Sept. 25, 1947

IN THE SUPREME COURT OF THE STATE OF OKLAHOMA

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER, AND CANADIAN COUNTIES, OKLAHOMA; THE DEFINING OF THE UNIT AREA THEREOF, and THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA. CAUSE CD No. 1355 ORDER No. 20212 BEFORE THE CORPORATION COMMISSION OF OKLAHOMA	No. _____.

A P P L I C A T I O N

Come now R. M. WHISLER, L. F. GENZER, M. M. RINGER, J. W. KING and LAWRENCE BROWN, each for himself and for and on behalf of all persons similarly situated, (hereinafter called "Plaintiffs in Error"), and show to the Court as follows:

That this is an appeal from an order of the Corporation Commission of Oklahoma wherein the Corporation Commission created the "West Edmond Hunton Lime Unit" providing for the unitized management, operation and further development thereof; and that the hearing before the Corporation Commission of Oklahoma consumed approximately twenty-one days, and numerous witnesses testified, and a large amount of documentary evidence was introduced;

That it has been impossible, within the time since said order herein complained of was entered on July 29, 1947, to prepare the entire record in said cause. Two volumes of the oral testimony have been transcribed, and are attached to the Petition in Error.

Plaintiffs in Error are informed, and upon such information believe that it will take approximately ninety days from this date to complete the preparation of the remainder of the record, and have it certified by the Corporation Commission of Oklahoma. That an order should be entered herein granting Plaintiffs in Error an extension of time of ninety days to complete the preparation of the entire record in said cause, to be filed herein as a part of this appeal, and extend the time to Plaintiffs in Error to file their brief herein.

COLEMAN H. HAYES

LYNN ADAMS
Attorneys for Plaintiffs in Error

Of Counsel:

MONNET, HAYES & BROWN

BOHANON & ADAMS

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

LYNN ADAMS, of lawful age, being first duly sworn upon his oath, deposes and says:

That he is one of the attorneys for the Plaintiffs in Error in the above styled and numbered cause; that he has read the above and foregoing Application, and that the matters and things therein set forth are true and correct as he verily believes, and that the appeal herein is being perfected in good faith, and the above and foregoing request is made in good faith.

LYNN ADAMS

Subscribed and sworn to before me this the 26th day of September, 1947.

Dorothy Drew
Notary Public.

My commission expires
March 27, 1949.

AFFIDAVIT OF SERVICE

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

LYNN ADAMS, of lawful age, being first duly sworn upon his oath, deposes and says:

That on the 25th day of September, 1947, he served a copy of the above and foregoing Application upon the Corporation Commission of the State of Oklahoma, by mailing a true and correct copy thereof to Floyd Green, Attorney for said Commission, and by mailing a true and correct copy thereof to Tom McMurray, Secretary of said Commission; that on said date he served a copy thereof upon the Proponents of said Plan of Unitization, by mailing a true and correct copy thereof to Robert M. Williams, c/o Phillips Petroleum Company, Bartlesville, Oklahoma, attorney of record for said Proponents, and, by stipulation, the party upon whom service upon said Proponents could be made.

LYNN ADAMS

Subscribed and sworn to before me this the 25th day of September, 1947.

Dorothy Drew
Notary Public.

My commission expires
March 27, 1949.

BEFORE THE CORPORATION COMMISSION OF THE
STATE OF OKLAHOMA

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER AND CANADIAN COUNTIES, OKLAHOMA; THE DEFINING OF THE UNIT AREA THEREOF AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA.	C. D. NO. 1355 Order 20212

REPORT AND ORDER OF COMMISSION

The above styled and numbered cause is a proceeding brought by the lessees of a substantial majority of the acreage in the West Edmond Hunton Lime oil and gas pool located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, seeking to unitize the management, operation and further development of said pool for the purpose of preventing the waste of gas and of substantially increasing the ultimate recovery of oil therefrom, all as authorized and provided for in H. B. 339 of the 1945 Legislature. The bringing of this proceeding followed months of cooperative study of the pool and of the benefits of unitization engaged in by substantially all of the operating lessees in the pool and in which all were invited to participate. The original petition herein, attached to which was a recommended Plan of Unitization applicable to said pool, was filed January 29, 1947. Pursuant to order of the Commission said petition was set for hearing March 18, 1947, at 10:00 o'clock A. M. in the Commission Court Room in the State Capitol Office Building at Oklahoma City, Oklahoma, and notice thereof was published once a week for three consecutive weeks in a newspaper of general circulation in each of the four counties in which the West Edmond Hunton Lime pool is located. On March 5, 1947, an amended petition was filed for the purpose of making certain amendments to the

recommended Plan of Unitization. A complete copy of the amended recommended Plan of Unitization was attached to said amended petition. Pursuant to the further order of the Commission, said amended petition was set for hearing at the same time and place as the hearing on the original petition and notice thereof was published in a newspaper of general circulation in Oklahoma County, Oklahoma. In advance of the hearing, as is its usual custom in oil and gas matters, the Commission mailed mimeographed copies of said petitions, together with information as to the time of the hearing, to all persons on its established mailing list, which includes all of the operating lessees within the West Edmond Hunton Lime pool. As a result, all parties in interest were given ample opportunity to be fully advised with respect to the subject matter of said hearing.

The hearing of said cause was commenced at the time and place so fixed, namely, March 18, 1947, at 10:00 o'clock A. M. in the Commission Court Room in the Capitol Office Building at Oklahoma City and was continued at the same place, throughout all of the following days, to wit: March 18, 19, 20, 21, 25, 26, 27 and 28; June 3, 4, 5, 25 and 26; and July 1, 2, 3, 8, 9 and 10; all in 1947. The continuance of said hearing from time to time was by proper orders of continuance. At said hearing the petitioners and subscribers to the proposed Plan of Unitization were represented by the following named attorneys: W. W. Heard, W. H. Brown, George Hazlett, W. R. Wallace, R. O. Wilson, T. Murray Robinson and R. M. Williams. The protestant British-American Oil Producing Company appeared by its attorneys, Donald Prentice, Earl Pruet and Kent Shartel. The protestant Gulf Oil Corporation appeared by its attorney, Russell G. Lowe. The protestant H. H. Wagner appeared by his attorneys, F. C. Love and V. P. Crowe. The Denver Producing and Refining Company appeared at the outset of the hearing as a protestant but during the course of the hearing announced the withdrawal of its protest, due to the sale of its property to the Champlin Refining Company, which purchaser elected to join in the proposed Plan of Unitization as a Subscriber thereto. W. W. Whistler, a royalty owner appeared as a protestant by his attorney, Lynn Adams. Approximately 180 royalty owners appeared as protestants by their attorney, Coleman Hayes. James Johnson, both a working interest and royalty owner, appeared in person in support of the petition. A number of royalty

owners wrote letters to the Commission urging the granting of the petition. Other royalty owners and various parties in interest were present at the hearing from time to time but took no part.

