL CO., a limited partnership, whose
name is subscribed to the foregoing instrument, appeared before me this day
in person and acknowledged that he signed and delivered the said instrument
as the free and voluntary act of said partnership, and as his free and voluntary
act, for the uses and purposes therein set forth.

In Witness Whereof, I have set my hand and seal this _____ day of
_____, 1965.

Notary Public

My Commission Expires:

EXHIBIT A
TO
UNIT AGREEMENT
ATOKA GRAYBURG UNIT
EDDY COUNTY, NEW MEXICO

<u>Tract Number</u>	<u>Tract Operator</u>	<u>Description of Acreage (All located in T 18S, R 26E, Eddy County, New Mexico)</u>	<u>Tract Participation Percentage</u>
1	Kewanee Oil Company	SW/4 NE/4 Section 14	1.2556
2	Kewanee Oil Company	NW/4 Section 13 and E/2 NE/4 Section 14	79.6008
3	Kewanee Oil Company	NW/4 SE/4 Section 14	0.1288
4	Kewanee Oil Company	NW/4 SW/4 Section 13 and NE/4 SE/4 Section 14	7.5918
5	Kewanee Oil Company	NE/4 SW/4 and NW/4 SE/4 Section 13	0.7920
6	California Oil Company	W/2 NE/4 Section 13	<u>10.6310</u>
UNIT TOTAL			100.0000

R27E



✕ ADD. GAS WELL
 ● WATER INPUT WELL
 ☐ WTR. SUPPLY WELL
 ▲ SALT WTR. DISPOSAL
 G GRAYBURG WELL

UNIT AGREEMENT
ATOKA GRAYBURG UNIT
EDDY COUNTY, NEW MEXICO

EXHIBIT B

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 3290
Order No. R-2954

APPLICATION OF KEWANEE OIL COMPANY
FOR A WATERFLOOD PROJECT, EDDY COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on August 11, 1965, at Santa Fe, New Mexico, before Examiner Elvís A. Utz.

NOW, on this 16th day of August, 1965, the Commission, a quorum being present, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the applicant, Kewanee Oil Company, seeks permission to institute a waterflood project in the Atoka-Grayburg Unit Area, Atoka-Grayburg Pool, by the injection of water into the Grayburg formation through two injection wells in Section 13, Township 18 South, Range 26 East, NMPN, Eddy County, New Mexico.

(3) That the wells in the project area are in an advanced state of depletion and should properly be classified as "stripper" wells.

(4) That the proposed waterflood project should result in the recovery of otherwise unrecoverable oil, thereby preventing waste.

-2-

CASE No. 3290
Order No. R-2954

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Kewanee Oil Company, is hereby authorized to institute a waterflood project in the Atoka-Grayburg Unit Area, Atoka-Grayburg Pool, by the injection of water into the Grayburg formation through the following-described wells in Section 13, Township 18 South, Range 26 East, NMPM, Eddy County, New Mexico:

Leavitt Well No. 3, to be located 1650 feet from the North line and 990 feet from the West line.

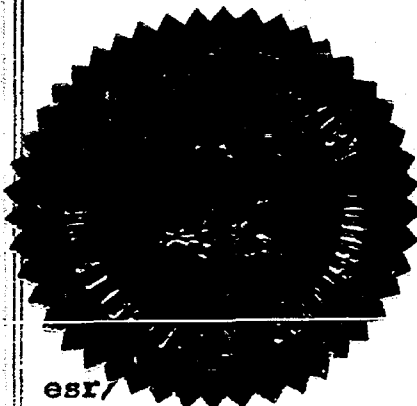
Leavitt Well No. 11, to be located 990 feet from the North line and 2310 feet from the West line.

(2) That the subject waterflood project shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

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



STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jack M. Campbell
JACK M. CAMPBELL, Chairman

Guyton B. Hays
GUYTON B. HAYS, Member

A. L. Porter, Jr.
A. L. PORTER, Jr., Member & Secretary

esr/

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

September 8, 1965

C
O
P
Y
Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

Dear Mr. Morris:

Reference is made to Commission Order No. R-2954, recently entered in Case No. 3290, approving the Kewanee Atoka Grayburg Unit Water Flood Project.

Injection is to be through the two authorized water injection wells, which shall be equipped with 2 inch Extra Heavy fiberglass tubing and packers set at approximately 900 to 960 feet.

As to allowable, our calculations indicate that when both of the authorized injection wells have been placed on active injection, the maximum allowable which this project will be eligible to receive under the provisions of Rule 701-E-3 is 336 barrels per day.

Please report any error in this calculated maximum allowable immediately, both to the Santa Fe office of the Commission and the appropriate District proration office.

In order that the allowable assigned to the project may be kept current, and in order that the operator may fully benefit from the allowable provisions of Rule 701, it behooves him to promptly notify both of the aforementioned Commission offices by letter of any change in the status of wells in the project area, i.e., when active injection commences, when additional injection or producing wells are drilled, when additional wells are acquired through purchase or unitization, when wells have received a response to water injection, etc.

