

CASE 3244: Application of JAMES E.  
LOGAN for approval of the RAIN  
SPRING UNIT AGREEMENT, EDDY COUNTY

CASE No.  
32244

Application,  
TRANSCRIPTS,  
SMALL Exhibits  
ETC.

*N. Mex. O. C. C.*

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U. S. GEOLOGICAL SURVEY  
ROSWELL, NEW MEXICO

MAY - 3 1966

3244

Cities Service Oil Company  
P. O. Box 700  
Roswell, New Mexico 88601

Carlsbad:

On April 29, 1966 effective as of May 1, 1966, Arthur A. Baker, Acting Director of the Geological Survey, approved the termination of the Leasehold Agreement, 1966, Carlsbad, New Mexico, No. 14-00-0001-0001, pursuant to the last paragraph of section 70 thereof.

Enclosed is one copy of the approved application for your records. We request that you furnish notice of this approval to each interested working interest owner, lessee, and lessor at their last known address.

Please furnish us with a copy of the authorization for R. B. Hurley, Northern Natural Gas Producing Company, Fred Forward, Phillips Petroleum Company and H. V. Wilson, The Atlantic Refining Company, to sign as Attorney-in-Fact for Cities Service Oil Company.

Sincerely yours,

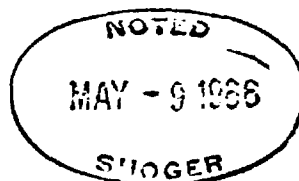
H. J. DUNCAN

For the Director

Enclosure

cc: Roswell (2) (w/2 copies of approved application)

*copy to Arthur  
JWS 5-9-66*



June 16, 1965

Mr. R. M. Richardson  
P. O. Box 819  
Roswell, New Mexico

Re: Rain Spring Unit  
Eddy County, New Mexico  
James E. Logan, Unit Operator

Dear Mr. Richardson:

The Commissioner of Public Lands approved as of June 16, 1965, the Rain Spring Unit Agreement, Eddy County, New Mexico, subject to like approval by the United States Geological Survey.

We are enclosing six originally signed copies of Certificate of Approval. Also enclosed is Official Receipt No. H-15683 in the amount of Eighty-Five (\$85.00) Dollars, which covers the filing fee.

After approval is obtained from the United States Geological Survey of this unit, we will appreciate your furnishing us with a completely conformed copy of this Unit Agreement.

Very truly yours,

GUYTON B. HAYS  
COMMISSIONER OF PUBLIC LANDS

BY:  
(Mr.) Ted Bilberry, Director  
Oil and Gas Department

GBH/MMR/d  
Enclosures

cc: United States Geological Survey  
P. O. Drawer 1857, Roswell, New Mexico  
Attention: Mr. John A. Anderson  
Oil Conservation Commission  
P. O. Box 2088, Santa Fe, New Mexico

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. 3244  
Order No. R-2905

APPLICATION OF JAMES E. LOGAN  
FOR APPROVAL OF THE RAIN SPRING  
UNIT AGREEMENT, EDDY COUNTY, NEW  
MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on April 28, 1965, at Santa Fe, New Mexico, before Examiner Daniel S. Nutter.

NOW, on this 6th day of May, 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, James E. Logan, seeks approval of the Rain Spring Unit Agreement covering 10,542.00 acres, more or less, of State, Federal and Fee lands described as follows:

EDDY COUNTY, NEW MEXICO

TOWNSHIP 22 SOUTH, RANGE 24 EAST, NMPM

Sections 23 through 26: All

Sections 35 and 36: All

TOWNSHIP 22 SOUTH, RANGE 25 EAST, NMPM

Sections 19 and 20: All

Section 29: W/2

Sections 30 and 31: All

TOWNSHIP 23 SOUTH, RANGE 24 EAST, NMPM

Sections 1 and 2: All

Sections 11 through 14: All

CASE No. 3244  
Order No. R-2905

(3) That approval of the proposed unit agreement should promote the prevention of waste and the protection of correlative rights within the unit area.

IT IS THEREFORE ORDERED:

(1) That the Rain Spring Unit Agreement is hereby approved.

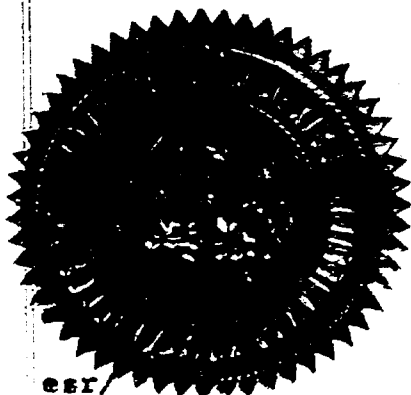
(2) That the plan contained in said unit agreement for the development and operation of the unit area is hereby approved in principle as a proper conservation measure; provided, however, that notwithstanding any of the provisions contained in said unit agreement, this approval shall not be considered as waiving or relinquishing, in any manner, any right, duty, or obligation which is now, or may hereafter be, vested in the Commission to supervise and control operations for the exploration and development of any lands committed to the unit and production of oil or gas therefrom.

(3) That the unit operator shall file with the Commission an executed original or executed counterpart of the unit agreement within 30 days after the effective date thereof; that in the event of subsequent joinder by any party or expansion or contraction of the unit area, the unit operator shall file with the Commission within 30 days thereafter counterparts of the unit agreement reflecting the subscription of those interests having joined or ratified.

(4) That this order shall become effective upon the approval of said unit agreement by the Commissioner of Public Lands for the State of New Mexico and the Director of the United States Geological Survey; that this order shall terminate ipso facto upon the termination of said unit agreement; and that the last unit operator shall notify the Commission immediately in writing of such termination.

(5) 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  
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

State of New Mexico  
Oil Conservation Commission



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

**May 7, 1965**

Re: Case No. 3244  
Order No. R-2905  
Applicant: EE

**JAMES E. LOGAN**

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

A. L. PORTER, Jr.  
Secretary-Director

Carbon copy of order also sent to:

Holtbs OCC x

Artesia OCC x

Aztec OCC \_\_\_\_\_

**OTHER**

BEFORE THE OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO

APPLICATION FOR APPROVAL OF  
RAIN SPRING UNIT AGREEMENT  
EDDY COUNTY, NEW MEXICO

New Mexico Oil Conservation Commission  
Santa Fe, New Mexico

Comes the undersigned, James E. Logan, with offices at Midland, Texas, and files herewith one copy of the proposed Unit Agreement for the development and operation of the Rain Spring Unit Area, Eddy County, New Mexico, and hereby makes application for the approval of said Unit Agreement as provided by law, and in support thereof, states:

1. That the proposed unit area covered by said agreement embraces 10,542.00 acres of land, more or less, more particularly described as follows:

NEW MEXICO PRINCIPAL MERIDIAN

Township 22 South, Range 24 East,  
Sections 23, 24, 25, 26, 35, 36; All

Township 22 South, Range 25 East,  
Sections 19, 20, All  
Section 29;  $W\frac{1}{2}$   
Sections 30, 31; All

Township 23 South, Range 24 East,  
Sections 1, 2, 11, 12, 13, 14; All

Containing 10,542.00 acres, more or less.

2. That of the lands embraced within the proposed unit area, 1272.64 acres are lands of the State of New Mexico; 8949.36 acres are lands of the United States; and 320.00 acres are patented or fee lands.

3. That application is being made for the designation of said unit area and for the approval of the form of Unit Agreement by the Commissioner of Public Lands of the State of New Mexico.

4. That applicant is informed and believes, and upon such information and belief states, that the proposed unit area contains all or substantially



all of the geological feature involved, and that in the event of the discovery of oil or gas thereon, that said Unit Agreement will permit the producing area to be developed and operated in the interest of conservation and the prevention of waste of the unitized substances.

5. That James E. Logan is designated as the Unit Operator in said Unit Agreement, and as such is given authority under the terms thereof to carry on all operations necessary for the development and operation of the unit area for oil and gas subject to all applicable laws and regulations. That said Unit Agreement provides for the drilling of an initial test well to a depth sufficient to test the entire Pennsylvanian System but that applicant is not obligated to drill said well, in any event to a depth in excess of 10,500 feet.

6. That applicant believes that in the event oil or gas in paying quantities is discovered on the lands within the unit area, that the field or area can be developed more economically and efficiently under the terms of said Unit Agreement, to the end that the maximum recovery will be obtained of unitized substances, and that said Unit Agreement is in the interest of conservation and prevention of waste as contemplated by the New Mexico Oil Conservation Commission Statutes and regulations.

7. That upon an order being entered by the New Mexico Oil Conservation Commission approving said Unit Agreement, and after approval thereof by the Commissioner of Public Lands of the State of New Mexico, and after approval by the United States Department of Interior, an approved copy will be filed with the New Mexico Oil Conservation Commission.

WHEREFORE, the undersigned applicant respectfully requests that a hearing be held before an examiner on the matter of the approval of said Unit Agreement, and that upon said hearing, said Unit Agreement be approved by the New Mexico Oil Conservation Commission as being in

the interests of conservation and the prevention of waste.

Dated this 1st day of April, 1965

Respectfully submitted,

*James E. Logan* *By R.M.R.*  
James E. Logan

*Randolph M. Richardson III*

Randolph M. Richardson III  
Attorney at Law  
P. O. Box 819  
Roswell, New Mexico

BEFORE EXAMINER NUTTER  
OIL CONSERVATION COMMISSION  
APR 8 4-28-65 EXHIBIT NO. 1  
CASE NO. 3244

RECEIVED  
APR 9 6 55 AM '65  
STATE LAND OFFICE  
SANTA FE, N. M.

RAIN SPRING UNIT  
Eddy County, New Mexico

88888

### INTRODUCTION

The following report is submitted in confirmation of a request for the formation of a working interest unit, the purpose of which is the drilling of a 10,500' test in Section 24, T-22-S, R-24-E. This proposed test well will adequately test all portions of the Permian and Pennsylvanian reservoirs. The proposed unit is approximately ten miles Southwest of Carlsbad, New Mexico; the geographic center of the unit is near the Southeast corner of T-22-S, R-24-E, Eddy County, New Mexico. The following described acreage will be included within the geographical confines of the proposed unit:

T-22-S, R-24-E, Sections 23, 24, 25, 26, 35 and 36.

T-22-S, R-25-E, Sections 19, 20, W/2 29, 30 and 31.

T-23-S, R-24-E, Sections 1, 2, 11, 12, 13 and 14.

### GEOLOGY

Structural configuration as indicated on the enclosed map, which has been contoured on the top of Cisco-Canyon, indicates the proposed unit to be located on a structural anticline trending North-South. This prominent structural feature is substantiated by subsurface information obtained from wells which have penetrated the beds in the immediate area of the proposed unit. These indications are further

Exhibit "B" <sup>1</sup>

substantiated by gravity meter surveys as well as by surface work.

### STRATIGRAPHY

The Permian System is represented by approximately 8700' of sedimentary rock. The lithologic units are formations of the Whitehorse and Delaware Mountain Groups of the Guadalupe Series, the Bone Springs formation of the Leonard Series, and the Wolfcamp formation of the Wolfcamp Series.

The Pennsylvanian System consists of approximately 2200' of sediments of Cisco, Canyon, Strawn, Atoka and Morrow Series. The Cisco and Canyon Series consist predominately of organic limestone showing definite evidence of reefing. The Strawn Series is predominately bedded limestone with minor interbedded sands and shales. This section frequently contains zones of dolomite and chert in its upper portion. The Atoka and Morrow Series are characterized by interbedded sands, shales and limestones. The sandstone intervals of the Atoka and Morrow Series have been the objective for numerous gas tests in this area over the period of the last several years and these zones are productive within a five mile radius of the proposed unit.

The Mississippian System consists of approximately 350' of cherty limestones and dolomites of probably Meramac and Osage Series age. The Kinderhookian Series is represented by approximately 50' to 75' of Woodford Shale. The Devonian System consists of approximately 400' to 500' of cherty dolomite. This section contains excellent zones of porosity and permeability in its upper extremities and offers an excellent potential reservoir where

these beds are encountered on structure.

### PROSPECTIVE RESERVOIRS

Potential reservoirs within the proposed unit have been determined from an examination and correlation of electric logs within the area. An evaluation of the several potential zones is given below:

Permian: The Bone Springs formation is considered to be prospective for gas production. The Stanoline #1 Guadalupe Foothills Unit, Section 20, T-22-S, R-25-E, flowed substantial gas from 4499'-4800'. It is anticipated that this section should be commercially productive if encountered at a higher structural position.

Pre-Permian: The Pennsylvanian and Devonian formations are considered to be the primary objective of the proposed test well on this unit. The Pennsylvanian zones from which gas production is being obtained in the Indian Hills Unit, in the Gulf #1 Hackberry Hills Unit, and from the Honolulu #1 McKittrick Canyon Unit may all be considered as prospective reservoirs at the much higher structural position anticipated at the crest of the anticlinal anomaly within the confines of the proposed unit. Such structural advantage should assure commercial gas production from one or more of these zones.

The Gulf #1 North Caverns Unit and the Northern Natural Gas #1 McKittrick Hills Unit both have well-developed sandstone sections of Morrow Age. The Northern Natural Gas #1 McKittrick Hills Unit tested substantial quantities of gas from a well-developed sandstone within this section. This same sandstone section appears to be well-developed in the Gulf #1 North Caverns Unit, but unfortunately was not tested. Calculations made from the several logs run in this hole would indicate that this section is productive of hydrocarbons. Because of these shows and these well-developed sandstones it is felt that these sections may be productive along the west flank of the structure mapped. These flanking sandstones present an excellent potential reservoir where they lap against the structure on its west side.