At the hearing everyone who desired to do so, regardless of the interest of such person, was given full opportunity to offer any and all competent evidence that such person chose to offer, either for or against the recommended Plan of Unitization or by way of amendment thereof, and to otherwise be heard in regard thereto. The evidence so introduced consisted of extensive geological, engineering and other proof concerning the history, discovery, development, operation and present condition of the West Edmond Hunton Lime pool and the results obtainable both under present competitive methods of operation and through the unitization thereof; proof both pro and con as to the fairness, reasonabless and equitableness of the recommended Plan of Unitization; and proof by protestants with respect to certain amendments which they claim should be made in said Plan.

In addition to the knowledge gained from the evidence introduced at said hearing, the Commission has a general knowledge of the pool and of conditions existing therein, gained through the exercise by it of its jurisdiction over such pool under the conservation laws of the state dating from the discovery thereof. As a result of the testimony, statements and arguments introduced and made in the hearing here under consideration, and by reason of its general knowledge of the West Edmond Hunton Lime pool, gained through the exercise of its jurisdiction under the conservation laws of the state, the Commission is of the opinion that it has sufficient knowledge and information upon which to base a proper order in this cause.

NOW, on the _____ day of July, 1947, the Commission having previously taken said cause under advisement and having considered the matter in conference and each of the commissioners being well and sufficiently advised, the Commission makes the following findings of act and conclusions of law and enters the following order authorizing and approving the creation of the West Edmond Hunton Lime Unit, defining the Unit Area thereof and prescribing the Plan of Unitization applicable to such Unit and Unit Area.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

1. That the notice of the filing of both the petition and amended petition herein and the time and place of hearing thereof and the purpose of said hearing was regularly given in all respects as by law required, and that the Commission has jurisdiction of the subject matter of said petition and amended petition and of all persons interested therein and has jurisdiction to make and promulgate the hereinafter prescribed order.

2. That the lands (hereinafter designated as the Unit Area) outlined by the hatched line on the map marked "Exhibit A" and attached to the Plan of Unitization attached to and made a part of this order, are underlaid with an oil and gas bearing formation known as the Hunton Lime formation found at depths ranging from approximately 6600 feet on the east side of said Unit Area to approximately 7200 feet on the west side of said Unit Area; that said Hunton Lime formation has an average formation thickness of approximately 350 feet and consists of a number of lithologic subdivisions or members, most important of which are the Bois d'Arc member, the Henry House-Harrington member, and the Chimney Hill member; that said Hunton Lime formation as above described and which has been designated by the Commission as the West Edmond Hunton Lime pool or field constitutes a single common source of supply of oil and gas, all portions of which are permeably connected so as to permit the migration of oil and gas from one portion of said common source of supply to another.

3. That said common source of supply of oil and gas was first discovered on or about April 12, 1943, by the completion of the Fox-Schmitz Wagner #1 Well in the NW$\frac{1}{4}$ of the NW$\frac{1}{4}$ of the SW$\frac{1}{4}$ of Section 32, Township 14 North, Range 4 West, Oklahoma County, Oklahoma; that at the present time there are 737 wells located within the aforesaid Unit Area and producing from said common source of supply.

4. That the portion of said common source of supply underlying and included within the aforesaid Unit Area and which is made subject to this order has been reasonably defined by actual drilling operations, both by the drilling of wells within and the drilling of wells outside said Unit Area; that said Unit Area consists of approximately 30,000 acres of land and in

areal extent constitutes one of the largest oil and gas pools in the State of Oklahoma.

5. That the lands embraced within the aforesaid Unit Area are divided into a large number of tracts owned in severalty by a multitude of owners owning varying interests therein, including leasehold interests, royalty interests, and various and sundry other rights and interests; that the lessees within the Unit Area are divided into two classes, (1) lessees engaged in the physical operation of the several leases, and (2) lessees owning leasehold interests other than an operating interest; that of the total leasehold interests within the Unit Area approximately 98.7592% is owned by lessees of the class first named, i. e., operating lessees, consisting of approximately 32 such lessees, with the remaining 1.2408% of the leasehold interests within the Unit Area being owned by lessees of the second class, i. e., nonoperating lessees, consisting of approximately 20 such lessees; that the royalty interests under said leases are owned by not less than 2500 royalty owners owning varying interests.

6. That the petitioners in this cause are lessees of record of not less than 65% of the area of the common source of supply herein sought to be unitized; that the subscribers to the Plan of Unitization herein recommended and which is approved and prescribed by the Commission are lessees of record of approximately 90.44% of the area of said common source of supply herein sought to be unitized; that the lessees appearing at the hearing and protesting the granting of the petition herein are lessees of record of approximately 5.8093% of the proposed Unit Area; that the lessees of the remaining percentage of the Unit Area have not appeared for or against the granting of the petition.

7. That at all times since its discovery and continuing to the present time, said West Edmond Hunton Lime common source of supply of oil and gas, subject only to the orders of the Commission issued under authority of the General Conservation Laws of the State, has been developed and operated by and under individual pressure depletion methods of development and operation; that under the orders of the Commission each of the separately owned tracts as defined and described in the Plan of Unitization hereto attached is a separate unit of development and operation for oil and gas purposes; that by reason of the division of said proposed Unit Area into small tracts or units

for development and operating purposes and because of said individual methods of operation conducted on each such separately owned tract there has been and still continues to be a disproportionate, inequitable and wasteful utilization and dissipation of the gas energy in the reservoir to the injury, detriment and disadvantage of the other tracts therein and of the common source of supply as a whole, large volumes of gas are being wasted and millions of barrels of oil were left in said common source of supply unrecovered and unrecoverable except by and through unitized methods of operation.

8. That by and through the unitization of the proposed Unit Area and the unitized management, operation and further development thereof as a unit, all as set out in the Plan of Unitization hereto attached, full use can be made of the gas energy in the reservoir to the mutual advantage of all the owners of said common source of supply of oil and gas, the waste of large volumes of oil and gas can be prevented, water encroachment on the lower side of the pool can be properly controlled and utilized, a more equitable distribution of the recoverable oil and gas can be had as between the several owners of the pool, substantially more oil amounting to millions of barrels can be recovered from the common source of supply than can otherwise be recovered, and the correlative rights of the several owners can be better protected.

9. That the unitization and the unitized management, operation and further development of said common source of supply as a unit is reasonably necessary to effectively carry on the unitized methods of operation described in said proposed Plan of Unitization.

10. That any one or all of said unitized methods of operation as applied to the common source of supply underlying and included within the proposed Unit Area are feasible, will prevent waste, and will, with reasonable probability, result in the increased recovery of substantially more oil and gas from the common source of supply than would otherwise be recovered; that the estimated additional cost of conducting such operations will not exceed the value of the additional oil and gas so recovered; that such unitization and the adoption of any one or more of such unitized methods of operation is for the common good and will result in the general advantage to the owners of the oil and gas rights in and to the portion of the common source of supply thereby affected.