OIL CONSERVATION COMMISSION

P. O. BOX 2088

SANTA FE, NEW MEXICO

- 2 -

Mr. Richard S. Morris
September 8, 1965

Your cooperation in keeping the Commission so informed as to the status of the project and the wells therein will be appreciated.

Very truly yours,

A. L. Porter, Jr.
Secretary-Director

C
ALP:sg

cc: Mr. Frank Irby
State Engineer Office
Santa Fe, New Mexico

O
Oil Conservation Commission
P. O. Drawer D D
Artesia, New Mexico

P
Y

OIL CONSERVATION COMMISSION
P. O. BOX 2088
SANTA FE, NEW MEXICO

December 3, 1965

C
O
P
Y

Seth, Montgomery, Federici & Andrews
Attorneys at Law
P. O. Box 2307
Santa Fe, New Mexico

Attention: Mr. Richard S. Morris

Gentlemen:

Reference is made to your letter of November 30, 1965, regarding the waterflood project authorized for Kewanee Oil Company by Order No. R-2954 in Case No. 4290.

It is our understanding that it is Kewanee's intention to inject water into the authorized wells through internally coated 2 3/8 inch steel tubing rather than the 2 inch extra heavy fiberglass tubing discussed at the hearing and authorized by our letter of September 8, 1965.

The Commission has no objection to the use of internally coated steel tubing in the injection wells of this project and our letter of September 8 is hereby amended to permit its use.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

ALP:DSN:eg

cc: Oil Conservation Commission - Artesia
Mr. Frank Irby - State Engineer Office - Santa Fe

2

DEC 1 - 1965

J. O. SETH (1883-1963)

SETH, MONTGOMERY, FEDERICI & ANDREWS

ATTORNEYS AND COUNSELORS AT LAW

350 EAST PALACE AVENUE

SANTA FE, NEW MEXICO 87501

November 30, 1965

A. K. MONTGOMERY

WM. FEDERICI

FRANK ANDREWS

FRED C. HANNAHS

RICHARD S. MORRIS

JOHN G. JASPER

SUMNER G. BUELL

SETH D. MONTGOMERY

POST OFFICE BOX 2307

AREA CODE 505

TELEPHONE 982-3876

Mr. A. L. Porter, Jr.
Secretary-Director
New Mexico Oil Conservation Commission
P.O. Box 2088
Santa Fe, New Mexico

Re: Kewanee Oil Company, Atoka Grayburg Unit
Waterflood Project, Case No. 3290, Order No. R-2954

Dear Mr. Porter:

In the hearing of the above referenced case and in the representations made before hearing to the Office of the State Engineer, Kewanee Oil Company proposed to equip its water injection wells with 2" extra heavy fiberglass tubing. In your letter to me dated September 8, 1965 concerning this case, you have specified that injection is to be through such tubing.

Kewanee Oil Company now desires to inject water into these wells through internally coated 2-3/8" O.D. steel tubing rather than the 2" extra heavy fiberglass tubing previously proposed and authorized. No other change in the project or in the make up of the injection wells will be made.

Since we do not expect anyone to have objection to this substitution and since reference to the fiberglass tubing was by your letter rather than by the Commission's Order, we are hopeful that this matter may be handled administratively without the necessity of a hearing. If you can see fit to amend your letter of September 8, 1965 referred to above to authorize injection through the steel rather than the fiberglass tubing, it will be greatly appreciated.

Very truly yours,

Richard S. Morris

RSM:mfb

cc: Mr. Frank Irby, Chief, Water Rights Division, Office of the
State Engineer, Capitol Bldg., Santa Fe, N.M.
Mr. E. F. Strickland, Division Superintendent, Kewanee Oil
Company, P.O. Box 3786, Odessa, Texas.



STATE OF NEW MEXICO

STATE ENGINEER OFFICE

SANTA FE

S. E. REYNOLDS
STATE ENGINEER

December 2, 1965

ADDRESS CORRESPONDENCE TO:
STATE CAPITOL
SANTA FE, NEW MEXICO 87501

Mr. A. L. Porter, Jr.
Secretary-Director
Oil Conservation Commission
Santa Fe, N. M.

Dear Mr. Porter:

Reference is made to Mr. Richard S. Morris' letter of November 30, 1965 pertaining to Kewanee Oil Company's Atoka Grayburg Unit Waterflood Project, Case No. 3290, Order R-2954.

This office offers no objection to the company substituting internally plastic coated 2 3/8" O.D. steel tubing in place of the 2" extra heavy fiberglass tubing previously proposed and authorized for the subject waterflood project.

FEI/ma
cc-Richard S. Morris (2)

Yours truly,

S. E. Reynolds
State Engineer

By: *Frank E. Irby*
Frank E. Irby
Chief
Water Rights Div.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

STATE OF NEW MEXICO)
) ss
COUNTY OF BERNALILLO)

I, ADA DEARNLEY, Notary Public in and for the County of Bernalillo, State of New Mexico, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me; and that the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

Witness my Hand and Seal this 26th day of August, 1965.