Drillstem tests of the Devonian formation in wells in this area have not recovered substantial shows of oil and gas but

the recovery of substantial amounts of fluid from highly permeable zones indicates a strong probability of encountering commercial Devonian production where these beds are encountered at a higher structural position in association with the prominent surface structure which has been mapped. These figures justify a test of this formation at any location where the Mississippian shales are encountered at a structurally high position.

#### WELL PROGNOSIS

It is anticipated that the proposed test well will drill to a total depth of 10,500' at which point the well will be in beds of Upper Mississippian Age. It is anticipated that this well will encounter the Bone Springs at approximately 4300'. Care should be exercised that any shows of gas within this section be adequately tested. The Abo formation is anticipated at approximately 5600'. It is not expected that commercial shows will be found in this section. However, since the Abo is known to be a prolific producer in its reef facies this section will be closely examined during the course of drilling. It is anticipated that the well will encounter the Wolfcamp sand between 7500' and 7600'.

One of the major objectives of this test well is the Cisco-Canyon section. Because of the reef nature of these deposits, this section may be encountered as high as 8000'. Every attention will be given to the testing of any porous zones encountered in this reef limestone section, the base of which is anticipated around 9000'. This section is known to be productive of gas in the Indian Hills and Indian

Basin areas. This section has likewise had shows of oil in the area. The Lower Pennsylvanian section from 9000' to 10,500' is expected to consist chiefly of thin bedded limestones and interbedded sands and shales. The limestone and sandstone beds within this section are potentially productive and will be carefully observed for shows and might justify drillstem tests.

In the event that this well encounters the top of the Mississippian shale at a structural high position every consideration must be given to deepening the well to adequately test the Devonian formation which might be encountered as high as 11,000'. It is not anticipated that commercial shows will be found in any portion of the Mississippian section. The Devonian formation has been known to contain excellent zones of porosity and may prove productive on structure.

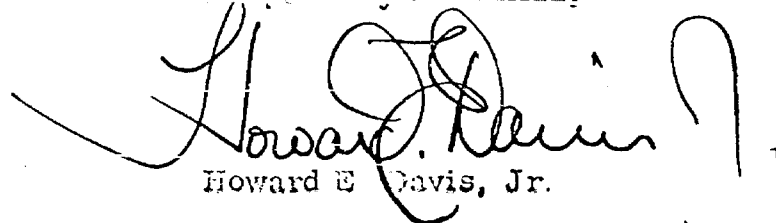
#### RECOMMENDATIONS

The geological evidence of several types confirming the anomalous position of this area justify the drilling of a test well to penetrate the Bone Spring and Pennsylvanian sections. In the event the proposed test should encounter the Mississippian shale at a structurally higher position every consideration should be given to the deepening of this well to adequately test the Devonian formation. The operator of this unit should have the privilege but not the obligation of carrying the well into the Devonian formation if strong shows and other evidence appear to justify this course of action.

The outline of this unit as now drawn differs somewhat from the original proposal. Sections 5, 8 and 17 of T-22-S, R-25-E was

originally included in the proposed unit. These three sections have been deleted from the unit as they did not seem to be essentially related geologically in a favorable position on the structure. It would have been desired to have included Sections 6, 7 and 18, T-22-S, R-25-E as well as Sections 1, 12 and 13 of T-22-S, R-24-E as these sections occupy a favorable position on the subsurface and are likewise well located on the surface geology. The inclusion of these sections within the unit was not possible since all of these sections had been previously dedicated to the Walt Canyon Unit to the North and West.

Respectfully submitted,

  
Howard E. Davis, Jr.

HEDJr:sm



R. M. RICHARDSON  
OIL AND GAS LEASES - UNITIZATION  
FEDERAL - STATE - FEE  
P. O. BOX 819  
ROSWELL, NEW MEXICO  
April 8, 1965

OFFICE 505 622-8801  
RES. 505 622-7985

In Re: Rain Spring Unit Area,  
Eddy County, New Mexico

*Box 3244*

Secretary,  
New Mexico Oil Conservation Commission  
State Land Office Building  
Santa Fe, New Mexico

Dear Mr. Porter,

On behalf of Mr. James E. Logan of Midland, Texas, I am filing herewith Application for Approval of the Rain Spring Unit, Eddy County, New Mexico.

Attached to the Application is one copy of the proposed form of Unit Agreement.

The Application of course contains the usual request for an Examiner hearing before the Conservation Commission.

Application has been made with the U. S. G. S. for designation of the Unit Area and for approval of the form of Unit Agreement.

Mrs. Rhea in the Commissioner's office has also been furnished with a copy of the Unit Agreement and a formal request for Approval.

We will be sincerely appreciative if you will place this Unit on your earliest Docket for an Examiner hearing, and please notify the undersigned or Mr. James E. Logan, 503 Midland National Bank Bldg. Midland, Texas, as to the date of the hearing.

In the event you need anything more at this time, please do not hesitate to let us know.

Thank you.

Yours very truly,

*R. M. Richardson*  
R. M. Richardson

DOCKET MAILED

Date 4-15-65  
*2*

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. 3244

Order No. R-2905

APPLICATION OF JAMES E. LOGAN  
FOR APPROVAL OF THE RAIN SPRING  
UNIT AGREEMENT, EDDY, COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 o'clock a.m. on  
April 28, 1965, at Santa Fe, New Mexico, before Examiner  
Daniel S. Nutter.

NOW, on this \_\_\_\_\_ day of May, 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, James E. Logan,  
seeks approval of the Rain Spring Unit Agreement  
State,  
covering 10.542.00 acres, more or less, of Federal lands  
and Fee  
described as follows:

EDDY COUNTY, NEW MEXICO  
TOWNSHIP 22 SOUTH, RANGE 24 EAST, NMPM  
Sections 23 through 26: All  
Sections 35 and 36: All

TOWNSHIP 22 SOUTH, RANGE 25 EAST, NMPM  
Sections 19 and 20: All  
Section 29: W/2  
Sections 30 and 31: All

TOWNSHIP 23 SOUTH, RANGE 24 EAST, NMPM  
Sections 1 and 2: All  
Sections 11 through 14: All

(3) That approval of the proposed unit agreement should promote the prevention of waste and the protection of correlative rights within the unit area.

IT IS THEREFORE ORDERED:

(1) That the Rain Spring Unit Agreement is hereby approved.

(2) That the plan contained in said unit agreement for the development and operation of the unit area is hereby approved in principle as a proper conservation measure; provided, however, that notwithstanding any of the provisions contained in said unit agreement, this approval shall not be considered as waiving or relinquishing, in any manner, any right, duty, or obligation which is now, or may hereafter be, vested in the Commission to supervise and control operations for the exploration and development of any lands committed to the unit and production of oil or gas therefrom.

(3) That the unit operator shall file with the Commission an executed original or executed counterpart of the unit agreement within 30 days after the effective date thereof; that in the event of subsequent joinder by any party or expansion or contraction of the unit area, the unit operator shall file with the Commission within 30 days thereafter counterparts of the unit agreement reflecting the subscription of those interests having joined or ratified.

(4) That this order shall become effective upon the approval of said unit agreement by the Commissioner of Public Lands for the State of New Mexico and the Director of the United States Geological Survey; that this order shall terminate ipso facto upon the termination of said unit agreement; and that the last unit operator shall notify the Commission immediately in writing of such termination.

(5) 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.

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
April 28, 1965

EXAMINER HEARING

IN THE MATTER OF: Application of James E.  
Logan for a unit agreement, Eddy County, New  
Mexico.

Case No. 3244

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

DEARNLEY-MEIER REPORTING SERVICE, Inc.

FARMINGTON, N. M.  
PHONE 325-1182

SANTA FE, N. M.  
PHONE 983-3971

ALBUQUERQUE, N. M.  
PHONE 243-6691



BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
April 28, 1965

EXAMINER HEARING

----- )  
IN THE MATTER OF: Application of James E. )  
Logan for a unit agreement, Eddy County, New )  
Mexico. Applicant, in the above-styled )  
cause, seeks approval of the Rain Spring Unit )  
Area comprising 10,542.00 acres, more or less, Case 3244  
of State, Federal and Fee lands in Townships )  
22 and 23 South, Ranges 24 and 25 East, Eddy )  
County, New Mexico. )  
----- )

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: We will call Case 3244.

MR. DURRETT: Application of James E. Logan for a unit  
agreement, Eddy County, New Mexico.

MR. RICHARDSON: Randolph M. Richardson from Roswell,  
representing Mr. James E. Logan from Midland. We have one  
witness and six exhibits.

(Whereupon, Applicant's Exhibits 1  
through 6 marked for identification.)

(Witness sworn.)

MR. DAVIS, called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. RICHARDSON:

Q Mr. Davis, have you ever testified before the Oil Conservation Commission or an Examiner?

A No, sir.

Q For the Commission, could you state your educational background and your present work and positions which would qualify you to testify?

A I graduated from the University of Texas with a major in geology in 1946; was employed from 1946 to '48 as geologist by Honolulu Oil Corporation; from 1948 to '53 in the capacity of district geologist for the same company; resigned, and was employed as division geologist for Monterey Oil Company, Midland, Texas until 1956. Since 1956 I have operated as an independent consulting geologist in Midland.

MR. RICHARDSON: Are his qualifications acceptable?

MR. NUTTER: Yes, sir.

Q Mr. Davis, you have before you a copy of a geological report. Would you please go through and identify the contents of the report, referring to the different exhibits that are in the report as 1, 2, 3, 4, 5, 6; just briefly list them.

A Exhibit Number 1 is a written report giving written

Hearnley-meier

SPECIALIZING IN: DEPOSITIONS, HEARINGS, STATEMENTS, EXPERT TESTIMONY, DAILY COPY, CONVENTIONS  
1123 SIMMS BLDG. • P. O. BOX 1092 • PHONE 243-6691 • ALBUQUERQUE, NEW MEXICO

dearnley-maier reporting

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

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

substantiation in detail concerned with the geologic facts used in substantiating this application.

Exhibit Number 2 is a structural contour map prepared from well information on the top of the Devonian formation, as encountered in this area of Eddy County.

Exhibit Number 3 is a photo copy of surface work mapping down on the surface beds substantiating the presence of a significant surface feature at the location of the deep-seated Devonian feature.

Exhibit Number 4 is an isopac map between the Devonian or Fourth Bone Spring sand in the Devonian formation, confirming through an isopac the significant thinning over the area of the Devonian feature, and of the surface feature.

Exhibit Number 5 is a map contoured on the Upper Pennsylvanian carbonate reef, the major producing horizon at Indian Basin, confirming that there is a significant build-up of this carbonate pay zone in the area of the structure, substantiated by the previous exhibits.

Exhibit Number 6 is an east-west cross section running from the Indian Hills producing area through the Walt Canyon producing area, across and through significant dry holes in the Prospect area, and over to the east.

Q Mr. Davis, was this report prepared by you?

A Yes, sir.

Q Would you please tell the Examiner the approximate geographical location of the proposed unit area and the total number of acres involved?

A The proposed unit area covers sections in the southeast quarter of Township 22 South, Range 24 East; sections in Township 22 South, Range 25 East, and sections in the eastern portion of Township 23 South, Range 24 East.

Q And the total number of acres in the unit and the acreage belonging to each category, Federal, State and Patented?

A There are 10,542 acres in the described unit area, of which 84.89 percent consists of Federal lands, 12.07 percent are New Mexico State lands, and 3.04 percent are Fee lands.

Q Now, Mr. Davis, could you refer to your written geological report, your Exhibit Number 1, and give the Commission a resume of the report, as connected with, or tied to the different maps, and your conclusions and recommendations as to the geological feature and structure involved?

A The Cisco Canyon formation, Pennsylvanian age, is a significant pay in the Indian Hills, Indian Basin Area. Mapping on this horizon indicates local reefing or thickening of this formation to such a degree that it could be logically anticipated that the formation would likewise be productive in this area.



The lower mapping on top of the Devonian, confirms the fact that there's a large and prominent structural feature beneath this reefing in the upper formation. The mapping of an isopac interval between the Permian formation and the deep-seated Devonian formation, confirms the presence of a significant thinning across this area; and further leads us to believe that the several formations within the Pennsylvanian should be productive in the unit area. All of this information has been further substantiated by the surface mapping mentioned in Exhibit 3.

Q I believe it is Number 3.

A This surface work has been substantiated from aerial photography. It has likewise been mapped and was published by the United States Geological Survey in 1962 which published mapping significantly agrees with this work.

Q In other words, Mr. Davis, your unit area is based not only upon surface information, but the possibility of your Cisco Canyon being productive, your Morrow, and possibly your Devonian?

A Yes, sir.

Q Your initial proposed test well is projected to what depth?

A It's projected to a depth of 10,500, which should be adequate to test all of the beds of Pennsylvanian age.

Q The unit area is also pin-pointed, or located to some extent by certain dry holes in the area. Could you spot the location, or refer to those dry holes as surrounding the unit area, or their relation to the unit area?

A The dry holes surround the unit area, and the information from these wells confirms the presence of this feature. The Stanolind Number 1 Guadalupe Foothills Unit in Section 20 is a significantly high well and is significantly thin against all regional characteristics. This well had significant shows.

The Inman Number 1 Carnero Peak Unit in Section 31, Township 22 South, Range 25 East, is likewise a high and significantly thin well, which further substantiates the feature.

The Northern Natural Gas Number 1 McKittrick Hills Federal, Section 23, Township 22 South, Range 24 East is a further significant control well which encountered gas, free gas from zones within the Morrow.

Of further significance is the Gulf Number 1 Northern Caverns Unit Well, Section 11, Township 23 South, Range 24 East. This well likewise encountered an excellent development of the sands within the Morrow, and may possibly be indicative of Morrow production in the area.