11. That the Unit Area is of such size and shape as is reasonably required for the successful and efficient conduct of any one or all of the unitized methods of operation described in the attached Plan of Unitization; that the conduct of any one or any combination thereof or all of said unitized methods of operation will have no material adverse effect on the remainder of said common source of supply.

12. That neither said West Edmond Hunton Lime common source of supply of oil and gas nor any part or parts thereof were being operated by or under pressure maintenance, repressuring or secondary recovery methods of operation as of the effective date of H. B. 339 of the 1945 Oklahoma Legislature.

13. That the recommended Plan of Unitization attached to the amended petition filed herein, a copy of which is attached to this order and is made a part hereof, is one suited to the needs and requirements of the West Edmond Hunton Lime Unit, the creation of which is hereby authorized and approved, taking into account all the facts and conditions found by the Commission to exist in respect thereto; that said Plan of Unitization is fair, reasonable and equitable and contains all the terms, provisions, conditions and requirements reasonably necessary and proper to protect, safeguard and adjust the respective rights and obligations of the several persons affected, including royalty owners, owners of overriding royalty interests, oil and gas payments, carried interests, interests, mortgagees, lien claimants, and others, as well as the lessees, and such as will effectuate and accomplish the purposes of H. B. 339 of the 1945 Oklahoma Legislature; that said Plan of Unitization provides for the efficient unitized management and control of the further development and operation of the Unit Area for the recovery of oil and gas from the common source of supply affected; that the division of interest set forth in "Exhibit B" attached to said Plan of Unitization pursuant to which the unit production is to be apportioned and allocated among and to the several separately owned tracts within the Unit Area is fair and equitable and is such as will reasonably permit persons otherwise to share in or benefit by the production from such separately owned tracts to receive, in lieu thereof, their fair, equitable and reasonable share of the unit production or other benefits thereof; that the division of interest assigned to the several

separately owned tracts in the Unit Area as set out in said "Exhibit B" to said Plan of Unitization is fair and reasonably representative of the value of said several tracts for oil and gas purposes and the contributing value thereof to the unit in relation to like values of other tracts in the unit; that the basis used to arrive at said division of interest takes into account the acreage of the several separately owned tracts, the quantity of oil and gas recoverable therefrom, the location thereof on structure, the probable productivity of oil and gas from such tracts in the absence of unitization, the burden of operation to which such tracts will or are likely to be subjected, together with all other pertinent engineering, geological and operating factors as are reasonably susceptible of determination; that the manner in which and the basis, terms and conditions on which the cost and expense of the further development and operation of the Unit Area shall be financed and apportioned among and assessed against the tracts and interests chargeable therewith are fair, reasonable and equitable; that the provisions of the said Plan with respect to taking over and using the wells, equipment and other properties of the several lessees within the Unit Area, including the method of arriving at the compensation therefor and otherwise proportionately equalizing and adjusting the investment of the several lessees in the project as of the effective date of the unit operations are fair, reasonable and equiptable; that the provisions of said Plan with respect to the creation of an operating committee and the powers and duties of such committee are fair, reasonable and equitable.

16. That the Plan of Unitization hereto attached in all respects conforms to and complies with the requirements of H. B. 339 of the 1945 Oklahoma Legislature.

17. That the amended petition filed herein and pursuant to which this order is made conforms to and in all respects complies with the requirements of House Bill 339 of the 1945 Oklahoma Legislature.

ORDER

IT IS THEREFORE ORDERED BY THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA AS FOLLOWS:

1. That the amended petition filed herein be and the same is hereby granted.

2. That the creation of the West Edmond Hunton Lime Unit as prayed in said amended petition be and the same is hereby authorized and approved.

3. That the Unit Area of said unit shall extend to and include all of the West Edmond Hunton Lime common source of supply of oil and gas outlined by the hatched lines on the map marked "Exhibit A" attached to the Plan of Unitization attached to this order.

4. That the Plan of Unitization hereto attached and which by reference is made a part of this order is hereby approved and shall constitute the Plan of Unitization of and for said West Edmond Hunton Lime Unit and the Unit Area of said Unit, all to the same extent and with the same force and effect as if copied herein in its entirety.

5. Nothing herein contained shall be construed as a waiver by the Commission of any of its powers or authority over the West Edmond Hunton Lime unit or the persons comprising said unit, or the development and operation of the Unit Area thereof under the general oil and gas conservation laws of the State of Oklahoma, it being expressly recited that the Commission has and retains continuing jurisdiction over the operations carried on by the unit to the same extent that it would have jurisdiction over any other lessee or person producing oil and gas from the West Edmond Hunton Lime pool in the absence of unitization.

6. The unit shall from time to time make such reports to the Commission concerning the operation by it of the Unit Area as may be requested by the Commission.

7- DONE AND PERFORMED by the Corporation Commission at its office in the Capitol Office Building, Oklahoma City, Oklahoma, this _____ day of July, 1947.

CORPORATION COMMISSION OF OKLAHOMA

_____
Chairman

_____
Vice Chairman

_____
Commissioner

ATTEST:

_____
Secretary

BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER AND CANADIAN COUNTIES, OKLAHOMA: THE DEFINING OF THE UNIT AREA THEREOF AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA.	CAUSE CD No. 1355 ORDER No. 20212

REPORT AND ORDER OF THE COMMISSION

The above styled and numbered cause is a proceeding brought by the lessees of a substantial majority of the acreage in the West Edmond Hunton Lime oil and gas pool located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, seeking to unitize the management, operation and further development of said pool for the purpose of preventing the waste of gas and of substantially increasing the ultimate recovery of oil therefrom, all as authorized and provided for in H. B. 339 of the 1945 Legislature. The bringing of this proceeding followed months of cooperative study of the pool and of the benefits of unitization engaged in by substantially all of the operating lessees in the pool and in which all were invited to participate. The original petition herein, attached to which was a recommended Plan of Unitization applicable to said pool, was filed January 29, 1947. Pursuant to order of the Commission said petition was set for hearing March 18, 1947, at 10:00 o'clock, A.M., in the Commission's Court Room in the State Capitol Office Building, Oklahoma City, Oklahoma, and notice thereof was published once a week for three consecutive weeks in a newspaper of general circulation in each of the four counties in which the West Edmond Hunton Lime pool is located. On March 5, 1947, an amended petition was filed for the purpose of making certain amendments to the recommended Plan of Unitization. A complete copy of the amended recommended Plan of Unitization was attached to said amended petition. Pursuant to the further order of the Commission, said amended petition was set for hearing at the same time and place as the hearing on the original petition and notice thereof was published in a newspaper of general cirulation in Oklahoma County, Oklahoma. In advance of the hearing, as is its usual custom in oil and gas matters, the Commission mailed mimeographed copies of said petitions, together with information as to the time of the hearing, to all persons on its established mailing list, which includes all of the operating lessees within the West Edmond Hunton Lime pool. As a result, all parties in interest were given ample opportunity to be fully advised with respect to the subject matter of said hearing.