Ada Dearnley
NOTARY PUBLIC

My Commission Expires:

June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Examiner hearing of Case No. 32-19,3294 3291 heard by me on 8-11 1965.

Thos. A. [Signature] Examiner
New Mexico Oil Conservation Commission

deanley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO



PAGE 29

INDEX

WITNESS

PAGE

J. W. GRAHAM

Direct Examination by Mr. Morris

3

Cross Examination by Mr. Irby

24

Redirect Examination by Mr. Morris

26

EXHIBITS

EXHIBIT

MARKED FOR IDENTIFICATION

OFFERED

ADMITTED

Ex. 1 - Case 3289

4

24

24

Ex. A - G

Case 3290

4

24

24

Ex. A - F

Case 3291

26

24

24

Ex. G & H

Case 3291

26 & 27

27

28

in evidence.

MR. UTZ: They will be received.

MR. IRBY: Is your Exhibit G Rock Island's manual number 10-64?

A Yes, it is.

MR. IRBY: I have no further questions.

MR. UTZ: Any other questions of the witness?

The witness may be excused; any other statements in this case?

(Witness excused.)

MR. MORRIS: That's all I have.

MR. UTZ: The cases will be taken under advisement.

(Whereupon, the Hearing was recessed until 1:45 o'clock P.M.)

A If I might quote from a letter which was written to Mr. Morris by a representative of the Fiberglass Pipe Division of Rock Island, "the maximum operating conditions at temperatures to 150 degrees Fahrenheit, pressure 1250, collapse 1,000, axial tensile 8500."

Q What pressures were you going to inject at?

A In the case of Atoka-Grayburg, 700 pounds. In the case of the Atoka-San Andres, 1,000 pounds.

MR. UTZ: Do you think that's enough safety factor?

MR. OUSTS: This pipe was tested to five times the rated pressure and all pipe is hydraulically tested to one and a half times before it is shipped.

MR. UTZ: This pressure is a working pressure rather than an ultimate pressure?

MR. OUSTS: Yes, sir.

MR. MORRIS: Will you state your name?

MR. OUSTS: John Ousts with Kewanee in Tulsa.

(Whereupon, Exhibit H in Case 3291 marked for identification.)

Q (By Mr. Morris) I hand you Exhibit H in Case 3291 and ask you if that is the letter that you just referred to?

A Yes, sir, it is.

MR. MORRIS: We offer Exhibits G and H in Case 3291

A Yes.

MR. UTZ: What make?

A Rock Island.

MR. UTZ: What's its test strength?

A We have it --

(Whereupon, Exhibit G in
Case 3291 marked for
identification.)

MR. MORRIS: If I could, just an aside here, we
will introduce this as an exhibit.

MR. UTZ: Sure.

REDIRECT EXAMINATION

BY MR. MORRIS:

Q I hand you what has been marked Exhibit Number G
in Case 3291 and ask you to state what that is.

A Exhibit G is an engineering manual prepared by the
Rock Island Company in which they set out the properties of
their fiberglass pipe.

Q And this is the pipe you propose to use in your,
both your Grayburg and San Andres projects?

A Yes, it is.

MR. UTZ: What is the strength of that tubing,
is it laminated tubing, reinforced tubing?

A It's laminated, reinforced laminated.

MR. UTZ: What strength is it?

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

Q In your previous testimony, you said the method of completion for these wells had previously been approved by the Commission. Did this include the fiberglass casing in that approval?

A I think in that instance, we may have used steel tubing.

Q Do you know of any case where the Commission has approved fiberglass casing?

A It's my understanding that the project involving the Tesoro Company was approved using fiberglass tubing.

Q I'm familiar with this application, but not the approval of it.

A Well, I stand corrected as to the approval then. Then, I do not know specifically whether it has been approved or not.

MR. MORRIS: For the Examiner's information, this was, I think the application referred to was originally styled application of Texas Star Petroleum Company and they later changed their name to Tesoro and it involves the Hospah area in McKinley County.

MR. UTZ: Is this fiberglass tubing or fiberglass casing?

A It's fiberglass tubing.

MR. UTZ: Is this high strength fiberglass tubing?

A I did.

MR. MORRIS: We offer those exhibits into evidence, Mr. Examiner.

MR. UTZ: Without objection, the exhibits as stated will be entered into the record.

(Whereupon, Exhibit 1 in Case 3289, Exhibits A through G in Case 3290 and Exhibits A through F in Case 3291 were offered and admitted into evidence.)

MR. MORRIS: That's all that we have of Mr. Graham at this time.

MR. UTZ: Any questions?

MR. IRBY: Yes, sir.