The Union Cowle Number 1 State in Section 30, Township 23 South, Range 25 East is likewise a significant control area, or

a well in the area. This well, is again high and thin, and likewise encountered free gas from zones within the Lower Pennsylvanian.

Q Mr. Davis, has the unit area been designated by the United States Geological Survey, the official unit designation from Washington?

A Preliminary approval has been given. The application is in Washington, and we are given to expect that it will be returned immediately approved.

Q Has the unit agreement been submitted to the Commissioner of Public Lands for the State of New Mexico for his approval?

A Yes, sir.

Q It has not been approved though?

A No.

Q In your opinion, does the unit area cover all, or substantially all of the geological structure or feature involved?

A In my opinion, the unit area as designated, covers essentially all of the unit, geologically. Unfortunately, some portion of the feature on its northern end has been previously dedicated to a producing unit in another area, and has had, therefore, to be excluded from the unit.

MR. NUTTER: Is that the Walt Canyon Unit?

A Yes.

MR. NUTTER: What particular acreage were you referring to there that is in the Walt Canyon?

A As you will see from the structure map, the feature which we have mapped, does extend into the Section 13 of Township 22 South, Range 24 East; and likewise, it does extend into Section 18 of Township 22 South, Range 25 East.

MR. NUTTER: And both of those sections are in the Walt Canyon?

A Yes, they are.

Q (By Mr. Richardson) Mr. Davis, the proposed location is apparently to be towards the north end of the unit rather than the center of the unit. I wonder if you could give the Examiner a brief reason, or history as to why the location was picked toward the north end of the unit?

A Yes, sir. The location which we have chosen is, we feel, an optimum location from the standpoint of geology from all the evidence at our disposal. We don't feel that any well that has been drilled in the area to date has been located in the most favorable position, as regards the surface feature, and the subsurface feature; and we feel like the location that we've chosen is at an optimum location.

MR. NUTTER: What is that location?

A It will be in the southeast quarter of Section 24, Township 22 South, Range 24 East.

Q In your opinion, if this well should be drilled in this location and should produce the main objective of this unit and test well is the Pennsylvanian; if it should produce in Section 24 to the north, there is also a good possibility that the southern portion of the unit would also be productive, is that right?

A Absolutely.

Q Well, in your opinion, if there is a discovery of unitized instances in paying quantities, will the unit agreement and the utilization of this land promote the orderly and proper development of the producing area?

A Yes, sir.

Q Will the orderly and proper development of the producing area be in the interest of conservation and prevention of waste?

A It will.

Q And also in the event of a discovery in paying quantities, will the State of New Mexico and the State institutions owning the land receive their fair share of production?

A Yes, sir.

Q And in the event of discovery, what additional plans do you have for further drilling and development in the area?

A Well, it is anticipated that if we are fortunate enough

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to make an economic discovery here that orderly and proper, prudent development would take place in an orderly fashion, following such completion.

MR. RICHARDSON: That is all the testimony, Mr. Nutter. Do you have any additional questions?

MR. NUTTER: Did you plan on another witness?

MR. RICHARDSON: No.

MR. NUTTER: Relating to the land matters --

MR. RICHARDSON: No. We could go into the exact acres.

MR. NUTTER: Maybe he could give us the amount of commitment and so forth.

MR. RICHARDSON: As far as the amount of commitment, I did not ask him the percentages of commitment. Those are the total unit area lands. We expect, that of the 10,542 acres there will be approximately 9,000 of it committed. All of the people have been contacted and there are, out of the 10,542 total acres there is expected to be 999.35 that will not be committed.

MR. NUTTER: What was that figure again?

MR. RICHARDSON: 999.85 not committed.

MR. NUTTER: That's acres?

MR. RICHARDSON: Acres. A portion of that, some 440 acres is unleased Federal land on which a lease cannot be issued right now. The acreage expected to be committed, and more or less already committed, is 9,542.15.

MR. NUTTER: Either committed or pledged.

MR. RICHARDSON: Committed or verbally pledged.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Davis, your structure extends down here on the south part, your south dome there occupies a portion of Sections 6, 7 and 18. Why wasn't that particular acreage included in the unit area?

A That acreage, I should have mentioned that in answer to the previous question. A portion of that acreage is perhaps involved with the feature. However, that acreage has been previously dedicated to Monsanto's Cueva Unit, which bounds this unit on the east. Otherwise, we might have also chosen to have included a portion of that within the unit of our acreage.

Q The structure to the north is in the Walt Canyon and the acreage on the southeast is already in another unit?

A Yes.

Q What is the name of that unit?

A Cueva.

Q How do you spell that?

A Cueva, C-u-e-v-a.

MR. RICHARDSON: Those two units, Cueva and this one, hit the United States Geological Survey about the same time for

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designation of unit area; and the eastern boundary of this Rain Spring Unit is the west boundary of the Cueva Unit.

MR. NUTTER: I see. Are there any further questions of Mr. Davis?

MR. DURRETT: I have a question, please.

BY MR. DURRETT:

Q Mr. Davis, what are you going to test now, the Devonian?

A What we are proposing is that the initial test well will be drilled completely through the Pennsylvanian formation; to encounter the top of the Mississippian, which is a reliable structure point. In the event the well structure position at that time confirms this geological concept, it's anticipated that we will want to take the well on into the Devonian. It would be wise to do so.

Q Well, is the Devonian being unitized --

MR. RICHARDSON: Yes.

Q -- as part of your unit agreement?

A Yes, sir.

Q The reason I was asking is that I noticed down here in 11 and 12 of 23, 24, you have a couple of dry holes that tested the Devonian, didn't they?

A Yes, sir, they did. Those wells, however, encountered the Devonian at a much lower subsea data than we would



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anticipate that our well would encounter it. We have every reason to feel that a well drilled in our proposed location would not only encounter the Devonian higher than it was in either of the two wells that you mentioned, but that it would likewise encounter the Devonian at a higher subsea data than the Stanolind Guadalupe Foothills Union, or the Northern Natural McKittrick Hills Federal across the line in the next township, 23.

We have attempted to show that there is a very substantial and prominent Devonian feature. We know that the Devonian in this area has porosity at its top and has shows, and if we can encounter it at a higher structural position, it's completely reasonable to anticipate that it would be productive.

Q This acreage wouldn't be in the participating area as far as the Devonian goes then, under your agreement --

MR. RICHARDSON: You mean the initial test well, or the acreage to the south?

MR. DURRETT: What will be the participating acreage, just roughly, on your test well?

MR. RICHARDSON: It's the unit agreement reads: "That acreage around the well which is reasonably proven productive".

MR. DURRETT: It wouldn't be very far then?

MR. RICHARDSON: No, it would be expanded as additional wells were drilled, the participating area would be expanded.

MR. DURRETT: Thank you, Mr. Davis, I think that's all I have.

MR. NUTTER: This is a geological inference type of participating area?

MR. RICHARDSON: Yes.

MR. NUTTER: And the obligation is to drill through the entire Pennsylvanian, but not required to go more than 10,500 and if the Mississippian is high, then the operator would, in all likelihood, want to test the Devonian also.

A Yes, sir.

MR. RICHARDSON: Right.

MR. NUTTER: But the Devonian is not an--

A It's not an obligatory objective.

MR. NUTTER: -- obligatory objective. Any further questions of the witness? He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Richardson?

MR. RICHARDSON: No, sir.

MR. NUTTER: I don't think we have had these exhibits offered yet.



MR. RICHARDSON: We would like to offer Exhibits 1 through 6, Case 3244.

MR. NUTTER: Applicant's Exhibits 1 through 6 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 6 were admitted in evidence.)

MR. NUTTER: Does anyone have anything they wish to offer in Case 3244? We will take the case under advisement, and the hearing is adjourned.

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STATE OF NEW MEXICO )  
 ) ss.  
COUNTY OF BERNALILLO )

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 12th day of May, 1965.

Ada Dearnley  
Notary Public - Court Reporter

My Commission Expires:  
June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Bernalillo Hearing of Case No. 3244 heard by me on 4/28, 1965.

[Signature], Examiner  
New Mexico Oil Conservation Commission

UNIT AGREEMENT  
FOR THE DEVELOPMENT AND OPERATION OF THE  
RAIN SPRING UNIT AREA  
EDDY COUNTY, NEW MEXICO  
NO. 3244

THIS AGREEMENT, entered into as of the 1st day of April, 1965, by and between the parties subscribing, ratifying, or consenting hereto, and herein referred to as the "parties hereto,"

WITNESSETH:

WHEREAS, the parties hereto are the owners of working, royalty or other oil and gas interests in the unit area subject to this agreement; and,

WHEREAS, the Mineral Leasing Act of February 25, 1920, 41 Stat. 437, as amended, 30 U.S.C. Sec. 181 et seq., authorizes Federal lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating a cooperative or unit plan of development or operation of any oil or gas pool, field, or like area, or any part thereof for the purpose of more properly conserving the natural resources thereof whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and,

WHEREAS, the Commissioner of Public Lands of the State of New Mexico is authorized by an Act of the Legislature (Sec. 7-11-39 N.M. Statutes 1953 Annotated) to consent to or approve this agreement on behalf of the State of New Mexico, insofar as it covers and includes lands and mineral interests of the State of New Mexico; and,

WHEREAS, the Oil Conservation Commission of the State of New Mexico is authorized by an Act of the Legislature (Article 3, Chapter 65, Volume 9, Part 2, 1953 Statutes) to approve this agreement and the conservation provisions hereof; and,

WHEREAS, the parties hereto hold sufficient interests in the Rain Spring Unit Area covering the land hereinafter described to give reasonably effective control of operations therein; and,

WHEREAS, it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure other benefits obtainable through development and operation of the area subject to this agreement under the terms,

conditions and limitations herein set forth;

NOW, THEREFORE, in consideration of the premises and the promises herein contained, the parties hereto commit to this agreement their respective interests in the below-defined unit area, and agree severally among themselves as follows:

1. ENABLING ACT AND REGULATIONS. The Mineral Leasing Act of February 25, 1920, as amended, supra, and all valid pertinent regulations, including operating and unit plan regulations, heretofore issued thereunder or valid, pertinent, and reasonable regulations hereafter issued thereunder are accepted and made a part of this agreement as to Federal lands, provided such regulations are not inconsistent with the terms of this agreement; and as to State of New Mexico and privately owned lands, the oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the State of New Mexico are hereby accepted and made a part of this agreement.

2. UNIT AREA. The area specified on the map attached hereto marked Exhibit "A" is hereby designated and recognized as constituting the unit area, containing 10,542.00 acres, more or less.

Exhibit "A" shows, in addition to the boundary of the unit area, the boundaries and identity of tracts and leases in said area to the extent known to the Unit Operator. Exhibit "B" attached hereto is a schedule showing to the extent known to the Unit Operator the acreage, percentage, and kind of ownership of oil and gas interests in all land in the unit area. However, nothing herein or in said schedule or map shall be construed as a representation by any party hereto as to the ownership of any interest other than such interest or interests as are shown in said map or schedule as owned by such party. Exhibits "A" and "B" shall be revised by the Unit Operator whenever changes in the unit area render such revision necessary, or when requested by the Oil and Gas Supervisor, hereinafter referred to as "Supervisor," or when requested by the Commissioner of Public Lands of the State of New Mexico, hereinafter referred to as "State Land Commissioner," and not less than seven copies of the revised exhibits shall be filed with the Supervisor, and two (2) copies thereof shall be filed with the State Land Commissioner and one (1) copy with the New Mexico Oil Conservation Commission, hereinafter referred to as "State Commission."

The above-described unit area shall when practicable be expanded to include therein any additional tract or tracts regarded as reasonably necessary or advisable for the purposes of this agreement, or shall be contracted to exclude lands not within any participating area whenever such expansion or contraction is necessary or advisable to conform with the purposes of this agreement. Such expansion or contraction shall be effected in the following manner:

(a) Unit Operator, on its own motion, or on demand of the Director of the Geological Survey, hereinafter referred to as "Director," or on demand of the State Land Commissioner, after preliminary concurrence by the Director, shall prepare a notice of proposed expansion or contraction describing the contemplated changes in the boundaries of the unit area, the reasons therefor, and the proposed effective date thereof, preferably the first day of a month subsequent to the date of notice.

(b) Said notice shall be delivered to the Supervisor, the State Land Commissioner and the State Commission and copies thereof mailed to the last known address of each working interest owner, lessee, and lessor whose interests are affected, advising that 30 days will be allowed for submission to the Unit Operator of any objections.

(c) Upon expiration of the 30-day period provided in the preceding item (b) hereof, Unit Operator shall file with the Supervisor, the State Land Commissioner and the State Commission evidence of mailing of the notice of expansion or contraction and a copy of any objections thereto which have been filed with the Unit Operator, together with an application in sufficient number, for approval of such expansion or contraction and with appropriate joinders.

(d) After due consideration of all pertinent information, the expansion or contraction shall, upon approval by the director, the State Land Commissioner and the State Commission, become effective as of the date prescribed in the notice thereof.

(e) All legal subdivisions of unitized lands (i.e., 40 acres by Government survey or its nearest lot or tract equivalent in instances of irregular surveys, however, unusually large lots or tracts shall be considered in multiples of 40 acres, or the nearest aliquot equivalent thereof, for the purpose of elimination under this subsection), no parts of which are entitled to be in a participating area within five years after the first day of the month following

3. UNITIZED LAND AND UNITIZED SUBSTANCES. All land committed to this agreement shall constitute land referred to herein as "unitized land" or "land subject to this agreement." All oil and gas in any and all formations of the unitized land are unitized under the terms of this agreement and herein are called "unitized substances."