The hearing of said cause was commenced at the time and place so fixed, namely, March 18, 1947, at 10:00 o'clock, A.M. in the Commission's Court Room, Capitol Office Building, Oklahoma City, and was continued at the same place, throughout all of the following days, to wit: March 18, 19, 20, 21, 25, 26, 27 and 28; June 3, 4, 5, 25 and 26; and July 1, 2, 3, 8, 9 and 10; all in 1947. The continuance of said hearing from time to time was by proper orders of continuance. At said hearing the petitioners and subscribers to the proposed Plan of Unitization were represented by the following named attorneys: W. W. Heard, W. H. Brown, George Hazlett, W. R. Wallace, R. O. Wilson, T. Murray Robinson and R. M. Williams. The protestant British-American Oil Producing Company appeared by its attorneys, Donald Prentice, Earl Pruet and Kent Shartel. The protestant Gulf Oil Corporation appeared by its attorney, Russell G. Lowe. The protestant H. H. Wagner appeared by his attorneys, F. C. Love and V. P. Crowe. The Denver Producing and Refining Company appeared at the outset of the hearing as a protestant but during the course of the hearing announced the withdrawal of its protest, due to the sale of its property to the Champlin Refining Company, which purchaser elected to join in the proposed Plan of Unitization as a Subscriber thereto. W. W. Whistler, a royalty owner appeared as a protestant by his attorneys, Lynn Adams. Approximately 180 royalty owners appeared as protestants by their attorney, Coloman Hayes. James Johnson, both a working interest and royalty owner, appeared in person in support of the petition. A number of royalty owners wrote letters to the Commission urging the granting of the petition. Other royalty owners and various parties in interest were present at the hearing from time to time but took no part.

At the hearing everyone who desired to do so, regardless of the interest of such person, was given full oportunity to offer any and all competant evidence that such person chose to offer, either for or against the recommended Plan of Unitization or by way of amendment thereof, and to otherwise be heard in regard thereto. The evidence so introduced consisted of extensive geological, engineering and other proof concerning the history, discovery, development, operation and present condition of the West Edmond Hunton Lime pool and the results obtainable both under present competitive methods of operation and through the unitization thereof; proof

both pro and con as to the fairness, reasonableness and equitableness of the recommended Plan of Unitization; and proof by protestants with respect to certain amendments which they claim should be made in said Plan.

In addition to the knowledge gained from the evidence introduced at said hearing, the Commission has a general knowledge of the pool and of conditions existing therin, gained through the exercise by it of its jurisdiction over such pool under the conservation laws of the state dating from the discovery thereof. As a result of the testimony, statements and arguments introduced and made in the hearing here under consideration, and by reason of its general knowledge of the West Edmond Hunton Lime pool, gained through the exercise of its jurisdiction under the conservation laws of the state, the Commission is of the opinion that it has sufficient knowledge and information upon which to base a proper order in this cause.

NOW, on the 29th day of July, 1947, the Commission having previously taken said cause under advisement and having considered the matter in conference and each of the commissioners being well and sufficiently advised, the Commission makes the following findings of act and conclusions of law and enters the following order authorizing and approving the creation of the West Edmond Hunton Lime Unit, defining the Unit Area thereof and prescribing the Plan of Unitization applicable to each Unit and Unit area.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

1. That the notice of the filing of both the petition and amended petition herein and the time and place of hearing thereof and the purpose of said hearing was regularly given in all respects as by law required, and that the Commission has jurisdiction of the subject matter of said petition and amended petition and of all persons interested therein and has jurisdiction to make and promulgate the hereinafter prescribed order.

2. That the lands (hereinafter designated as the Unit Area) outlined by the hatched line on the map marked "Exhibit A" and attached to the Plan of Unitization attached to and made a part of this order, are underlaid with an oil and gas bearing formation known as the Huhton Lime formation found at depths ranging from approximately 6600 feet on the east side of said Unit Area to approximately 7200 feet on the west side of said Unit Area; that said Hunton Lime formation has an average formation thickness of approximately 350 feet and consists of a number of lithologic subdivisions or members, most important of which are the Bois d'Arch member, the Henry House-Harringon member and the Chimney Hill member; that said Hunton Lime formation as above described and which has been designated by the Commission as the West Edmond Hunton Lime pool or field, constitutes a single common source of supply of oil and gas, all portions of which are permeably connected so as to permit the migration of oil and gas from one portion of said common source of supply to another.

3. That said common source of supply of oil and gas was first discovered on or about April 12, 1943, by the completion of the Fox-Schmitz Wagner #1 Well in the NW/4 of the NW/4 of the SW/4 of Section 32, Township 14 North, Range 4 West, Oklahoma County, Oklahoma; that at the present time there are 737 wells located within the aforesaid Unit Area and producing from said common source of supply.

4. That the portion of said common source of supply underlying and included within the aforesaid Unit Area and which is made subject to this order has been reasonably defined by actual drilling operations, both by the drilling of wells within and the drilling of wells outside said Unit Area; that said Unit Area consists of approximately 30,000 acres of land and in areal extent constitutes one of the largest oil and gas pools in the State of Oklahoma.

5. That the lands embraced within the aforesaid Unit Area are divided into a large number of tracts owned in severalty by a multitude of owners varying interests therein, including leasehold interest, royalty interests, and various and sundry other rights and interests; that the lessees within the Unit Area are divided into two classes, (1) lessees engaged in the physical operation of the several leases, and (2) lessees owning leasehold interests other than an operating interest; that of the total leasehold interests within the Unit Area approximately 98.7592% is owned by lessees of the class first named, i.e., operating lessees, consisting of approximately 32 such lessees, with the remaining 1.2408% of the leasehold interests within the Unit Area being owned by lessees of the second class; i.e., nonoperating lessees, consisting of approximately 20 such lessees; that the royalty interests under said leases are owned by not less than 2500 royalty owners owning varing interests.

6. That the petitioners in this cause are lessees of record of not less than 65% of the area of the common source of supply herein sought to be unitized; that the subscribers to the Plan of Unitization herein recommended and which is approved and prescribed by the Commission are lessees of record of approximately 90.44% of the area of said common source of supply herein sought to be unitized; that the lessees appearing at the hearing and protesting the granting of the petition herein are lessees of record of approximately 5.3093% of the proposed Unit Area: that the lessees of the remaining percentage of the Unit Area have not appeared for or against the granting of the petition.