CROSS EXAMINATION

BY MR. IRBY:

Q Mr. Graham, I am not sure that you are the one that prepared this reply to my letter, but you have an analysis on the Atoka-Grayburg water supply that indicates it came from Well Number 2 and I am not sure that I am familiar with where that well is. Is this your well or the Fanning Well?

A It's the Fanning well.

Q And this other analysis is the produced water from Levitt S-2?

A Yes, sir.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

PAGE

23

to be injected?

A Not of the total amount since this is a pilot project.

Q You will just have to wait and see?

A Yes.

Q What is the anticipated ultimate primary recovery in the San Andres on your Levitt S lease?

A We have estimated an ultimate primary recovery of 282,000 barrels of oil.

Q What do you expect performance on secondary recovery will be?

A We expect to recover at least 50 per cent of the ultimate primary by secondary means.

Q Do you expect this area to be the same, better or worse than your Grayburg flood?

A Based on our preliminary studies, we anticipate that this will be somewhat better or is a somewhat better waterflood prospect than the Grayburg formation.

Q Do you propose to operate this project under Rule 701 of the Commission's Rules and Regulations?

A Yes, we do.

Q Mr. Graham, did you prepare or participate in the preparation or supervise the preparation of the exhibits, being Exhibit 1 in Case 3289, Exhibits A through G in Case 3290 and Exhibits A through F in Case 3291?

through perforations.

Q How do you propose to convert this well to water injection?

A We propose to run heavy duty fiberglass tubing, two inch, to set it on a tension packer above the perforations and to inject through the fiberglass tubing into the producing zone.

Q This is as shown on Exhibit F to the application?

A Yes.

Q How does your proposed completion and equipping of this well compare with the injection well previously approved for the Atoka-Grayburg area by Order Number R-2720?

A It is essentially the same equipment, the only difference being that this well is completed through perforations rather than open hole.

Q I believe you said previously, Mr. Graham, that your source for water for this flood would be produced San Andres water only?

A That's correct.

Q What rate of injection and pressure do you contemplate for this well?

A We anticipate an injection rate of 400 barrels per day at 1,000 pounds.

Q Do you have any estimate of the total amount of water

attendant increase in water production from two to 40 barrels per day.

Q So that one well accounts for 25 of the 65 barrels per day that the six wells on this lease are producing at the present time?

A Yes.

Q What does Exhibit D to the application show?

A Exhibit D again is a regional ownership and development plat showing production within a two mile radius of our proposed injection well.

Q What is Exhibit E to the application?

A Exhibit E is a typical log of a well in the Atoka-San Andres Field, this particular exhibit is a log of the proposed injection well and is a gamma ray neutron log and shown thereon is the top of the Grayburg Formation, the top of the Grayburg Oil Sand or Premier Sand, the top of the San Andres formation, and the Slaughter C producing zone.

Q How is your well Number 9-S, your proposed injection well presently completed and equipped?

A This well has four and a half inch casing set at 1770 feet. It was cemented to surface with 195 sacks of cement. This cementing operation was witnessed by a representative of the State Engineer's Office. This well has casing set through the producing horizon and was completed

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMAS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAN BLVD. • P.O. BOX 1082 • PHONE 243-4491 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

PAGE

20

Q It is the Slaughter C zone which will be water-flooded?

A In our particular case, yes.

Q What does Exhibit C show?

A Exhibit C is an oil production graph showing the daily average oil production of Kewanee's Levitt S lease in Eddy County, New Mexico.

Q What is the current rate of production on this lease?

A The current rate is approximately 65 barrels of oil per day.

Q For how many wells?

A For six producing wells.

Q In your opinion, Mr. Graham, could these wells be properly classified as stripper wells?

A Yes, sir.

Q I note on the exhibit that the production shows to have taken a jump during the recent months, could you explain that?

A That increase in production is due to the fracture treatment of one well on the Levitt lease, the number 2 well. It resulted in an increase of production from five barrels to a maximum of 32 barrels per day and that production has now declined to 25 barrels per day. We had an

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 250-1294 • ALBUQUERQUE, NEW MEXICO

A We propose to convert an existing oil well producing from the San Andres formation to an input well, this well being Number 9-S as shown on Exhibit A. This well is located 1680 feet from the north line, 990 feet from the west line of Section 13. We propose to utilize produced water as our source of injection water, that is, water produced from the San Andres formation.

Q I note on this Exhibit A, that there are a number of San Andres wells in the area. Why have you proposed only to convert one well to an injection well rather than a larger project at this time?

A As mentioned previously, there is still very primary development going on in the Atoka-San Andres Pool and we hope by means of a pilot project to gain information which will enable us to determine the feasibility later on of a field wide unit and waterflood operation in the San Andres formation.

Q Referring now to the other exhibits attached to this application, Mr. Graham, what is Exhibit B?

A Exhibit B is a structure map of the, one of the producing members of the San Andres formation, being the Slaughter C zone and as noted on Exhibit B this structure covers considerable more area than that which we propose to obtain approval for our pilot project.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLVD. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

PAGE

18

Q What was that figure, again?