4. UNIT OPERATOR. James E. Logan with offices at Midland, Texas, is hereby designated as Unit Operator and by signature hereto as Unit Operator commits to this agreement all interests in unitized substances vested in him and agrees and consents to accept the duties and obligations of Unit Operator for discovery, development and production of unitized substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interest in unitized substances, and the term "working interest owner" when used herein shall include or refer to Unit Operator as the owner of a working interest when such an interest is owned by him.

5. RESIGNATION OR REMOVAL OF UNIT OPERATOR. Unit Operator shall have the right to resign at any time prior to the establishment of a participating area or areas hereunder, but such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator and terminate Unit Operator's rights as such for a period of six months after notice of intention to resign has been served by Unit Operator on all working interest owners and the Director, the State Land Commissioner and State Commission and until all wells then drilled hereunder are placed in a satisfactory condition for suspension or abandonment whichever is required by the Supervisor as to Federal lands and by the State Commission as to State and privately owned lands unless a new Unit Operator shall have been selected and approved and shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

Unit Operator shall have the right to resign in like manner and subject to like limitations, as above provided, at any time a participating area established hereunder is in existence, but, in all instances of resignation or removal, until a successor Unit Operator is selected and approved as hereinafter provided, the working interest owners shall be jointly responsible for performance of the duties of Unit Operator, and shall not later than 30 days before such resignation or removal becomes effective appoint a common agent to represent them in any action to be taken hereunder.



The resignation of Unit Operator shall not release Unit Operator from any liability for any default by it hereunder occurring prior to the effective date of its resignation.

The Unit Operator may, upon default or failure in the performance of its duties or obligations hereunder, be subject to removal by the same percentage vote of the owners of working interests determined in like manner as herein provided for the selection of a new Unit Operator. Such removal shall be effective upon notice thereof to the Director and the State Land Commissioner.

The resignation or removal of Unit Operator under this agreement shall not terminate its right, title, or interest as the owner of a working interest or other interest in unitized substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all equipment, materials, and appurtenances used in conducting the unit operations and owned by the working interest owners to the new duly qualified successor Unit Operator or to the owners thereof if no such new Unit Operator is elected, to be used for the purpose of conducting unit operations hereunder. Nothing herein shall be construed as authorizing removal of any material, equipment and appurtenances needed for the preservation of any wells.

6. SUCCESSOR UNIT OPERATOR. Whenever the Unit Operator shall tender his or its resignation as Unit Operator, or shall be removed as hereinabove provided, or a change of unit operator is negotiated by working interest owners, the owners of the working interests in the participating area or areas according to their respective acreage interests in such participating area or areas, or until a participating area shall have been established, the owners of the working interests according to their respective acreage interests in all unitized land, shall by majority vote select a successor Unit Operator; provided that, if a majority but less than 75 per cent of the working interests qualified to vote are owned by one party to this agreement, a concurring vote of one or more additional working interest owners shall be required to select a new operator. Such selection shall not become effective until:

(a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator, and

(b) the selection shall have been filed with the Supervisor and approved

by the State Land Commissioner. If no successor Unit Operator is selected and qualified as herein provided, the Director and State Land Commissioner at their election may declare this Unit Agreement terminated.

7. ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT. If the Unit Operator is not the sole owner of working interests, costs and expenses incurred by Unit Operator in conducting unit operations hereunder shall be paid and apportioned among and borne by the owners of working interests, all in accordance with the agreement or agreements entered into by and between the Unit Operator and the owners of working interests, whether one or more, separately or collectively. Any agreement or agreements entered into between the working interest owners and the Unit Operator as provided in this section, whether one or more, are herein referred to as the "unit operating agreement." Such unit operating agreement shall also provide the manner in which the working interest owners shall be entitled to receive their respective proportionate and allocated share of the benefits accruing hereto in conformity with their underlying operating agreements, leases, or other independent contracts, and such other rights and obligations as between Unit Operator and the working interest owners as may be agreed upon by Unit Operator and the working interest owners; however, no such unit operating agreement shall be deemed either to modify any of the terms and conditions of this unit agreement or to relieve the Unit Operator of any right or obligation established under this unit agreement, and in case of any inconsistency or conflict between the unit agreement and the unit operating agreement, this unit agreement shall prevail. Three (3) true copies of any unit operating agreement executed pursuant to this section should be filed with the Supervisor and one (1) true copy with the State Land Commissioner, prior to approval of this unit agreement by the Director.

8. RIGHTS AND OBLIGATIONS OF UNIT OPERATOR. Except as otherwise specifically provided herein, the exclusive right, privilege, and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, storing, allocating, and distributing the unitized substances are hereby delegated to and shall be exercised by the Unit Operator as herein provided. Acceptable evidence of title to said rights shall be deposited with said Unit Operator and, together with this agreement, shall constitute and

define the rights, privileges, and obligations of Unit Operator. Nothing herein, however, shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that under this agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

9. DRILLING TO DISCOVERY. Within six months after the effective date hereof, the Unit Operator shall begin to drill an adequate test well at a location approved by the Supervisor if on Federal land or by the State Land Commissioner if on State land, or by the State Commission if on privately owned land, unless on such effective date a well is being drilled conformably with the terms hereof, and thereafter continue such drilling diligently until the entire Pennsylvanian system has been tested, or until at a lesser depth unitized substances shall be discovered which can be produced in paying quantities (to-wit: quantities sufficient to repay the costs of drilling and producing operations, with a reasonable profit) or the Unit Operator shall at any time establish to the satisfaction of the Supervisor if on Federal land, or the State Land Commissioner if on State land, or of the State Commission if on privately owned land, that further drilling of said well would be unwarranted or impracticable; provided however, that Unit Operator shall not in any event be required to drill said well to a depth in excess of 10,500 feet. Until the discovery of a deposit of unitized substances capable of being produced in paying quantities, the Unit Operator shall continue drilling diligently one well at a time, allowing not more than six months between the completion of one well and the beginning of the next well, until a well capable of producing unitized substances in paying quantities is completed to the satisfaction of said Supervisor if it be on Federal land or of the State Land Commissioner if on State land or the State Commission if on privately owned land or until it is reasonably proved that the unitized land is incapable of producing unitized substances in paying quantities in the formations drilled hereunder. Nothing in this section shall be deemed to limit the right of the Unit Operator to resign as provided in Section 5 hereof, or as requiring Unit Operator to commence or continue any drilling during the period pending such resignation becoming effective in order to comply with the requirements of this section. The Director and State Land

Commissioner may modify the drilling requirements of this section by granting reasonable extensions of time when, in their opinion, such action is warranted.

Upon failure to comply with the drilling provisions of this section, the Director and State Land Commissioner may, after reasonable notice to the Unit Operator, and each working interest owner, lessee, and lessor at their last known addresses, declare this unit agreement terminated.

10. PLAN OF FURTHER DEVELOPMENT AND OPERATION. Within six months after completion of a well capable of producing unitized substances in paying quantities, the Unit Operator shall submit for the approval of the Supervisor and the State Land Commissioner an acceptable plan of development and operation for the unitized land which, when approved by the Supervisor and the State Land Commissioner, shall constitute the further drilling and operating obligations of the Unit Operator under this agreement for the period specified therein. Thereafter, from time to time before the expiration of any existing plan, the Unit Operator shall submit for the approval of the Supervisor and the State Land Commissioner a plan for an additional specified period for the development and operation of the unitized land. Any plan submitted pursuant to this section shall provide for the exploration of the unitized area and for the diligent drilling necessary for determination of the area or areas thereof capable of producing unitized substances in paying quantities in each and every productive formation and shall be as complete and adequate as the Supervisor and the State Land Commissioner may determine to be necessary for timely development and proper conservation of the oil and gas resources of the unitized area and shall:

(a) specify the number and location of any wells to be drilled and the proposed order and time for such drilling; and

(b) to the extent practicable specify the operating practices regarded as necessary and advisable for the proper conservation of natural resources. Separate plans may be submitted for separate productive zones, subject to the approval of the Supervisor and the State Land Commissioner. Said plan or plans shall be modified or supplemented when necessary to meet changed conditions, or to protect the interests of all parties to this agreement. Reasonable diligence shall be exercised in complying with the obligations of the approved plan of development. The Supervisor and State Land Commissioner are authorized to grant a

reasonable extension of the six-month period herein prescribed for submission of an initial plan of development where such action is justified because of unusual conditions or circumstances. After completion hereunder of a well capable of producing any unitized substance in paying quantities, no further wells, except such as may be necessary to afford protection against operations not under this agreement or such as may be specifically approved by the Supervisor and the State Land Commissioner shall be drilled except in accordance with a plan of development approved as herein provided.

11. PARTICIPATION AFTER DISCOVERY. Upon completion of a well capable of producing unitized substances in paying quantities, the Unit Operator shall within the month of such completion, if practicable, or as soon thereafter as required by the Supervisor or the State Land Commissioner submit for approval by the Director and the State Land Commissioner a schedule, based on subdivisions of the public land survey or aliquot parts thereof of all unitized land then regarded as reasonably proved to be productive or unitized substances in paying quantities; all lands in said schedule on approval of the Director and the State Land Commissioner to constitute a participating area, effective as of the date of completion of such well or the effective date of the unit agreement, whichever is later. The acreages of both Federal and non-Federal lands shall be based upon appropriate computations from the courses and distances shown on the last approved public land survey as of the effective date of the initial participating area. Said schedule also shall set forth the percentage of unitized substances to be allocated as herein provided to each unitized tract in the participating area so established, and shall govern the allocation of production from and after the date the participating area becomes effective. A separate participating area shall be established in like manner for each separate pool or deposit of unitized substances or for any group thereof produced as a single pool or zone, and any two or more participating areas so established may be combined into one with the consent of the owners of all working interests in the lands within the participating areas so to be combined, on approval of the Director and the State Land Commissioner. The participating area or areas so established shall be revised from time to time, subject to like approval, whenever such action appears proper as a result of further drilling operations or otherwise, to include additional land then regarded as reasonably proved to be productive in paying quantities,

or to exclude land then regarded as reasonably proved not to be productive in paying quantities and the percentage of allocation shall also be revised accordingly. The effective date of any revision shall be the first of the month in which is obtained the knowledge or information on which such revision is predicated, provided, however, that a more appropriate effective date may be used if justified by the Unit Operator and approved by the Director and the State Land Commissioner. No land shall be excluded from a participating area on account of depletion of the unitized substances.

It is the intent of this section that a participating area shall represent the area known or reasonably estimated to be productive in paying quantities; but, regardless of any revision of the participating area, nothing herein contained shall be construed as requiring any retroactive adjustment for production obtained prior to the effective date of the revision of the participating area.

In the absence of agreement at any time between the Unit Operator and the Director and the State Land Commissioner as to the proper definition or redefinition of a participating area, or until a participating area has, or areas have, been established as provided herein, the portion of all payments affected thereby may be impounded in a manner mutually acceptable to the owners of working interests, except royalties due the United States and the State of New Mexico, which shall be determined by the Supervisor for Federal lands and the State Land Commissioner for State lands and the State Commission as to privately owned lands and the amount thereof deposited, as directed by the Supervisor and the State Land Commissioner respectively, to be held as unearned money until a participating area is finally approved and then applied as earned or returned in accordance with a determination of the sum due as Federal and State royalty on the basis of such approved participating area.

Whenever it is determined, subject to the approval of the Supervisor, as to wells drilled on Federal land and of the State Land Commissioner as to wells drilled on State land and the State Commission as to wells on privately owned lands, that a well drilled under this agreement is not capable of production in paying quantities and inclusion of the land on which it is situated in a participating area is unwarranted, production from such well shall, for the purposes of settlement among all parties other than working interest owners, be

allocated to the land on which the well is located so long as such land is not within a participating area established for the pool or deposit from which such production is obtained. Settlement for working interest benefits from such a well shall be made as provided in the unit operating agreement.

12. ALLOCATION OF PRODUCTION. All unitized substances produced from each participating area established under this agreement, except any part thereof used in conformity with good operating practices within the unitized area for drilling, operating, comm and other production or development purposes, for repressuring or recycling in accordance with a plan of development approved by the Supervisor, and State Land Commissioner and the State Commission, or unavoidably lost, shall be deemed to be produced equally on an acreage basis from the several tracts of unitized land of the participating area established for such production and, for the purpose of determining any benefits accruing under this agreement, each such tract of unitized land shall have allocated to it such percentage of said production as the number of acres of such tract included in said participating area bears to the total acres of unitized land in said participating area, except that allocation of production hereunder for purposes other than for settlement of the royalty, overriding royalty, or payment out of production obligations of the respective working interest owners, shall be on the basis prescribed in the unit operating agreement whether in conformity with the basis of allocation herein set forth or otherwise. It is hereby agreed that production of unitized substances from a participating area shall be allocated as provided herein regardless of whether any wells are drilled on any particular part or tract of said participating area. If any gas produced from one participating area is used for repressuring or recycling purposes in another participating area, the first gas withdrawn from such last-mentioned participating area for sale during the life of this agreement shall be considered to be the gas so transferred until an amount equal to that transferred shall be so produced for sale and such gas shall be allocated to the participating area from which initially produced as constituted at the time of such final production.

13. DEVELOPMENT OR OPERATION OF NON-PARTICIPATING LAND OR FORMATIONS. Any party or parties hereto owning or controlling the working interests in any unitized land having thereon a regular well location may with the approval of

the Supervisor as to Federal land, the State Land Commissioner as to State land, and the State Commission as to privately owned land, and subject to the provisions of the Unit Operating Agreement, at such party's or parties' sole risk, costs, and expense drill a well at such location on such land to test any formation for which a participating area has been established if such location is not within said participating area, unless within 90 days of receipt of notice from said party of his intention to drill the well the Unit Operator elects and commences to drill such a well in like manner as other wells are drilled by the Unit Operator under this agreement.