7. That at all times since its discovery and continuing to the present time, said West Edmond Hunton Lime common source of supply of oil and gas, subject only to the orders of the Commission issued under authority of the General Conservation Laws of the State, has been developed and operated by and under individual pressure depletion methods of development and operation; that under the orders of the Commission each of the separately owned tracts as defined and described in the Plan of Unitization hereto attached is a separate Unit of development and operation for oil and gas purposes; that by reason of the division of said proposed Unit Area into small tracts or Units for development and operating purposes and because of said individual methods of operation conducted on each such separately owned tract there has been and still continues to be a disproportionate, inequitable and wasteful utilization and dissipation of the gas energy in the reservoir to the injury, detriment and disadvantage of the other tracts therein and of the common source of supply as a whole, large volumes of gas are being wasted and millions of barrels of oil were left in said common source of supply unrecovered and unrecoverable except by and through unitized methods of operation.

8. That by and through the unitization of the proposed Unit Area and the unitized management, operation and further development thereof as a Unit, all as set out in the Plan of Unitization hereto attached, full use can be made of the gas energy in the reservoir to the mutual advantage of all the owners of said common source of supply of oil and gas, the waste of large volumes of oil and gas can be prevented, water encroachment on the lower side of the pool can be properly controlled and utilized, a more equitable distribution of the recoverable oil and gas can be had as between the several owners of the pool, substantially more oil amounting to millions of barrels can be recovered from the common source of supply than can otherwise be recovered, and the correlative rights of the several owners can be better protected.

9. That the unitization and the unitized management, operation and further development of said common source of supply as a Unit is reasonably necessary to effectively carry on the unitized methods of operation described in said proposed Plan of Unitization.

10. Than any one or all of said unitized methods of operation as applied to the common source of supply underlying and included within the proposed Unit Area are feasible, will prevent waste, and will, with reasonable probability, result in the increased recovery of substantially more oil and gas from the common source of supply than would otherwise be recovered; that the estimated additional cost of conducting such operations will not exceed the value of the additional oil and gas so recovered; that such unitization and the adoption of any one or more of such unitized methods of operation is for the common good and will result in the general advantage to the owners of the oil and gas rights in and to the portion of the common source of supply thereby affected.

11. That the Unit Area is of such size and shape as is reasonably required for the successful and efficient conduct of any one or all of the unitized methods of operation described in the attached Plan of Unitization; that the conduct of any one or any combination thereof or all of said unitized methods of operation will have no material adverse effect on the remainder of said common source of supply.

12. That neither said West Edmond Hunton Lime common source of supply of oil and gas nor any part or parts thereof were being operated by or under pressure maintenance, repressuring or secondary recovery methods of operation as of the effective date of H.B. 339 of the 1945 Oklahoma Legislature.

13. That the recommended Plan of Unitization attached to the amended petition filed herein, a copy of which is attached to this order and is made a part hereof, is one suited to the needs and requirements of the West Edmond Hunton Lime Unit, the creation of which is hereby authorized and approved, taking into account all the facts and conditions found by the Commission to exist in respect thereto; that said Plan of Unitization is fair, reasonable and equitable and contains all the terms, provisions, conditions and requirements reasonably necessary and proper to protect, safeguard and adjust the respective rights and obligations of the several

persons affected, including royalty owners, owners of overriding royalty interests, oil and gas payments, carried interests, interests, mortgagees, lien claimants and others, as well as the lessees, and such as will effectuate and accomplish the purposes of H. B. 339 of the 1945 Oklahoma Legislature; that said Plan of Unitization provides for the efficient unitized management and control of the further development and operation of the Unit Area for the recovery of oil and gas from the common source of supply affected; that the division of interest set forth in "Exhibit B" attached to said Plan of Unitization pursuant to which the Unit production is to be apportioned and allocated among and to the several separately owned tracts within the Unit Area is fair and equitable and is such as will reasonably permit persons otherwise to share in or benefit by the production from such separately owned tracts to receive, in lieu thereof, their fair, equitable and reasonable share of the Unit production or other benefits thereof; that the division of interest assigned to the several separately owned tracts in the Unit Area as set out in said "Exhibit B" to said Plan of Unitization is fair and reasonably representative of the value of said several tracts for oil and gas purposes and the contributing value thereof to the Unit in relation to like values of other tracts in the Unit; that the basis used to arrive at said division of interest takes into account the acreage of the several separately owned tracts, the quantity of oil and gas recoverable therefrom, the location thereof on structure, the probable productivity of oil and gas from such tracts, the quantity of oil and gas recoverable therefrom, the probable productivity of oil and gas from such tracts in the absence of unitization, the burden of operation to which such tracts will or are likely to be subjected, together with all other pertinent engineering, geological and operating factors as are reasonably susceptible of determination; that the manner in which and the basis, terms and conditions on which the cost and expense of the further development and operation of the Unit Area shall be financed and apportioned among and assessed against the tracts and interests chargeable therewith are fair, reasonable and equitable; that the provisions of the said Plan with respect to taking over and using the wells, equipment and other properties of the several lessees within the Unit Area, including the method of arriving at the compensation therefor and otherwise proportionately equalizing and adjusting the investment of the several lessees in the project as of the effective date of the Unit operations are fair, reasonable and equitable; that the provisions of said Plan with respect to the creation of an operating committee and the powers and duties of such committee are fair, reasonable and equitable.

14. That in the ordinary course of events there will be tracts within the Unit Area which as of the effective date of said Plan of Unitization will have produced oil from said Hunton Lime formation in excess of the amount such tracts were allowed to produce under the prior conservation orders of the Commission, which said excess oil is known and is referred to in this order as overproduction; that it would be unfair and in violation of the correlative rights of the owners of other tracts in said Unit Area if such overproduced tracts are not required to make up such overproduction; that the amount of the overproduction charged against each such tract should be charged against and made up out of the Unit production of oil allocated to such tract under the Plan of Unitization.

15. That the Corporation Commission, since the discovery of said Hunton Lime Pool, has regulated the production of oil and gas therefrom, and that in the absence of unitization, it was impossible to control the venting of gas in said field; that the Commission has fixed gas-oil ratio limitations at various times in an effort to reduce the amount of gas being vented at the wells and at the gas plants in said field, but in spite of the continued action of the Commission, billions of cubic feet of natural gas has been vented into said field under competitive production practices; that the first thing to be done in the proposed plan is to shut in the high gas-oil ratio wells and to selectively produce the oil from the low gas-oil ratio wells, and this will have the effect of further decreasing the amount of gas produced in said field to a point where all gas produced in said field will be utilized either at the gasoline plants or sold; that the experience gained by the Corporation Commission in its attempt to regulate the production of oil and gas in said pool up to the present time has convinced it that the only practical method surbing the waste of natural gas is the granting of this application and the operation of the pool under unitized management.