A 180,000 barrels of oil.

Q What do you anticipate will be your experience on secondary recovery operations as far as the recovery of additional oil is concerned?

A We anticipate that we will recover by secondary means at least 50 per cent of the ultimate primary.

Q Do you propose to operate this flood under the provisions of Rule 701 of the Commission's Rules and Regulations?

A Yes, we do.

Q Turning your attention next, Mr. Graham, to the application Kewanee has made in Case 3291, what is sought by that application?

A By this application Kewanee seeks to obtain approval to conduct a pilot waterflood project on its Levitt S lease, comprising the northwest quarter of Section 13 and the east half, northeast quarter of Section 14, Township 18 South, Range 26 East, Eddy County, New Mexico.

Q Is this area that you have just referred to shown on the Exhibit A to the application in this case?

A Yes, it is.

Q How do you propose to institute waterflood operations in this area?

MR. IRBY: Township and Range?

A Township 18 South, Range 26 East, Eddy County.

Q (By Mr. Morris) Will fresh water be used exclusively as the source for this project?

A Initially it will be used exclusively; as the flood progresses and we begin to get produced water, it will be injected into the Grayburg formation.

Q What will be your total water requirements for the project?

A We estimate that it will require 1,800,000 barrels of water to flood this formation, of that we anticipate that 600,000 barrels of water will be fresh water, the rest will be reinjected produced water.

Q What will be the rate of injection and at what pressure will the water be injected?

A We anticipate an injection rate of 300 barrels per day per injection well and a pressure of 700 pounds.

Q What has been the ultimate, or what is your estimate of the ultimate primary production from this pool?

A Our estimate of ultimate primary production was some 180,000 barrels of oil and that is just about what we have produced. As mentioned previously, we are essentially at the economic limit and are continuing production in order that we might conduct this waterflood project.

by the Commission in Case 3061, Order R-2720 dated June 3, 1964.

Q (By Mr. Morris) Are there any substantial differences, Mr. Graham, between the type of completion that you have proposed in this case and the type of completion made in the injection well in that Dayton-Grayburg project?

A No, there is not.

Q What will be the source of water you propose to use for this injection program?

A For the Grayburg flood, we propose to use fresh water from the Artesian Basin. We have obtained certain water rights or certain water rights have been converted to this use. This is also the same source of water which is being used in the Dayton-Grayburg flood.

Q Have applications been made to the office of the State Engineer for transferring ownership, place of use and method of use of this water?

A Yes.

Q And have they been approved?

A Yes.

Q What will be the location of this source well for this fresh water?

A The source well will be located in the northeast quarter, southeast quarter, Section 14.

open hole in the Premier Sand.

Q Go on to the next well and then point out, referring to Exhibits F and G to the application, how these wells will be converted to injection wells.

A Levitt Number 11 has seven inch casing cemented at 960 feet with 280 sacks of cement. It was cemented to the surface and again, this cementing operation was witnessed by a representative of the State Engineer's Office. Total depth of the well is 986 feet, it too is completed open hole in the Premier Sand. As to the completion of the wells for injection purposes, we propose to set two inch heavy duty fiberglass tubing on tension packers in each well, and to inject water through the fiberglass tubing into the pay zone.

Q Has this method of completion previously been approved by this Commission for water injection purposes?

A Yes. Essentially this same type of injection well was approved in our Dayton-Grayburg Flood approximately one mile south of the proposed Atoka-Grayburg Unit.

Q That area appears down in Section 25 as shown on Exhibit A that you previously referred to, is that correct?

A That's correct.

MR. MORRIS: For the Examiner's information, that waterflood project, the Dayton-Grayburg project was approved

dearnley-meier reporting service, inc.

SPECIALIZING IN DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

proposed injection wells.

Q This plat was submitted in accordance with the requirements of Rule 701?

A Yes.

Q Referring next to Exhibit E attached to the application, what is that?

A Exhibit E is a typical log of a producing well in the Atoka-Grayburg Pool. This particular log being the log of one of the proposed injection wells, specifically it's a gamma-ray sonic log. Shown thereon is the top of the Grayburg formation and the top of the oil producing zone or Premier Sand.

Q How are the two proposed injection wells presently equipped, mechanically?

A Levitt Number 3 has five and a half inch casing -- No, excuse me, has eight and five-eighths inch casing cemented 803 feet, cemented with 375 sacks which circulated to the surface.

Q Was that cementing witnessed by any regulatory agency?

A Yes, it was witnessed by the State Engineer's Office. In that well, also, there is five and a half inch liner cemented inside of the eight and five-eighths inch casing, total depth of the well is 975 feet. It was completed

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 236-1294 • ALBUQUERQUE, NEW MEXICO

PAGE

13

A Exhibit B is a structure map of the Atoka-Grayburg Unit Area which has been contoured on top of the pay zone which is the Premier Sand. It shows essentially the limits of production from the Premier Sand in the unit area.