If any well drilled as aforesaid by a working interest owner results in production such that the land upon which it is situated may properly be included in a participating area, such participating area shall be established or enlarged as provided in this agreement and the well shall thereafter be operated by the Unit Operator in accordance with the terms of this agreement and the unit operating agreement.

If any well drilled as aforesaid by a working interest owner obtains production in quantities insufficient to justify the inclusion in a participating area of the land upon which such well is situated, such well may be operated and produced by the party drilling the same subject to the conservation requirements of this agreement. The royalties in amount or value of production from any such well shall be paid as specified in the underlying lease and agreements affected.

14. ROYALTY SETTLEMENT. The United States and the State of New Mexico and all royalty owners who, under existing contract, are entitled to take in kind a share of the substances now unitized hereunder produced from any tract, shall hereafter be entitled to the right to take in kind their share of the unitized substances allocated to such tract, and Unit Operator, or in case of the operation of a well by a working interest owner as herein in special cases provided for, such working interest owner, shall make deliveries of such royalty share taken in conformity with the applicable contracts, laws and regulations. Settlement for royalty interest not taken in kind shall be made by working interest owners responsible therefor under existing contracts, laws and regulations on or before the last day of each month for unitized substances produced during the preceding



calendar month; provided, however, that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any royalties due under their leases.

If gas obtained from lands not subject to this agreement is introduced into any participating area hereunder, for use in repressuring, stimulation of production, or increasing ultimate recovery, which shall be in conformity with a plan first approved by the Supervisor, the State Land Commissioner, and the State Commission, a like amount of gas, after settlement as herein provided for any gas transferred from any other participating area and with due allowance for loss or depletion from any cause, may be withdrawn from the formation into which the gas was introduced, royalty free as to dry gas, but not as to the products extracted therefrom; provided that such withdrawal shall be at such time as may be provided in the plan of operations or as may otherwise be consented to by the Supervisor, the State Land Commissioner and the State Commission as conforming to good petroleum engineering practice; and provided further, that such right of withdrawal shall terminate on the termination of this unit agreement.

Royalty due the United States shall be computed as provided in the operating regulations and paid in value or delivered in kind as to all unitized substances on the basis of the amounts thereof allocated to unitized Federal land as provided herein at the rates specified in the respective Federal leases, or at such lower rate or rates as may be authorized by law or regulations; provided, that for leases on which the royalty rate depends on the daily average production per well, said average production shall be determined in accordance with the operating regulations as though each participating area were a single consolidated lease.

Royalty due on account of State of New Mexico and privately owned lands, shall be computed and paid as to all unitized substances on the basis of the amounts allocated to such lands.

15. RENTAL SETTLEMENT. Rental or minimum royalties due on leases committed hereto shall be paid by working interest owners responsible therefor under existing contracts, laws, and regulations, provided that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental or minimum royalty in lieu thereof.

due under their leases. Rental or minimum royalty for lands of the United States subject to this agreement shall be paid at the rate specified in the respective leases from the United States unless such rental or minimum royalty is waived, suspended, or reduced by law or by approval of the Secretary or his duly authorized representative.

Rentals on State of New Mexico lands subject to this agreement shall be paid at the rates specified in the respective leases.

With respect to any lease on non-Federal land containing provisions which would terminate such lease unless drilling operations were within the time therein specified commenced upon the land covered thereby or rentals paid for the privilege of deferring such drilling operations, the rentals required thereby shall, notwithstanding any other provision of this agreement, be deemed to accrue and become payable during the term thereof as extended by this agreement and thereafter until the required drilling operations are commenced upon the land covered thereby or some portion of such land is included within a participating area.

16. CONSERVATION. Operations hereunder and production of unitized substances shall be conducted to provide for the most economical and efficient recovery of said substances without waste, as defined by or pursuant to State or Federal law or regulation.

17. DRAINAGE. The Unit Operator shall take appropriate and adequate measures to prevent drainage of unitized substances from unitized land by wells on land not subject to this agreement, or, with prior consent of the Director and the State Land Commissioner, pursuant to applicable regulations pay a fair and reasonable compensatory royalty as determined by the Supervisor for Federal lands or as approved by the State Land Commissioner for New Mexico State lands.

18. LEASES AND CONTRACTS CONFORMED AND EXTENDED. The terms, conditions and provisions of all leases, subleases and other contracts relating to exploration, drilling, development or operations for oil or gas on lands committed to this agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect; and the parties hereto hereby consent that the Secretary as to Federal leases and the State Land Commissioner as to State leases shall and each

by his approval hereof, or by the approval hereof by his duly authorized representative, does hereby establish, alter, change or revoke the drilling, producing, rental, minimum royalty and royalty requirements of Federal and State leases committed hereto and the regulations in respect thereto to conform said requirements to the provisions of this agreement and, without limiting the generality of the foregoing, all leases, subleases, and contracts are particularly modified in accordance with the following:

(a) The development and operation of lands subject to this agreement under the terms hereof shall be deemed full performance of all obligations for development and operation with respect to each and every part or separately owned tract subject to this agreement, regardless of whether there is any development of any particular part or tract of the unit area, notwithstanding anything to the contrary in any lease, operating agreement or other contract by and between the parties hereto, or their respective predecessors in interest, or any of them.

(b) Drilling and producing operations performed hereunder upon any tract of unitized lands will be accepted and deemed to be performed upon and for the benefit of each and every tract of unitized land, and no lease shall be deemed to expire by reason of failure to drill or produce wells situated on the land therein embraced.

(c) Suspension of drilling or producing operations on all unitized lands pursuant to direction or consent of the Secretary and the State Land Commissioner or their duly authorized representative, shall be deemed to constitute such suspension pursuant to such direction or consent as to each and every tract of unitized land.

(d) Each lease, sublease or contract relating to the exploration, drilling, development or operation for oil or gas of lands, other than those of the United States and State of New Mexico, committed to this agreement, which, by its terms might expire prior to the termination of this agreement, is hereby extended beyond any such term so provided therein so that it shall be continued in full force and effect for and during the term of this agreement.

(e) Any Federal lease for a fixed term of twenty (20) years or any renewal thereof or any part of such lease which is made subject to this agreement shall continue in force beyond the term provided therein until the termination

hereof. Any other Federal lease committed hereto shall continue in force beyond the term so provided therein or by law as to the land committed so long as such lease remains subject hereto, provided that production is had in paying quantities under this unit agreement prior to the expiration date of the term of such lease, or in the event actual drilling operations are commenced on unitized land, in accordance with the provisions of this agreement, prior to the end of the primary term of such lease and are being diligently prosecuted at that time, such lease shall be extended for two years and so long thereafter as oil or gas is produced in paying quantities in accordance with the provisions of the Mineral Leasing Act Revision of 1960.

(f) Each sublease or contract relating to the operation and development of unitized substances from lands of the United States committed to this agreement, which by its terms would expire prior to the time at which the underlying lease, as extended by the immediately preceding paragraph, will expire, is hereby extended beyond any such term so provided therein so that it shall be continued in full force and effect for and during the term of the underlying lease as such term is herein extended.

(g) Any lease embracing lands of the State of New Mexico which is made subject to this agreement, shall continue in force beyond the term provided therein as to the lands committed hereto until the termination hereof.

(h) The segregation of any Federal lease committed to this agreement is governed by the following provision in the fourth paragraph of Sec. 17 (j) of the Mineral Leasing Act, as amended by the Act of September 2, 1960, (74 Stat. 781-784): "Any (Federal) lease heretofore or hereafter committed to any such (unit) plan embracing lands that are in part within and in part outside of the area covered by any such plan shall be segregated into separate leases as to the land committed and the lands not committed as of the effective date of unitization: Provided, however, that any such lease as to the nonunitized portion shall continue in force and effect for the term thereof but for not less than two years from the date of such segregation and so long thereafter as oil or gas is produced in paying quantities."

(i) Any lease embracing lands of the State of New Mexico having only a portion of its lands committed hereto, shall be segregated as to the portion committed and the portion not committed, and the provisions of such lease shall apply separately to such segregated portions commencing as of the effective date hereof; provided, however, notwithstanding any of the provisions of this agreement to the contrary, any lease embracing lands of the State of New Mexico having only a portion of its lands committed hereto shall continue in full force and effect beyond the term provided therein as to all lands embraced in such lease, if oil or gas is discovered and is capable of being produced in paying quantities from some part of the lands embraced in such lease at the expiration of the secondary term of such lease; or if, at the expiration of the secondary term, the Lessee or the Unit Operator is then engaged in bona fide drilling or reworking operations on some part of the lands embraced in such lease, the same, as to all lands embraced therein, shall remain in full force and effect so long as such operations are being diligently prosecuted, and if they result in the production of oil or gas, said lease shall continue in full force and effect as to all the lands embraced therein, so long thereafter as oil or gas in paying quantities is being produced from any portion of said lands.

19. COVENANTS RUN WITH LAND. The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this agreement terminates, and any grant, transfer or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee or other successor in interest. No assignment or transfer of any working interest, royalty or other interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, photostatic or certified copy of the instrument of transfer.

20. EFFECTIVE DATE AND TERM. This agreement shall become effective upon approval by the Director and the State Land Commissioner or their duly authorized representatives as of the date of approval by the Director and shall terminate five (5) years from said effective date unless:

(a) such date of expiration is extended by the Director and the State Land Commissioner, or

(b) it is reasonably determined prior to the expiration of the fixed

term or any extension thereof that the unitized land is incapable of production of unitized substances in paying quantities in the formations tested hereunder and after notice of intention to terminate the agreement on such ground is given by the Unit Operator to all parties in interest at their last known addresses, the agreement is terminated with the approval of the Director and State Land Commissioner, or

(c) a valuable discovery of unitized substances has been made or accepted on unitized land during said initial term or any extension thereof, in which event the agreement shall remain in effect for such term and so long as unitized substances can be produced in quantities sufficient to pay for the cost of producing same from wells on unitized land within any participating area established hereunder and, should production cease, so long thereafter as diligent operations are in progress for the restoration of production or discovery of new production and so long thereafter as the unitized substances so discovered can be produced as aforesaid, or

(d) it is terminated as heretofore provided in this agreement. This agreement may be terminated at any time by not less than 75 per centum, on an acreage basis, of the owners of working interests signatory hereto, with the approval of the Director and State Land Commissioner; notice of any such approval to be given by the Unit Operator to all parties hereto.

21. RATE OF PROSPECTING, DEVELOPMENT AND PRODUCTION. The Director is hereby vested with authority to alter or modify from time to time in his discretion the quantity and rate of production under this agreement when such quantity and rate is not fixed pursuant to Federal or State law or does not conform to any state-wide voluntary conservation or allocation program which is established, recognized and generally adhered to by the majority of operators in such State, such authority being hereby limited to alteration or modification in the public interest, the purpose thereof and the public interest to be served thereby to be stated in the order of alteration or modification. Without regard to the foregoing, the Director is also hereby vested with authority to alter or modify from time to time at his discretion the rate of prospecting and development and the quantity and rate of production under this agreement when such alteration or modification is in the interest of attaining the conservation objectives stated

in this agreement and is not in violation of any applicable Federal or State law; provided further that no such alteration or modification shall be effective as to any land of the State of New Mexico as to the rate of prospecting and developing in the absence of the specific written approval thereof by the State Land Commissioner and as to the lands of the State of New Mexico or privately owned lands subject to this agreement as to the quantity and rate of production in the absence of specific written approval thereof by the State Commission.

Powers in this section vested in the Director shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than fifteen (15) days from notice.

22. CONFLICT OF SUPERVISION. Neither the Unit Operator nor the working interest owners nor any of them shall be subject to any forfeiture, termination or expiration of any rights hereunder or under any leases or contracts subject hereto, or to any penalty or liability on account of delay or failure in whole or in part to comply with any applicable provision thereof to the extent that the Unit Operator, working interest owners or any of them are hindered, delayed or prevented from complying therewith by reason of failure of the Unit Operator to obtain in the exercise of due diligence, the concurrence of proper representatives of the United States and proper representatives of the State of New Mexico in and about any matters or thing concerning which it is required herein that such concurrence be obtained. The parties hereto, including the State Commission, agree that all powers and authority vested in the State Commission in and by any provisions of this agreement are vested in the State Commission and shall be exercised by it pursuant to the provisions of the laws of the State of New Mexico and subject in any case to appeal or judicial review as may now or hereafter be provided by the laws of the State of New Mexico.

23. APPEARANCES. Unit Operator shall, after notice to other parties affected, have the right to appear for and on behalf of any and all interests affected hereby before the Department of Interior, the Commissioner of Public Lands of the State of New Mexico and the New Mexico Oil Conservation Commission and to appeal from orders issued under the regulations of said Department, the State Land Commissioner or State Commission or to apply for relief from any of said regulations or in any proceedings relative to operations before the Department of the Interior, the State Land Commissioner or State Commission or any other legally constituted authority; provided, however, that any other interested party shall also have the right at his own expense to be heard in any such proceeding.

24. NOTICES. All notices, demands or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if given in writing and personally delivered to the party or sent by postpaid registered mail or certified mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or the ratification or consent hereof or to such other address as any such party may have furnished in writing to the party sending the notice, demand or statement.

25. NO WAIVER OF CERTAIN RIGHTS. Nothing in this agreement contained shall be construed as a waiver by any party hereto of the right to assert any legal or constitutional right or defense as to the validity or invalidity of any law of the state wherein said unitized lands are located, or of the United States, or regulations issued thereunder in any way affecting such party, or as a waiver by any such party of any right beyond his or its authority to waive.