16. That the Plan of Unitization hereto attached in all respects conforms to and complies with the requirements of H. B. 339 of the 1945 Oklahoma Legislature.

17. That the amended petition filed herein and pursuant to which this order is made conforms to and in all respects complies with the requirements of House Bill 339 of the 1945 Oklahoma Legislature.

O R D E R

IT IS THEREFORE ORDERED BY THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA AS FOLLOWS:

1. That the amended petition filed herein be and the same is hereby granted.

2. That the creation of the West Edmond Hunton Lime Unit as prayed in said amended petition be and the same is hereby authorized and approved.

3. That the Unit Area of said Unit shall extend to and include all of the West Edmond Hunton Lime common source of supply of oil and gas outlined by the hatched lines on the map marked "Exhibit A" attached to the Plan of Unitization attached to this order.

4. That the Plan of Unitization hereto attached and which by reference is made a part of this order is hereby approved and shall constitute the Plan of Unitization of and for said West Edmond Hunton Lime Unit and the Unit Area of said Unit, all to the same extent and with the same force and effect as if copied herein in its entirety.

5. Nothing herein contained shall be construed as a waiver by the Commission of any of its powers or authority over the West Edmond Hunton Lime Unit or the persons comprising said unit, or the development and operation of the Unit Area thereof under the general oil and gas conservation laws of the State of Oklahoma, it being expressly recited that the Commission has and retains continuing jurisdiction over the operations carried on by the Unit to the same extent that it would have jurisdiction over any other lessee or person producing oil and gas from the West Edmond Hunton Lime pool in the absence of unitization.

6. The unit shall from time to time make such reports to the Commission concerning the operation by it of the Unit Area as may be requested by the Commission.

7. The amount of overproduction charged against any tract within the Unit Area as of the effective date of said plan of Unitization shall be charged against and made up out of the unit production of oil allocated to such tract; that until such time as said tract's overproduction is made up, such overproduced tract shall not receive any part of the Unit production of oil; the Unit Operator shall each month file with the Corporation Commission a report by tracts of all overproduction so made up, together with a statement by tracts of the balance of the overproduction not so made up.

DONE AND PERFORMED by the Corporation Commission at its office in the Capitol Office Building, Oklahoma City, Oklahoma, this 29th day of July, 1947.

CORPORATION COMMISSION OF OKLAHOMA

Reford Bond, Chairman

Ray O. Weems, Vice-Chairman

Ray C. Jones, Commissioner

ATTEST:

Tom McMurray
Secretary

(S E A L)

BEFORE THE CORPORATION COMMISSION OF THE
STATE OF OKLAHOMA

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER AND CANADIAN COUNTIES, OKLAHOMA; THE DEFINING OF THE UNIT AREA THEREOF AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA.	C. D. NO. 1355 Order 20212

REPORT AND ORDER OF COMMISSION

The above styled and numbered cause is a proceeding brought by the lessees of a substantial majority of the acreage in the West Edmond Hunton Lime oil and gas pool located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, seeking to unitize the management, operation and further development of said pool for the purpose of preventing the waste of gas and of substantially increasing the ultimate recovery of oil therefrom, all as authorized and provided for in H. B. 339 of the 1945 Legislature. The bringing of this proceeding followed months of cooperative study of the pool and of the benefits of unitization engaged in by substantially all of the operating lessees in the pool and in which all were invited to participate. The original petition herein, attached to which was a recommended Plan of Unitization applicable to said pool, was filed January 29, 1947. Pursuant to order of the Commission said petition was set for hearing March 18, 1947, at 10:00 o'clock A. M. in the Commission Court Room in the State Capitol Office Building at Oklahoma City, Oklahoma, and notice thereof was published once a week for three consecutive weeks in a newspaper of general circulation in each of the four counties in which the West Edmond Hunton Lime pool is located. On March 5, 1947, an amended petition was filed for the purpose of making certain amendments to the

recommended Plan of Unitization. A complete copy of the amended recommended Plan of Unitization was attached to said amended petition. Pursuant to the further order of the Commission, said amended petition was set for hearing at the same time and place as the hearing on the original petition and notice thereof was published in a newspaper of general circulation in Oklahoma County, Oklahoma. In advance of the hearing, as is its usual custom in oil and gas matters, the Commission mailed mimeographed copies of said petitions, together with information as to the time of the hearing, to all persons on its established mailing list, which includes all of the operating lessees within the West Edmond Hunton Lime pool. As a result, all parties in interest were given ample opportunity to be fully advised with respect to the subject matter of said hearing.

The hearing of said cause was commenced at the time and place so fixed, namely, March 18, 1947, at 10:00 o'clock A. M. in the Commission Court Room in the Capitol Office Building at Oklahoma City and was continued at the same place, throughout all of the following days, to wit: March 18, 19, 20, 21, 25, 26, 27 and 28; June 3, 4, 5, 25 and 26; and July 1, 2, 3, 8, 9 and 10; all in 1947. The continuance of said hearing from time to time was by proper orders of continuance. At said hearing the petitioners and subscribers to the proposed Plan of Unitization were represented by the following named attorneys: W. W. Heard, W. H. Brown, George Hazlett, W. R. Wallace, R. O. Wilson, T. Murray Robinson and R. M. Williams. The protestant British-American Oil Producing Company appeared by its attorneys, Donald Prentice, Earl Pruet and Kent Shartel. The protestant Gulf Oil Corporation appeared by its attorney, Russell G. Lowe. The protestant H. H. Wagner appeared by his attorneys, F. C. Love and V. P. Crowe. The Denver Producing and Refining Company appeared at the outset of the hearing as a protestant but during the course of the hearing announced the withdrawal of its protest, due to the sale of its property to the Champlin Refining Company, which purchaser elected to join in the proposed Plan of Unitization as a Subscriber thereto. W. W. Whistler, a royalty owner appeared as a protestant by his attorney, Lynn Adams. Approximately 180 royalty owners appeared as protestants by their attorney, Coleman Hayes. James Johnson, both a working interest and royalty owner, appeared in person in support of the petition. A number of royalty

owners wrote letters to the Commission urging the granting of the petition. Other royalty owners and various parties in interest were present at the hearing from time to time but took no part.

At the hearing everyone who desired to do so, regardless of the interest of such person, was given full opportunity to offer any and all competent evidence that such person chose to offer, either for or against the recommended Plan of Unitization or by way of amendment thereof, and to otherwise be heard in regard thereto. The evidence so introduced consisted of extensive geological, engineering and other proof concerning the history, discovery, development, operation and present condition of the West Edmond Hunton Lime pool and the results obtainable both under present competitive methods of operation and through the unitization thereof; proof both pro and con as to the fairness, reasonabless and equitableness of the recommended Plan of Unitization; and proof by protestants with respect to certain amendments which they claim should be made in said Plan.