Q Referring next to Exhibit C to the application, will you state what that is and what it shows?

A Exhibit C is a production graph showing the monthly oil production from all wells in the Atoka-Grayburg Pool.

Q What is the present rate of production?

A The present rate of production is approximately 300 barrels per month, or approximately 10 barrels per day.

Q For how many wells?

A Eight active producing wells.

Q Based upon that rate of production, would it be your opinion that these wells properly may be classified stripper wells?

A Yes. They are definitely stripper wells, in fact, the lease has for all practical purposes reached an economic limit.

Q Referring to Exhibit D attached to the application, will you state what that is and what it shows?

A Exhibit D is a regional ownership and development plat showing production within the two mile radius of the

Q These wells are shown on the plat which has been marked Exhibit A in this case?

A Yes. They are marked with a circle as our proposed input wells. To go a step further with that, depending on the performance of the flood utilizing these two wells as input wells, we would determine whether or not to drill Well Number 13. If we get the stimulation we anticipate, then we would drill well Number 13 as originally planned.

Q Then, as a result of this Hearing, you would propose that a new order be entered but that it not supersede the previous authority given to you by Order Number R-2721?

A Yes, that's correct.

Q In the event that you decided that you want to drill the Well Number 13?

A Correct.

MR. UTZ: Actually, you want that order amended, is that right?

MR. MORRIS: It could have that effect, Mr. Examiner. Either way would be fine. Our proposal is that it not be superseded.

Q (By Mr. Morris) Referring to the Exhibits which were attached to the application in this case, would you state what Exhibit B is and what it shows?

MR. UTZ: For the Grayburg?

MR. MORRIS: Yes, sir.

Q (By Mr. Morris) With respect to the authorization that was previously granted by the order that I have just referred to, Mr. Graham, is it true that that Well Number 13 has not been drilled?

A It has not.

Q Why not?

A After we received commission approval to inject water into the Grayburg formation through Well Number 13, we had previously proposed to conduct a cooperative effort with Standard of Texas. Subsequent study of the area indicated that it was more feasible to unitize the leases in order to prosecute a waterflood project and for that reason, we did not drill the well pending formation of a unit to include the Standard of Texas lease.

Q What is your present proposal with respect to the institution of waterflood project in this area?

A Our present proposal would be to convert two existing oil wells to water input wells, these wells being Levitt Number 3-G and Levitt Number 11-G. Well Number 3-G is located 1650 from the north line and 990 from the west line of Section 13. Well Number 11-G is located 990 from the north line, 2310 from the west line of Section 13.

A Yes.

Q What will be the effective date of the unit agreement if approved by this Commission?

A If approval is obtained by the Commission prior to September 1st, we will be able to make effective date of the unit September 1st.

Q Turning your attention next, Mr. Graham, to the application by Kewanee in Case 3290, would you state what it is that Kewanee seeks by its application in this case?

A Kewanee seeks by this application as unit operator of the Atoka-Grayburg unit, to conduct waterflood operations on the leases comprising the Atoka-Grayburg unit.

MR. MORRIS: As an aside at this point, Mr. Examiner, I would point out that a waterflood project in this Atoka-Grayburg Pool has previously been authorized by the Commission at a Hearing before the same Examiner in Case 3062, which resulted in Order No. R-2721 dated June 3rd of 1964. That order authorized the injection of water into one well located in Unit F of Section 13, which was a well to be drilled. It does not appear on the plat the Examiner has before him. That well has not been drilled and the witness will explain the situation in that respect, but I thought that the Examiner should be apprised of the fact that a previous order has been entered respecting waterflood operations in this area.

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

PAGE

9

A Participation was based 100 per cent on productive acre feet of the Grayburg formation as described in the unit agreement. The productive zone in the Grayburg formation which contributes to production is what is known as the Premier Sand and the basis of participation was determined from an engineering study of the area, a study of well logs, cores, to determine what the contribution of each tract would be to a unit project.

Q How do tracts become qualified under this unit agreement for participation in the unit?

A Tracts become qualified by the ratification of working interest and royalty interest.

Q That's Article Nine?

A Article Nine of the unit agreement. There are various provisions under Article Nine by which a tract can qualify, the first one being that 100 per cent of the working interest be committed to the unit agreement and that 65 per cent or more of the royalty interest be committed.

Q Under that criteria, have all tracts in the unit qualified for joinder and participation in the unit?

A Yes, they have.

Q With respect to the one overriding royalty interest that has not joined to date, are there provisions for subsequent joinder?

dearnley-meier reporting services inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMAS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

A We are seeking to unitize what is commonly known as the Grayburg formation, that formation is described in the unit agreement.

Q That is Section 1.2 of the Unit Agreement?

A Yes.

Q In Case 3291, Kewanee is applying for permission to institute waterflood project in the San Andres formation in this area. Why has not the San Andres been unitized as well as the Grayburg formation?