26. UNAVOIDABLE DELAY. All obligations under this agreement requiring the Unit Operator to commence or continue drilling or to operate on or produce unitized substances from any of the lands covered by this agreement shall be suspended while, but only so long as, the Unit Operator despite the exercise of due care and diligence is prevented from complying with such obligations, in whole or in part, by Strikes, acts of God, Federal, State or Municipal law or agencies, unavoidable accidents, uncontrollable delays in transportation, inability to obtain necessary materials in open market, or other matters beyond the reasonable control of the Unit Operator whether similar to matters herein enumerated or not.

27. NONDISCRIMINATION. In connection with the performance of work under this agreement, the operator agrees to comply with all of the provisions of Section 301 (1) to (7) inclusive, of Executive Order 10925 (28 F.R. 6485), which are hereby incorporated by reference in this agreement.

28. LOSS OF TITLE. In the event title to any tract of unitized land shall fail and the true owner cannot be induced to join in this unit agreement, such tract shall be automatically regarded as not committed hereto and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title. In the event of a dispute as to title as to any royalty, working interest or other interests subject thereto, payment or delivery on account thereof may be withheld without liability for interest until the dispute is finally settled; provided, that, as to Federal and State land or



leases, no payments of funds due the United States or the State of New Mexico should be withheld, but such funds of the United States shall be deposited as directed by the Supervisor, and such funds of the State of New Mexico shall be deposited as directed by the State Land Commissioner, to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

Unit Operator as such is relieved from any responsibility for any defect or failure of any title hereunder.

29. NON-JOINDER AND SUBSEQUENT JOINDER. If the owner of any substantial interest in a tract within the unit area fails or refuses to subscribe or consent to this agreement, the owner of the working interest in that tract may withdraw said tract from this agreement by written notice to the Director, the State Land Commissioner, and the Unit Operator prior to the approval of this agreement by the Director. Any oil or gas interests in lands within the unit area not committed hereto prior to submission of this agreement for final approval may thereafter be committed hereto by the owner or owners thereof subscribing or consenting to this agreement, and, if the interest is a working interest, by the owner of such interest also subscribing to the unit operating agreement. After operations are commenced hereunder, the right of subsequent joinder, as provided in this section, by a working interest owner is subject to such requirements or approvals, if any, pertaining to such joinder, as may be provided for in the unit operating agreement. After final approval hereof, joinder by a non-working interest owner must be consented to in writing by the working interest owner committed hereto and responsible for the payment of any benefits that may accrue hereunder in behalf of such non-working interest. Joinder by any owner of a non-working interest, at any time, must be accompanied by appropriate joinder by the owner of the corresponding working interest in order for the interest to be regarded as committed hereto. Joinder to the unit agreement by a working interest owner, at any time, must be accompanied by appropriate joinder to the unit operating agreement, if more than one committed working interest owner is involved, in order for the interest to be regarded as committed to this unit agreement. Except as may otherwise herein be provided, subsequent joinders to this agreement shall be effective as of the first day of the month following the filing with the Supervisor, the State Land Commissioner and the State Commission of duly executed counterparts

of all or any papers necessary to establish effective commitment of any tract to this agreement unless objection to such joinder is duly made within sixty (60) days by the Director; provided, however, that as to State lands such subsequent joinder must be approved by the State Land Commissioner.

30. COUNTERPARTS. This agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties, or may be ratified or consented to by separate instrument in writing specifically referring hereto and shall be binding upon all those parties who have executed such a counterpart, ratification or consent hereto with the same force and effect as if all such parties had signed the same document and regardless of whether or not it is executed by all other parties owning or claiming an interest in the lands within the above-described unit area.

IN WITNESS WHEREOF, the parties hereto have caused this agreement to be executed and set opposite their respective names the date of execution.

	_____ ADDRESS: _____
	_____ UNIT OPERATOR
DATE: _____	_____ ADDRESS: _____ _____
ATTEST:	
_____ DATE: _____	BY: _____ ITS _____ ADDRESS: _____ _____

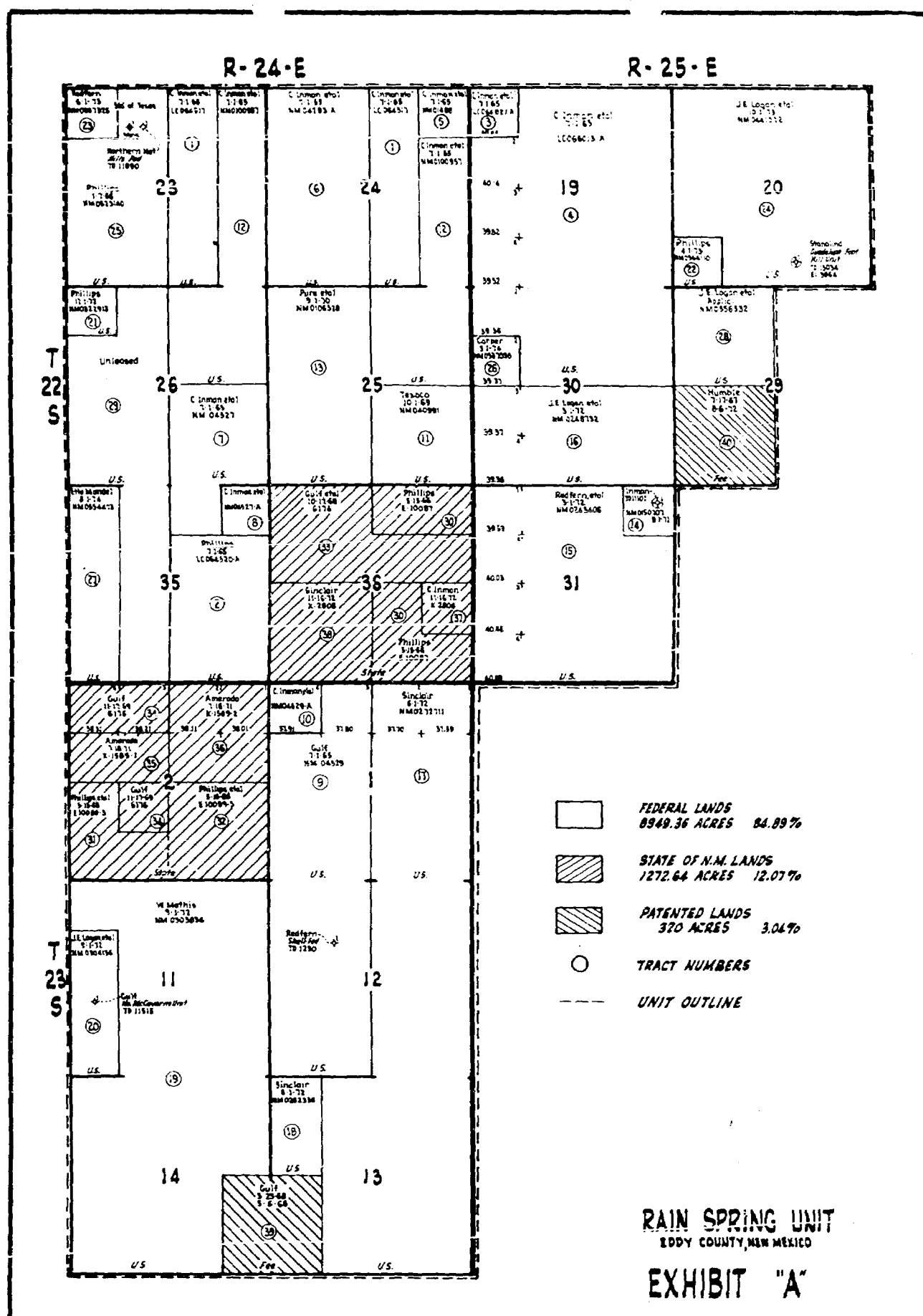


EXHIBIT "B"  
SCHEDULE SHOWING ALL LANDS AND OWNERSHIP  
WITHIN THE UNIT AREA  
RAIN SPRING UNIT - EDDY COUNTY, NEW MEXICO

TRACT NO.	DESCRIPTION	NO. OF ACRES	SERIAL NO. & LEASE EXPIRATION DATE	BASIC ROYALTY & PERCENT	LESSEE OF RECORD AND PERCENT	OVERRIDING ROYALTY AND PERCENT	WORKING INTEREST AND PERCENT
FEDERAL LANDS							
1.	T-22-S, R-24-E Sec. 23; W/2 E/2 Sec. 24; W/2 E/2	320.00	LC-064517 7-1-65	U.S.A. 12 3/8%	Curtis R. Inman Richfield Oil Corp. Phillips Pet. Corp. Socony Mobil Oil Co.	48.75% 11.25% 20.00% 20.00% out of \$300.00 per acre	26.25 11.25 20.00 20.00 2% Curtis R. Inman Richfield Oil Corp. Phillips Pet. Corp. Socony Mobil Oil Co. Kerr County Land Co. Sinclair Oil & Gas Co.
2.	T-22-S, R-24-E Sec. 35; SE/4, S/2 NE/4	240.00	LC-064520-A 7-1-65	U.S.A. 12 3/8%	Phillips Pet. Corp. Curtis R. Inman Richfield Oil Corp.	40.00% 48.75% 11.25% C. A. & Hazel Hobbs (1/6) Neil H. Wills (5/12) George D. & Edith Riggs (5/12) out of \$300.00 per acre	40.00 26.25 11.25 15.00 7.50 2% Phillips Pet. Corp. Curtis R. Inman Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.
3.	T-22-S, R-25-E Sec. 19; Lot 1	40.44	LC-064521-A 7-1-65	U.S.A. 12 3/8%	Curtis R. Inman Richfield Oil Corp. Phillips Pet. Corp. Socony Mobil Oil Co.	48.75% 11.25% 20.00% 20.00% D. O. & Margaret L. Wilson (1/6) Neil H. Wills (5/12) George D. & Edith Riggs (5/12) out of \$600.00 per acre	26.25 11.25 20.00 20.00 15.00 7.50 3% Curtis R. Inman Richfield Oil Corp. Phillips Pet. Corp. Socony Mobil Oil Co. Kerr County Land Co. Sinclair Oil & Gas Co.
4.	T-22-S, R-25-E Sec. 19; Lots 2, 3, 4, E/2 W/2, E/2 Sec. 30; Lot 1, NE/4, E/2 NW/4	878.84	LC-066103-A 7-1-65	U.S.A. 12 3/8%	Curtis R. Inman Richfield Oil Corp. Socony Mobil Oil Co. Phillips Pet. Co.	48.75% 11.25% 20.00% 20.00% Ruble C. & Bryan Bell (1/6) Neil H. Wills (1/3) George D. & Edith Elizabeth W. Chaney (1/6) out of	26.25 11.25 20.00 20.00 3% Curtis R. Inman Richfield Oil Corp. Phillips Pet. Corp. Socony Mobil Oil Co. Kerr County Land Co. Sinclair Oil & Gas Co.

5.	<u>T-22-S, R-24-E</u> <u>Sec. 24, NE/4 NE/4</u>	40.00	NM-01488 7-1-65	U.S.A. 12 <sup>1</sup> / <sub>2</sub> %	Curtis R. Inman Phillips Pet. Co. Richfield Oil Corp.	60.9375% 25.0000% 14.0625%	Margaret L. & D. O. Wilson Neil H. Wills George D. & Edith Riggs Everett E. Taylor Ruble C. & Bryan Bell \$300.00 per acre out of	(1/4) (1/4) (1/4) (1/4) (1/8) (1/8) (1/8)	Curtis R. Inman Phillips Pet. Co. Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	32.8125 25.0000 14.0625 18.7500 9.3750
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6.	<u>T-22-S, R-24-E</u> <u>Sec. 24; W/2</u>	320.00	NM-04293-A 7-1-65	U.S.A. 12 <sup>1</sup> / <sub>2</sub> %	Curtis R. Inman Socony Mobil Oil Co. Phillips Pet. Co. Richfield Oil Corp.	48.75% 20.00% 20.00% 11.25%	Virginia W. and R. W. Hess Mabel F. Leonard Harry Leonard Estate Neil H. Wills George D. & Edith Riggs Sally S. Toles Sue S. Graham Eleyse S. Patterson \$300.00 per acre out of	(1/5) (1/10) (1/5) (1/5) (1/10) (1/5) (1/5) (1/15) (1/15) (1/15) (1/15) (1/15) (1/15)	Curtis R. Inman Socony Mobil Oil Co. Phillips Pet. Co. Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	26.25 20.00 20.00 11.25 15.00 7.50
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7.	<u>T-22-S, R-24-E</u> <u>Sec. 26; SE/4</u> <u>Sec. 35; NW/4 NE/4</u>	200.00	NM-04527 7-1-65	U.S.A. 12 <sup>1</sup> / <sub>2</sub> %	Curtis R. Inman Socony Mobil Oil Co. Phillips Pet. Co. Richfield Oil Corp.	48.75% 20.00% 20.00% 11.25%	T. J. and June C. Deason Neil H. Wills George D. & Edith Riggs Elizabeth W. Chaney \$300.00 per acre out of	(1/4) (1/4) (1/4) (1/4) (1/4) (1/4) (1/4)	Curtis R. Inman Socony Mobil Oil Co. Phillips Pet. Co. Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	26.25 20.00 20.00 11.25 15.00 7.50
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2%