In addition to the knowledge gained from the evidence introduced at said hearing, the Commission has a general knowledge of the pool and of conditions existing therein, gained through the exercise by it of its jurisdiction over such pool under the conservation laws of the state dating from the discovery thereof. As a result of the testimony, statements and arguments introduced and made in the hearing here under consideration, and by reason of its general knowledge of the West Edmond Hunton Lime pool, gained through the exercise of its jurisdiction under the conservation laws of the state, the Commission is of the opinion that it has sufficient knowledge and information upon which to base a proper order in this cause.

NOW, on the _____ day of July, 1947, the Commission having previously taken said cause under advisement and having considered the matter in conference and each of the commissioners being well and sufficiently advised, the Commission makes the following findings of act and conclusions of law and enters the following order authorizing and approving the creation of the West Edmond Hunton Lime Unit, defining the Unit Area thereof and prescribing the Plan of Unitization applicable to such Unit and Unit Area.

FINDINGS OF FACT AND CONCLUSIONS OF LAW

1. That the notice of the filing of both the petition and amended petition herein and the time and place of hearing thereof and the purpose of said hearing was regularly given in all respects as by law required, and that the Commission has jurisdiction of the subject matter of said petition and amended petition and of all persons interested therein and has jurisdiction to make and promulgate the hereinafter prescribed order.

2. That the lands (hereinafter designated as the Unit Area) outlined by the hatched line on the map marked "Exhibit A" and attached to the Plan of Unitization attached to and made a part of this order, are underlaid with an oil and gas bearing formation known as the Hunton Lime formation found at depths ranging from approximately 6600 feet on the east side of said Unit Area to approximately 7200 feet on the west side of said Unit Area; that said Hunton Lime formation has an average formation thickness of approximately 350 feet and consists of a number of lithologic subdivisions or members, most important of which are the Bois d'Arc member, the Henry House-Harrington member, and the Chimney Hill member; that said Hunton Lime formation as above described and which has been designated by the Commission as the West Edmond Hunton Lime pool or field constitutes a single common source of supply of oil and gas, all portions of which are permeably connected so as to permit the migration of oil and gas from one portion of said common source of supply to another.

3. That said common source of supply of oil and gas was first discovered on or about April 12, 1943, by the completion of the Fox-Schmitz Wagner #1 Well in the NW¼ of the NW¼ of the SW¼ of Section 32, Township 14 North, Range 4 West, Oklahoma County, Oklahoma; that at the present time there are 737 wells located within the aforesaid Unit Area and producing from said common source of supply.

4. That the portion of said common source of supply underlying and included within the aforesaid Unit Area and which is made subject to this order has been reasonably defined by actual drilling operations, both by the drilling of wells within and the drilling of wells outside said Unit Area; that said Unit Area consists of approximately 30,000 acres of land and in

areal extent constitutes one of the largest oil and gas pools in the State of Oklahoma.

5. That the lands embraced within the aforesaid Unit Area are divided into a large number of tracts owned in severalty by a multitude of owners owning varying interests therein, including leasehold interests, royalty interests, and various and sundry other rights and interests; that the lessees within the Unit Area are divided into two classes, (1) lessees engaged in the physical operation of the several leases, and (2) lessees owning leasehold interests other than an operating interest; that of the total leasehold interests within the Unit Area approximately 98.7592% is owned by lessees of the class first named, i. e., operating lessees, consisting of approximately 32 such lessees, with the remaining 1.2408% of the leasehold interests within the Unit Area being owned by lessees of the second class, i. e., nonoperating lessees, consisting of approximately 20 such lessees; that the royalty interests under said leases are owned by not less than 2500 royalty owners owning varying interests.

6. That the petitioners in this cause are lessees of record of not less than 65% of the area of the common source of supply herein sought to be unitized; that the subscribers to the Plan of Unitization herein recommended and which is approved and prescribed by the Commission are lessees of record of approximately 90.44% of the area of said common source of supply herein sought to be unitized; that the lessees appearing at the hearing and protesting the granting of the petition herein are lessees of record of approximately 5.8093% of the proposed Unit Area; that the lessees of the remaining percentage of the Unit Area have not appeared for or against the granting of the petition.

7. That at all times since its discovery and continuing to the present time, said West Edmond Hunton Lime common source of supply of oil and gas, subject only to the orders of the Commission issued under authority of the General Conservation Laws of the State, has been developed and operated by and under individual pressure depletion methods of development and operation; that under the orders of the Commission each of the separately owned tracts as defined and described in the Plan of Unitization hereto attached is a separate unit of development and operation for oil and gas purposes; that by reason of the division of said proposed Unit Area into small tracts or units

for development and operating purposes and because of said individual methods of operation conducted on each such separately owned tract there has been and still continues to be a disproportionate, inequitable and wasteful utilization and dissipation of the gas energy in the reservoir to the injury, detriment and disadvantage of the other tracts therein and of the common source of supply as a whole, large volumes of gas are being wasted and millions of barrels of oil were left in said common source of supply unrecovered and unrecoverable except by and through unitized methods of operation.

8. That by and through the unitization of the proposed Unit Area and the unitized management, operation and further development thereof as a unit, all as set out in the Plan of Unitization hereto attached, full use can be made of the gas energy in the reservoir to the mutual advantage of all the owners of said common source of supply of oil and gas, the waste of large volumes of oil and gas can be prevented, water encroachment on the lower side of the pool can be properly controlled and utilized, a more equitable distribution of the recoverable oil and gas can be had as between the several owners of the pool, substantially more oil amounting to millions of barrels can be recovered from the common source of supply than can otherwise be recovered, and the correlative rights of the several owners can be better protected.

9. That the unitization and the unitized management, operation and further development of said common source of supply as a unit is reasonably necessary to effectively carry on the unitized methods of operation described in said proposed Plan of Unitization.

10. That any one or all of said unitized methods of operation as applied to the common source of supply underlying and included within the proposed Unit Area are feasible, will prevent waste, and will, with reasonable probability, result in the increased recovery of substantially more oil and gas from the common source of supply than would otherwise be recovered; that the estimated additional cost of conducting such operations will not exceed the value of the additional oil and gas so recovered; that such unitization and the adoption of any one or more of such unitized methods of operation is for the common good and will result in the general advantage to the owners of the oil and gas rights in and to the portion of the common source of supply thereby affected.

11. That the Unit Area is of such size and shape as is reasonably required for the successful and efficient conduct of any one or all of the unitized methods of operation described in the attached Plan of Unitization; that the conduct of any one or any combination thereof or all of said unitized methods of operation will have no material adverse effect on the remainder of said common source of supply.

12. That neither said West Edmond Hunton Lime common source of supply of oil and gas nor any part or parts thereof were being operated by or under pressure maintenance, repressuring or secondary recovery methods of operation as of the effective date of H. B. 339 of the 1945 Oklahoma Legislature.