A Well, as mentioned, the Grayburg unit includes all known production from the Atoka-Grayburg Pool, whereas the leases which we propose to waterflood in the San Andres constitutes only a part of the Atoka-San Andres Field. It's quite extensive an area, covers much more area than the Atoka-Grayburg Pool does. There is still some development going on in the San Andres Field and the field as a whole has not reached the point where it's felt that unitization is practical.

Q Your proposal for waterflood in the San Andres only concerns one well and will be proposed merely as a pilot project, is that correct?

A That's correct.

Q Under the unit agreement, what will be the participation factors for the various tracts?

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

120-SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
213 FIRST NATIONAL BANK TAST • PHONE 256-1292 • ALBUQUERQUE, NEW MEXICO

A Yes, we have. We have obtained ratifications by all of the basic royalty owners, by all oil payment owners and by all overriding royalty owners with the exception of one.

Q Has anyone refused to -- Well, has the one overriding royalty interest that has not joined the unit been contacted?

A Yes.

Q Has he refused to join the unit?

A No.

Q You still expect to obtain his ratification?

A Yes, we do. He has traveled quite extensively and it has just been difficult to get in touch with him personally.

Q What is the form of the unit agreement?

A This unit agreement is patterned after the model API form which is used extensively in the mid continent area where Federal or State lands are not involved or where there is not a prescribed form of unit agreement to be employed.

Q I believe you said at the outset that the purpose of forming this unit was to conduct waterflood projects in this area?

A That's correct.

Q Again, would you state what formation is unitized under the unit agreement?

dearney-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

PAGE

6

Q Now, in the customary manner, are the tracts within the unit area shown on this exhibit by number?

A Yes, they are.

Q And that is keyed over to Exhibit A to the unit agreement concerning ownership?

A Yes, Exhibit A describes each tract and lists the tract number.

Q Now, I believe you said before that the only working interest in this unit were Kewanee and Standard Oil Company of Texas?

A Yes. Actually, they operate under the name of Standard of Texas. It's the California Oil Company, the parent company who is the other working interest owner.

Q What is the status of the working interest commitment to the unit agreement?

A 100 per cent of the working interest has been committed to the unit agreement.

Q Are there any Federal or State lands involved in this unit?

A No.

Q It's all what we call fee lands?

A Yes.

Q Have you contacted the royalty owners to secure their approval to this unit?

the purpose of conducting a secondary recovery project by the waterflood method. We are seeking to unitize the Grayburg formation.

Q If you will refer to what has been marked Exhibit Number 1 in this case, will you state what that is?

A Exhibit Number 1 is a copy of the unit agreement for the Atoka-Grayburg Unit, Eddy County, New Mexico.

Q If you will refer to the attachment to that unit agreement which is designated Exhibit G, it's the last page, I believe, will you state what that is?

A Exhibit B is a plat which shows thereon, outlined in heavy black line, the unit area and the acreage that will be included in the Atoka-Grayburg Unit. This area is located some five miles south and two and a half miles east of the City of Artesia, New Mexico, in Township 18 South, Range 26 East.

Q What area does this cover with respect to the producing wells in the Atoka-Grayburg Pool?

A The unit area covers all known production from the Grayburg Formation in the Atoka-Grayburg Pool.

Q Now, are the Grayburg wells shown on this plat by any particular legend?

A Yes, the Grayburg wells are designated by the lettering after the well number.

execution by other parties to various agreements.

Q Are you familiar with the application of Kewanee Oil Company in Cases 3289, 3290 and 3291 before the Commission here today?

A Yes, I am.

MR. MORRIS: Are the witness' qualifications acceptable?

MR. UTZ: Yes, they are.

Do you have your Exhibits marked?

MR. MORRIS: No, actually all of our Exhibits are attachments to the application and we were wondering if it would be acceptable to the Examiner to merely refer to those Exhibits as they are marked as attachments.

MR. UTZ: It will be all right as long as we get one of them marked.

MR. MORRIS: All right.

(Whereupon, Applicant's Exhibit Number 1 in Case 3289 marked for identification, and Exhibits A through G in Case 3290, and Exhibits A through F in 3291 marked for identification.)

Q (By Mr. Morris) Mr. Graham, what is it that Kewanee Oil Company seeks in its application in Case 3289?

A We seek there to unitize certain leases operated by Kewanee Oil Company and Standard Oil Company of Texas for

DIRECT EXAMINATION

BY MR. MORRIS:

Q Mr. Graham, will you please state your name, by whom you are employed and in what capacity?

A My name is J. W. Graham. I am employed by Kewanee Oil Company in Tulsa, Oklahoma, in the capacity of Joint Interest Superintendent.

Q Have you previously testified before the New Mexico Oil Conservation Commission or one of its examiners?

A No, I have not.

Q Would you briefly outline please, your education and experience in the oil industry?