8.	<u>T-22-S, R-24-E</u> <u>Sec. 35; NE/4 NE/4</u>	40.00	NM-04527-A 7-1-65	U.S.A. 12 3/8%	Gulf Oil Corp. Curtis R. Inman Richfield Oil Corp.	50.000% 40.625% 9.375%	T. J. Jr. & June C. Deason (1/4) Neil H. Wills (1/4) George D. & Edith Riggs (1/4) Elizabeth W. Chaney (1/4) \$300.00 per acre out of	2%	Gulf Oil Corp. Curtis R. Inman Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	50.000 21.875 9.375 12.500 6.250
9.	<u>T-23-S, R-24-E</u> <u>Sec. 1; Lot 3, S/2 NW/4,</u> <u>SE/4</u> <u>Sec. 12; W/2</u>	597.80	NM-04529 7-1-65	U.S.A. 12 3/8%	Gulf Oil Corp. Curtis R. Inman Richfield Oil Corp.	50.000% 40.625% 9.375%	Leslie A. & Ruth C. McPherson (1/6) Neil H. Wills (5/18) George D. & Edith Riggs (5/18) Ruble C. & Bryan Bell (5/18) \$500.00 per acre out of	3%	Gulf Oil Corp. Curtis R. Inman Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	50.000 21.875 9.375 12.500 6.250
10.	<u>T-23-S, R-24-E</u> <u>Sec. 1; Lot 4</u>	37.91	NM-04529-A 7-1-65	U.S.A. 12 3/8%	Curtis R. Inman Richfield Oil Corp. Phillips Pet. Co.	60.9375% 14.0625% 25.0000%	Leslie A. & Ruth C. McPherson (1/6) Neil H. Wills (5/18) George D. & Edith Riggs (5/18) Ruble C. & Bryan Bell (5/18) \$500.00 per acre out of	3%	Curtis R. Inman Richfield Oil Corp. Phillips Pet. Co. Kerr County Land Co. Sinclair Oil & Gas Co.	32.8125 14.0625 25.0000 18.7500 9.3750
11.	<u>T-22-S, R-24-E</u> <u>Sec. 25; SE/4</u>	160.00	NM-040991 10-1-69	U.S.A. 12 3/8%	Texaco Inc.	All	Robert S. Light \$500.00 per acre out of	3%	Texaco Inc	All

12.	<u>T-22-S, R-24-E</u> Sec. 23; E/2 E/2 Sec. 24; SE/4 NE/4, E/2 SE/4 Sec. 25; NE/4 Sec. 26; NE/4	600.00	NM-0100957 7-1-65	U.S.A. 12 3/8%	Curtis R. Inman Richfield Oil Corp. Socony Mobil Oil Co. Phillips Pet. Co.	48.75% 11.25% 20.00% 20.00%	T.J. Jr. & June C. Deason (1/4) Neil H. Wills (1/4) George D. & Edith Riggs (1/4) Elizabeth W. Chaney (1/4) \$300.00 per acre out of	2%	Curtis R. Inman Richfield Oil Corp. Socony Mobil Oil Co. Phillips Pet. Co. Kerr County Land Co. Sinclair Oil & Gas Co.	26.25 11.25 20.00 20.00 10.00 7.50
13.	<u>T-22-S, R-24-E</u> Sec. 25; W/2	320.00	NM-0106328 9-1-65 (1)	U.S.A. 12 3/8%	Pure Oil Co. Curtis R. Inman Richfield Oil Corp.	50.000% 40.625% 9.375%	Anabel C. McHugh Dow & McHugh, a partnership	.25% 3.25%	Pure Oil Co. Curtis R. Inman Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	50.000 21.875 9.375 12.500 6.250
14.	<u>T-22-S, R-25-E</u> Sec. 31; NE/4 NE/4	40.00	NM-0150707 8-1-71	U.S.A. 12 3/8%	Redfern Dev. Co. Curtis R. Inman Richfield Oil Corp.	50.000% 40.625% 9.325%	W. W. Priest	5%	Redfern Dev. Corp. Curtis R. Inman Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	50.000 21.875 9.325 12.500 6.250
15.	<u>T-22-S, R-25-E</u> Sec. 31; Lots 1, 2, 3, 4 E/2 W/2, W/2 E/2 SE/4 NE/4, E/2 SE/4	600.96	NM-0243406 3-1-72	U.S.A. 12 3/8%	Redfern Dev. Corp. Curtis R. Inman Richfield Oil Corp.	50.000% 40.625% 9.325%	Alice F. Holmes Janell Corp.	2.5% 2.5%	Redfern Dev. Corp. Curtis R. Inman Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	50.000 21.875 9.375 12.500 6.250
16.	<u>T-22-S, R-25-E</u> Sec. 30; Lots 3, 4, E/2 SW/4 SE/4	318.75	NM-0248732 3-1-72	U.S.A. 12 3/8%	William A. Huffman	5%	James F. Logan Howard E. Davis Robert Zinke	33.34 33.33 33.33		

17.	T-23-S, R-24-E Sec. 1; Lots 1, 2, S/2 NE/4, SE/4 Sec. 12; E/2 Sec. 13; E/2, E/2 W/2	1115.29	NM-0272711 6-1-72	U.S.A. 12 <sup>3</sup> / <sub>8</sub> %	Sinclair Oil & Gas Co. A..	R. M. Patterson	Sinclair Oil & Gas Co.	ALL
18.	T-23-S, R-24-E Sec. 13; W/2 NW/4	80.00	NM-0282336 6-1-72	U.S.A. 12 <sup>3</sup> / <sub>8</sub> %	Sinclair Oil & Gas Co.	Pauline W. Walker \$500.00 per acre out of	Sinclair Oil & Gas Co.	ALL
19.	T-23-S, R-24-E Sec. 11; NW/4 NW/4, E/2 W/2, E/2 Sec. 14; W/2, W/2 E/2 E/2 NE/4	1080.00	NM-0303836 9-1-72	U.S.A. 12 <sup>3</sup> / <sub>8</sub> %	Walter H. Walne, Jr.	Walter H. Walne, Jr.	W. Mathis	ALL
20.	T-23-S, R-24-E Sec. 11; W/2 SW/4, SW/4 NW/4	120.00	NM-0304136 9-1-72	U.S.A. 12 <sup>3</sup> / <sub>8</sub> %	Robert W. Polchow	Robert W. Polchow \$750.00 per acre out of	James E. Logan Howard E. Davis Robert Zinke	33.34 33.33 33.33
21.	T-22-S, R-24-E Sec. 26; NW/4 NW/4	40.00	NM-0322913 12-1-72	U.S.A. 12 <sup>3</sup> / <sub>8</sub> %	Robert G. Hanagan	Sullivan Inc.	Phillips Pet. Co.	ALL
22.	T-22-S, R-25-E Sec. 20; SW/4 SW/4	40.00	NM-0364110 4-1-73	U.S.A. 12 <sup>3</sup> / <sub>8</sub> %	Dwight P. Teed	Dwight P. Teed	Phillips Pet. Co.	ALL
23.	T-22-S, R-24-E Sec. 23; NW/4 NW/4	40.00	NM-0387325 6-1-73	U.S.A. 12 <sup>3</sup> / <sub>8</sub> %	Redfern Dev. Corp.	None	Redfern Dev. Corp.	ALL
24.	T-22-S, R-25-E Sec. 20; E/2, E/2 W/2 W/2 NW/4, NW/4 SW/4	600.00	NM-0441072 10-1-73	U.S.A. 12 <sup>3</sup> / <sub>8</sub> %	J. T. Winkhaus, Jr.	J. T. Winkhaus, Jr. \$750.00 per acre out of	James E. Logan Howard E. Davis Robert Zinke	33.34 33.33 33.33
25.	T-22-S, R-24-E Sec. 23; SW/4, S/2 NW/4, NE/4 NW/4	280.00	NM-0523140 1-7-66	U.S.A. 12 <sup>3</sup> / <sub>8</sub> %	Socony Mobil Oil Co. Phillips Pet. Co.	Elyse S. Patterson, Sue S. Graham & Sally S. Toles, \$300.00 per acre out of	Socony Mobil Oil Co. Phillips Pet. Co.	50.00 50.00



26.	T-22-S, R-25-E Sec. 30; Lot 2	39.37	NM-0537855 5-1-74	U.S.A. 12 <sup>3</sup> / <sub>8</sub>	Carper Drilling Co.	None	Carper Drilling Co.	ALL
27.	T-22-S, R-24-E Sec. 35; W/2 W/2	160.00	NM-0554473 8-1-74	U.S.A. 12 <sup>3</sup> / <sub>8</sub>	Etta Mendel	None	Etta Mendel	ALL
28.	T-22-S, R-25-E Sec. 29; NW/4	160.00	NM-0556532 4-1-75		Derrell G. Hanks	Derrell G. Hanks \$750.00 per acre out of	James E. Logun Howard E. Davis Robert Zinke	33.34 33.33 33.33
29.	T-22-S, R-24-E Sec. 26; SW/4, S/2 NW/4 NE/4 NW/4 Sec. 35; E/2 W/2	440.00				Not Leased		

TOTAL: 29 Tracts, Federal Land, 8949.36 acres 84.89% of Unit Area

STATE OF NEW MEXICO LANDS

30.	T-23-S, R-24-E Sec. 36; N/2 NE/4, W/2 SE/4, SE/4 SE/4	200.00	E-10087-1 5-15-66	State 12 $\frac{3}{8}$ %	Phillips Pet. Co.	None	Curtis R. Inman Phillips Pet. Co. Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	26.25 40.00 11.25 15.00 7.50
31.	T-23-S, R-24-E Sec. 2; S/2 SE/4, NW/4 SW/4	120.00	E-10089-3 5-15-66	State 12 $\frac{3}{8}$ %	Phillips Pet. Co. & Socony Mobil Oil Co.	None	Phillips Pet. Co. & Socony Mobil Oil Co.	ALL
32.	T-23-S, R-24-E Sec. 2; SE/4	160.00	E-10089-3 5-15-66	State 12 $\frac{3}{8}$ %	Phillips Pet. Co.	None	Curtis R. Inman Phillips Pet. Co. Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	26.25 40.00 11.25 15.00 7.50
33.	T-22-S, R-24-E Sec. 36; NW/4, S/2 NE/4	240.00	06-6176 11-17-69	State 12 $\frac{3}{8}$ %	Gulf Oil Corp.	None	Gulf Oil Corp. Curtis R. Inman Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	50.00 21.875 9.375 12.500 6.250
34.	T-23-S, R-24-E Sec. 2; Lots 3, 4, NE/4 SW/4	116.52	06-6176 11-17-69	State 12 $\frac{3}{8}$ %	Gulf Oil Corp.	None	Gulf Oil Corp.	ALL
35.	T-23-S, R-24-E Sec. 2; S/2 NW/4	80.00	K-1589-1 7-18-71	State 12 $\frac{3}{8}$ %	Amerada Pet. Co.	None	Amerada Pet. Corp.	ALL
36.	T-23-S, R-24-E Sec. 2; Lots 1, 2, S/2 NE/4	156.12	K-1589-2 7-18-71	State 12 $\frac{3}{8}$ %	Amerada Pet. Co.	None	Amerada Pet. Corp. Curtis R. Inman Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	50.000 21.875 9.375 12.500 6.250

37.	T-22-S, R-24-E Sec. 36; NE/4 SE/4	40.00	K-2808 11-16-72	State 12 1/2%	Curtis R. Inman	None	Curtis R. Inman Kerr County Land Co. Richfield Oil Corp. Sinclair Oil & Gas Co.	43.75 25.00 18.75 12.50
38.	T-22-S, R-24-E Sec. 36; SW/4	160.00	K-2808-1 11-16-72	State 12 1/2%	Sinclair Oil & Gas Co.	None	Sinclair Oil & Gas Co.	All

TOTAL: 9 Tracts, State of New Mexico Lands 1272.64 Acres 12.07% of Unit Area

PATENTED (FEE) LANDS

39.	T-23-S, R-24-E Sec. 13; W/2 SW/4 Sec. 14; E/2 SE/4	160.00	Lease 1 3-25-68	W. L. Kincaid	50.00%	Gulf Oil Corp.	ALL	Caswell S. Neal \$250.00 per acre out of	3%	Gulf Oil Corp. Curtis R. Inman Richfield Oil Corp. Kerr County Land Co. Sinclair Oil & Gas Co.	50.000 21.875 9.375 12.500 6.250
			Lease 2 5-6-68	William G. Smith (12 3/8% Royalty)	50.00%						
40.	T-22-S, R-25-E Sec. 29; SW/4	160.00	Lease 1 7-17-67	Est. M. G. Kin- caid	50.00%	Humble Oil & Ref. Co.	ALL	None		Humble Oil & Ref. Co.	ALL
			Lease 2 8-8-72	C. R. Kee (12 3/8% Royalty)	50.00%						

RECAPITULATION: 29 Tracts Federal Lands - 8949.36 Acres 84.89 Percent of Unit Area  
 9 Tracts State of New Mexico Lands - 1272.64 " 12.07 " " " "  
 2 Tracts Patented (Fee) Lands - 320.00 " 3.04 " " " "

10542.00 Acres 100.00 Percent of Unit Area

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BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
April 28, 1962 New Mexico

EXAMINER

HEARING

Application of James E.  
Logan for a 10-year agreement, Eddy County, New  
Mexico.

3244

Case No. \_\_\_\_\_

Daniel S. Nutter, Examiner.

BEFORE:

TRANSCRIPT OF HEARING

BEFORE THE  
NEW MEXICO OIL CONSERVATION COMMISSION  
Santa Fe, New Mexico  
April 28, 1965

EXAMINER HEARING

-----  
IN THE MATTER OF: Application of James E. )  
Logan for a unit agreement, Eddy County, New )  
Mexico. Applicant, in the above-styled )  
cause, seeks approval of the Rain Spring Unit )  
Area comprising 10,542.00 acres, more or less )  
of State, Federal and Fee lands in Townships )  
22 and 23 South, Ranges 24 and 25 East, Eddy )  
County, New Mexico. )  
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Case 3244

BEFORE: Daniel S. Nutter, Examiner.

TRANSCRIPT OF HEARING

MR. NUTTER: We will call Case 3244.

MR. DURRETT: Application of James E. Logan for a unit  
agreement, Eddy County, New Mexico.