A I received a B.S. degree in Chemical Engineering from Rice University in 1947. I was subsequently employed by Pan American Petroleum Corporation for 18 months, and for the past 16 and a half years I have been in the employ of Kewanee Oil Company in various engineering capacities up to my present position.

Q What are your duties in your present position, Mr. Graham?

A Essentially to oversee the preparation and execution of various unit agreements, to sit in on engineering committee meetings, relative to data that is prepared for the purpose of determining equities and to obtain ratification or

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P.O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO
1213 FIRST NATIONAL BANK EAST • PHONE 256-1294 • ALBUQUERQUE, NEW MEXICO

dearnley-meier reporting service, inc.

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS

1120 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
August 11, 1965

EXAMINER HEARING

IN THE MATTER OF:

Application of Kewanee Oil Company for
a unit agreement, Eddy County, New Mexico.

Application of Kewanee Oil Company for
a waterflood project, Eddy County, New
Mexico.

Application of Kewanee Oil Company for
a waterflood project, Eddy County, New Mexico.

Case No. 3289,
3290 and 3291

BEFORE:

ELVIS A. UTZ

TRANSCRIPT OF HEARING

DRAFT

JMD/esr

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION OF NEW MEXICO FOR
THE PURPOSE OF CONSIDERING:

CASE No. 3290

Order No. R-2954

APPLICATION OF KEWANEE OIL COMPANY
FOR A WATERFLOOD PROJECT, EDDY COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on
August 11, 1965, at Santa Fe, New Mexico, before Examiner
Elvis A. Utz.

NOW, on this day of August, 1965, the Commission,
a quorum being present, having considered the testimony, the record,
and the recommendations of the Examiner, and being fully advised
in the premises,

FINDS:

(1) That due public notice having been given as required by
law, the Commission has jurisdiction of this cause and the subject
matter thereof.

(2) That the applicant, Kewanee Oil Company,
seeks permission to institute a waterflood project, ~~in the~~
Atoka-Grayburg in the Atoka-Grayburg Unit Area,
Atoka-Grayburg Pool, by the injection of water into the
Grayburg formation through two injection wells in
Section 13, Township 18 ~~North~~, Range
26 ~~West~~, NMPM, Eddy County, New Mexico.
East

(3) That the wells in the project area are in an advanced
state of depletion and should properly be classified as "stripper"
wells.

(4) That the proposed waterflood project should result in the
recovery of otherwise unrecoverable oil, thereby preventing waste.

(5) That the subject application should be approved and the project should be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED:

(1) That the applicant, Kewanee Oil Company,
is hereby authorized to institute a waterflood project, ~~in the~~
Atoka-Grayburg in the Atoka-Grayburg Unit Area,
Atoka-Grayburg Pool, by the injection of water into the
Grayburg formation through the following-described wells
in Section 13,
~~in~~ Township 18 ~~North~~ Range 26 ~~West~~,
South East
NMPM, Eddy County, New Mexico:

to be located
Leavitt Well No. 3, 1650 feet from the north line
and 990 feet from the west line.

to be located
Leavitt Well No. 11, 990 feet from the north line
and 2310 feet from the west line.

(2) That the subject waterflood project shall be governed by the provisions of Rules 701, 702, and 703 of the Commission Rules and Regulations.

(3) That monthly progress reports of the waterflood project herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

(4) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year herein-
above designated.

GOVERNOR
EDWIN L. MECHEM
CHAIRMAN

State of New Mexico
Oil Conservation Commission



LAND COMMISSIONER
E. S. JOHNNY WALKER
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

P. O. BOX 2088

SANTA FE,
87501

Mr. Richard S. Morris
Seth, Montgomery, Federici & Andrews
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

6+4
Injection up to be through the
two authorized water injection wells
which shall be equipped with 2 inch
Extra Heavy fiberglass tubing and
packers set at approximately
900 - 960 feet,

Dear Mr. Morris:

Gentlemen:

Reference is made to
~~Enclosed herewith is~~ Commission Order No. R- 2954, recently
No. 3290, approving the Turnell Water Recycling Unit
Water Flood Project.

As to allowable, indicate that when both
According to our calculations, when all of the authorized injection
wells have been placed on active injection, the maximum allowable which this
project will be eligible to receive under the provisions of Rule 701-E-3
is 336 barrels per day.

Please report any error in this calculated maximum allowable immediately,
both to the Santa Fe office of the Commission and the appropriate District
proration office.

In order that the allowable assigned to the project may be kept current,
and in order that the operator may fully benefit from the allowable provisions
of Rule 701, it behooves him to promptly notify both of the aforementioned
Commission offices by letter of any change in the status of wells in the project
area, i.e., when active injection commences, when additional injection or
producing wells are drilled, when additional wells are acquired through purchase
or unitization, when wells have received a response to water injection, etc.

Your cooperation in keeping the Commission so informed as to the status
of the project and the wells therein will be appreciated.

Very truly yours,

A. L. PORTER, Jr.
Secretary-Director

cc: Mr. Frank Irby
OCC - Artesia