MR. RICHARDSON: Randolph M. Richardson from Roswell,  
representing Mr. James E. Logan from Midland. We have one  
witness and six exhibits.

(Whereupon, Applicant's Exhibits 1  
through 6 marked for identification.)

(Witness sworn.)

MR. DAVIS, called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. RICHARDSON:

Q Mr. Davis, have you ever testified before the Oil Conservation Commission or an Examiner?

A No, sir.

Q For the Commission, could you state your educational background and your present work and positions which would qualify you to testify?

A I graduated from the University of Texas with a major in geology in 1946; was employed from 1946 to '48 as geologist by Honolulu Oil Corporation; from 1948 to '53 in the capacity of district geologist for the same company; resigned, and was employed as division geologist for Monterey Oil Company, Midland, Texas until 1956. Since 1956 I have operated as an independent consulting geologist in Midland.

MR. RICHARDSON: Are his qualifications acceptable?

MR. NUTTER: Yes, sir.

Q Mr. Davis, you have before you a copy of a geological report. Would you please go through and identify the contents of the report, referring to the different exhibits that are in the report as 1, 2, 3, 4, 5, 6; just briefly list them.

A Exhibit Number 1 is a written report giving written

substantiation in detail concerned with the geologic facts used in substantiating this application.

Exhibit Number 2 is a structural contour map prepared from well information on the top of the Devonian formation, as encountered in this area of Eddy County.

Exhibit Number 3 is a photo copy of surface work mapping down on the surface beds substantiating the presence of a significant surface feature at the location of the deep-seated Devonian feature.

Exhibit Number 4 is an isopac map between the Devonian or Fourth Bone Spring sand in the Devonian formation, confirming through an isopac the significant thinning over the area of the Devonian feature, and of the surface feature.

Exhibit Number 5 is a map contoured on the Upper Pennsylvanian carbonate reef, the major producing horizon at Indian Basin, confirming that there is a significant build-up of this carbonate pay zone in the area of the structure, substantiated by the previous exhibits.

Exhibit Number 6 is an east-west cross section running from the Indian Hills producing area through the Walt Canyon producing area, across and through significant dry holes in the Prospect area, and over to the east.

Q Mr. Davis, was this report prepared by you?

A Yes, sir.



Q Would you please tell the Examiner the approximate geographical location of the proposed unit area and the total number of acres involved?

A The proposed unit area covers sections in the southeast quarter of Township 22 South, Range 24 East; sections in Township 22 South, Range 25 East, and sections in the eastern portion of Township 23 South, Range 24 East.

Q And the total number of acres in the unit and the acreage belonging to each category, Federal, State and Patented?

A There are 10,542 acres in the described unit area, of which 84.89 percent consists of Federal lands, 12.07 percent are New Mexico State lands, and 3.04 percent are Fee lands.

Q Now, Mr. Davis, could you refer to your written geological report, your Exhibit Number 1, and give the Commission a resume of the report, as connected with, or tied to the different maps, and your conclusions and recommendations as to the geological feature and structure involved?

A The Cisco Canyon formation, Pennsylvanian age, is a significant pay in the Indian Hills, Indian Basin Area. Mapping on this horizon indicates local reefing or thickening of this formation to such a degree that it could be logically anticipated that the formation would likewise be productive in this area.

The lower mapping on top of the Devonian, confirms the fact that there's a large and prominent structural feature beneath this reefing in the upper formation. The mapping of an isopac interval between the Permian formation and the deep-seated Devonian formation, confirms the presence of a significant thinning across this area; and further leads us to believe that the several formations within the Pennsylvanian should be productive in the unit area. All of this information has been further substantiated by the surface mapping mentioned in Exhibit 3.

Q I believe it is Number 3.

A This surface work has been substantiated from aerial photography. It has likewise been mapped and was published by the United States Geological Survey in 1962 which published mapping significantly agrees with this work.

Q In other words, Mr. Davis, your unit area is based not only upon surface information, but the possibility of your Cisco Canyon being productive, your Morrow, and possibly your Devonian?

A Yes, sir.

Q Your initial proposed test well is projected to what depth?

A It's projected to a depth of 10,500, which should be adequate to test all of the beds of Pennsylvanian age.

Q The unit area is also pin-pointed, or located to some extent by certain dry holes in the area. Could you spot the location, or refer to those dry holes as surrounding the unit area, or their relation to the unit area?

A The dry holes surround the unit area, and the information from these wells confirms the presence of this feature. The Stanolind Number 1 Guadalupe Foothills Unit in Section 20 is a significantly high well and is significantly thin against all regional characteristics. This well had significant shows.

The Inman Number 1 Carnero Peak Unit in Section 31, Township 22 South, Range 25 East, is likewise a high and significantly thin well, which further substantiates the feature.

The Northern Natural Gas Number 1 McKittrick Hills Federal, Section 23, Township 22 South, Range 24 East is a further significant control well which encountered gas, free gas from zones within the Morrow.

Of further significance is the Gulf Number 1 Northern Caverns Unit Well, Section 11, Township 23 South, Range 24 East. This well likewise encountered an excellent development of the sands within the Morrow, and may possibly be indicative of Morrow production in the area.

The Union Cowle Number 1 State in Section 30, Township 23 South, Range 25 East is likewise a significant control area, or

a well in the area. This well, is again high and thin, and likewise encountered free gas from zones within the Lower Pennsylvanian.

Q Mr. Davis, has the unit area been designated by the United States Geological Survey, the official unit designation from Washington?

A Preliminary approval has been given. The application is in Washington, and we are given to expect that it will be returned immediately approved.

Q Has the unit agreement been submitted to the Commissioner of Public Lands for the State of New Mexico for his approval?

A Yes, sir.

Q It has not been approved though?

A No.

Q In your opinion, does the unit area cover all, or substantially all of the geological structure or feature involved?

A In my opinion, the unit area as designated, covers essentially all of the unit, geologically. Unfortunately, some portion of the feature on its northern end has been previously dedicated to a producing unit in another area, and has had, therefore, to be excluded from the unit.

MR. NUTTER: Is that the Walt Canyon Unit?

A Yes.

MR. NUTTER: What particular acreage were you referring to there that is in the Walt Canyon?

A As you will see from the structure map, the feature which we have mapped, does extend into the Section 13 of Township 22 South, Range 24 East; and likewise, it does extend into Section 18 of Township 22 South, Range 25 East.

MR. NUTTER: And both of those sections are in the Walt Canyon?

A Yes, they are.

Q (By Mr. Richardson) Mr. Davis, the proposed location is apparently to be towards the north end of the unit rather than the center of the unit. I wonder if you could give the Examiner a brief reason, or history as to why the location was picked toward the north end of the unit?

A Yes, sir. The location which we have chosen is, we feel, an optimum location from the standpoint of geology from all the evidence at our disposal. We don't feel that any well that has been drilled in the area to date has been located in the most favorable position, as regards the surface feature, and the subsurface feature; and we feel like the location that we've chosen is at an optimum location.

MR. NUTTER: What is that location?

A It will be in the southeast quarter of Section 24, Township 22 South, Range 24 East.

Q In your opinion, if this well should be drilled in this location and should produce the main objective of this unit and test well is the Pennsylvanian; if it should produce in Section 24 to the north, there is also a good possibility that the southern portion of the unit would also be productive, is that right?

A Absolutely.

Q Well, in your opinion, if there is a discovery of unitized instances in paying quantities, will the unit agreement and the utilization of this land promote the orderly and proper development of the producing area?

A Yes, sir.

Q Will the orderly and proper development of the producing area be in the interest of conservation and prevention of waste?

A It will.

Q And also in the event of a discovery in paying quantities, will the State of New Mexico and the State institutions owning the land receive their fair share of production?

A Yes, sir.

Q And in the event of discovery, what additional plans do you have for further drilling and development in the area?

A Well, it is anticipated that if we are fortunate enough

to make an economic discovery here that orderly and proper, prudent development would take place in an orderly fashion, following such completion.

MR. RICHARDSON: That is all the testimony, Mr. Nutter. Do you have any additional questions?

MR. NUTTER: Did you plan on another witness?

MR. RICHARDSON: No.

MR. NUTTER: Relating to the land matters --

MR. RICHARDSON: No. We could go into the exact acres.

MR. NUTTER: Maybe he could give us the amount of commitment and so forth.

MR. RICHARDSON: As far as the amount of commitment, I did not ask him the percentages of commitment. Those are the total unit area lands. We expect, that of the 10,542 acres there will be approximately 9,000 of it committed. All of the people have been contacted and there are, out of the 10,542 total acres there is expected to be 999.85 that will not be committed.

MR. NUTTER: What was that figure again?

MR. RICHARDSON: 999.85 not committed.

MR. NUTTER: That's acres?

MR. RICHARDSON: Acres. A portion of that, some 440 acres is unleased Federal land on which a lease cannot be issued right now. The acreage expected to be committed, and more or less already committed, is 9,542.15.

MR. NUTTER: Either committed or pledged.

MR. RICHARDSON: Committed or verbally pledged.

CROSS EXAMINATION

BY MR. NUTTER:

Q Mr. Davis, your structure extends down here on the south part, your south dome there occupies a portion of Sections 6, 7 and 18. Why wasn't that particular acreage included in the unit area?

A That acreage, I should have mentioned that in answer to the previous question. A portion of that acreage is perhaps involved with the feature. However, that acreage has been previously dedicated to Monsanto's Cueva Unit, which bounds this unit on the east. Otherwise, we might have also chosen to have included a portion of that within the unit of our acreage.

Q The structure to the north is in the Walt Canyon and the acreage on the southeast is already in another unit?

A Yes.

Q What is the name of that unit?

A Cueva.

Q How do you spell that?

A Cueva, C-u-e-v-a.

MR. RICHARDSON: Those two units, Cueva and this one, hit the United States Geological Survey about the same time for



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designation of unit area; and the eastern boundary of this Rain Spring Unit is the west boundary of the Cueva Unit.

MR. NUTTER: I see. Are there any further questions of Mr. Davis?

MR. DURRETT: I have a question, please.

BY MR. DURRETT:

Q Mr. Davis, what are you going to test now, the Devonian?

A What we are proposing is that the initial test well will be drilled completely through the Pennsylvanian formation; to encounter the top of the Mississippian, which is a reliable structure point. In the event the well structure position at that time confirms this geological concept, it's anticipated that we will want to take the well on into the Devonian. It would be wise to do so.

Q Well, is the Devonian being unitized --

MR. RICHARDSON: Yes.

Q -- as part of your unit agreement?

A Yes, sir.

Q The reason I was asking is that I noticed down here in 11 and 12 of 23, 24, you have a couple of dry holes that tested the Devonian, didn't they?

A Yes, sir, they did. Those wells, however, encountered the Devonian at a much lower subsea data than we would

anticipate that our well would encounter it. We have every reason to feel that a well drilled in our proposed location would not only encounter the Devonian higher than it was in either of the two wells that you mentioned, but that it would likewise encounter the Devonian at a higher subsea data than the Stanolind Guadalupe Foothills Union, or the Northern Natural McKittrick Hills Federal across the line in the next township, 23.

We have attempted to show that there is a very substantial and prominent Devonian feature. We know that the Devonian in this area has porosity at its top and has shows, and if we can encounter it at a higher structural position, it's completely reasonable to anticipate that it would be productive.

Q This acreage wouldn't be in the participating area as far as the Devonian goes then, under your agreement --

MR. RICHARDSON: You mean the initial test well, or the acreage to the south?

MR. DURRETT: What will be the participating acreage, just roughly, on your test well?

MR. RICHARDSON: It's the unit agreement reads: "That acreage around the well which is reasonably proven productive".

MR. DURRETT: It wouldn't be very far then?

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MR. RICHARDSON: No, it would be expanded as additional wells were drilled, the participating area would be expanded.

MR. DURRETT: Thank you, Mr. Davis, I think that's all I have.

MR. NUTTER: This is a geological inference type of participating area?

MR. RICHARDSON: Yes.

MR. NUTTER: And the obligation is to drill through the entire Pennsylvanian, but not required to go more than 10,500 and if the Mississippian is high, then the operator would, in all likelihood, want to test the Devonian also.

A Yes, sir.

MR. RICHARDSON: Right.

MR. NUTTER: But the Devonian is not an--

A It's not an obligatory objective.

MR. NUTTER: -- obligatory objective. Any further questions of the witness? He may be excused.

(Witness excused.)

MR. NUTTER: Do you have anything further, Mr. Richardson?

MR. RICHARDSON: No, sir.

MR. NUTTER: I don't think we have had these exhibits offered yet.

MR. RICHARDSON: We would like to offer Exhibits 1 through 6, Case 3244.

MR. NUTTER: Applicant's Exhibits 1 through 6 will be admitted in evidence.

(Whereupon, Applicant's Exhibits 1 through 6 were admitted in evidence.)

MR. NUTTER: Does anyone have anything they wish to offer in Case 3244? We will take the case under advisement, and the hearing is adjourned.

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STATE OF NEW MEXICO )  
COUNTY OF BERNALILLO ) SS.

I, ADA DEARNLEY, Court Reporter, do hereby certify that the foregoing and attached transcript of proceedings before the New Mexico Oil Conservation Commission Examiner at Santa Fe, New Mexico, is a true and correct record to the best of my knowledge, skill and ability.

IN WITNESS WHEREOF I have affixed my hand and notarial seal this 12th day of May, 1965.

*Ada Dearnley*  
Notary Public - Court Reporter

My Commission Expires:  
June 19, 1967.

I do hereby certify that the foregoing is a complete record of the proceedings in the Ex parte hearing of Case No. 3244 heard by me on 4/28, 1965.  
*[Signature]* Examiner  
New Mexico Oil Conservation Commission