13. That the recommended Plan of Unitization attached to the amended petition filed herein, a copy of which is attached to this order and is made a part hereof, is one suited to the needs and requirements of the West Edmond Hunton Lime Unit, the creation of which is hereby authorized and approved, taking into account all the facts and conditions found by the Commission to exist in respect thereto; that said Plan of Unitization is fair, reasonable and equitable and contains all the terms, provisions, conditions and requirements reasonably necessary and proper to protect, safeguard and adjust the respective rights and obligations of the several persons affected, including royalty owners, owners of overriding royalty interests, oil and gas payments, carried interests, interests, mortgagees, lien claimants, and others, as well as the lessees, and such as will effectuate and accomplish the purposes of H. B. 339 of the 1945 Oklahoma Legislature; that said Plan of Unitization provides for the efficient unitized management and control of the further development and operation of the Unit Area for the recovery of oil and gas from the common source of supply affected; that the division of interest set forth in "Exhibit B" attached to said Plan of Unitization pursuant to which the unit production is to be apportioned and allocated among and to the several separately owned tracts within the Unit Area is fair and equitable and is such as will reasonably permit persons otherwise to share in or benefit by the production from such separately owned tracts to receive, in lieu thereof, their fair, equitable and reasonable share of the unit production or other benefits thereof; that the division of interest assigned to the several

separately owned tracts in the Unit Area as set out in said "Exhibit B" to said Plan of Unitization is fair and reasonably representative of the value of said several tracts for oil and gas purposes and the contributing value thereof to the unit in relation to like values of other tracts in the unit; that the basis used to arrive at said division of interest takes into account the acreage of the several separately owned tracts, the quantity of oil and gas recoverable therefrom, the location thereof on structure, the probable productivity of oil and gas from such tracts in the absence of unitization, the burden of operation to which such tracts will or are likely to be subjected, together with all other pertinent engineering, geological and operating factors as are reasonably susceptible of determination; that the manner in which and the basis, terms and conditions on which the cost and expense of the further development and operation of the Unit Area shall be financed and apportioned among and assessed against the tracts and interests chargeable therewith are fair, reasonable and equitable; that the provisions of the said Plan with respect to taking over and using the wells, equipment and other properties of the several lessees within the Unit Area, including the method of arriving at the compensation therefor and otherwise proportionately equalizing and adjusting the investment of the several lessees in the project as of the effective date of the unit operations are fair, reasonable and equiptable; that the provisions of said Plan with respect to the creation of an operating committee and the powers and duties of such committee are fair, reasonable and equitable.

14 — Insert —

16. That the Plan of Unitization hereto attached in all respects conforms to and complies with the requirements of H. B. 339 of the 1945 Oklahoma Legislature.

17. That the amended petition filed herein and pursuant to which this order is made conforms to and in all respects complies with the requirements of House Bill 339 of the 1945 Oklahoma Legislature.

ORDER

IT IS THEREFORE ORDERED BY THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA AS FOLLOWS:

1. That the amended petition filed herein be and the same is hereby granted.

2. That the creation of the West Edmond Hunton Lime Unit as prayed in said amended petition be and the same is hereby authorized and approved.

3. That the Unit Area of said unit shall extend to and include all of the West Edmond Hunton Lime common source of supply of oil and gas outlined by the hatched lines on the map marked "Exhibit A" attached to the Plan of Unitization attached to this order.

4. That the Plan of Unitization hereto attached and which by reference is made a part of this order is hereby approved and shall constitute the Plan of Unitization of and for said West Edmond Hunton Lime Unit and the Unit Area of said Unit, all to the same extent and with the same force and effect as if copied herein in its entirety.

5. Nothing herein contained shall be construed as a waiver by the Commission of any of its powers or authority over the West Edmond Hunton Lime unit or the persons comprising said unit, or the development and operation of the Unit Area thereof under the general oil and gas conservation laws of the State of Oklahoma, it being expressly recited that the Commission has and retains continuing jurisdiction over the operations carried on by the unit to the same extent that it would have jurisdiction over any other lessee or person producing oil and gas from the West Edmond Hunton Lime pool in the absence of unitization.

6. The unit shall from time to time make such reports to the Commission concerning the operation by it of the Unit Area as may be requested by the Commission.

7- DONE AND PERFORMED by the Corporation Commission at its office in the Capitol Office Building, Oklahoma City, Oklahoma, this _____ day of July, 1947.

CORPORATION COMMISSION OF OKLAHOMA

_____
Chairman

_____
Vice Chairman

_____
Commissioner

ATTEST:

_____
Secretary

EXHIBIT "B"

TABLE OF PERCENTAGE PARTICIPATION IN THE UNIT

Tract	Operator	Lease	Description	Percentage Interest in Unit
1	Anderson-Prichard	Wright	NE SW 13-15N-5W	.03736511
2	Anderson-Prichard	Wright	SW SW 13-15N-5W	.08492256
3	Anderson-Prichard	Wright	SE SW 13-15N-5W	.07814302
4	Phillips	Nakvinda	SW SE 13-15N-5W	.07703107
5	Anderson-Prichard	Stewart	NW NW 24-15N-5W	.09255040
6	Anderson-Prichard	Stewart	NE NW 24-15N-5W	.10151492
7	Phillips	Storm	NW NE 24-15N-5W	.08080138
8	Anderson-Prichard	Stewart	SE NW 24-15N-5W	.10135082
9	Phillips	Storm	SW NE 24-15N-5W	.11223291
10	Phillips	Chester	NE SW 24-15N-5W	.11483790
11	Phillips	Libecayt	NW SE 24-15N-5W	.10868815
12	Phillips	Libecayt	NE SE 24-15N-5W	.09350734
13	Phillips	Bierman	NW SW 19-15N-4W	.10448649
14	Phillips	Chester	SE SW 24-15N-5W	.09795073
15	Phillips	Libecayt	SW SE 24-15N-5W	.09021055
16	Phillips	Libecayt	SE SE 24-15N-5W	.11317691
17	Phillips	Bierman	SW SW 19-15N-4W	.09924719
18	Phillips	Bierman	SE SW 19-15N-4W	.06092940
19	Anderson-Prichard	Collett	NE NW 25-15N-5W	.11352313
20	Atlantic	Trindle	NW NE 25-15N-5W	.08212818
21	Atlantic	Trindle	NE NE 25-15N-5W	.07511282
22	Sohio	Messenbaugh	NW NW 30-15N-4W	.10881188
23	Sohio	Messenbaugh	NE NW 30-15N-4W	.06839446
24	Stanolind	Christner	NW NE 30-15N-4W	.04384272
25	Anderson-Prichard	Collett	SW NW 25-15N-5W	.08436402
26	Anderson-Prichard	Collett	SE NW 25-15N-5W	.11414263
27	Atlantic	Trindle	SW NE 25-15N-5W	.11461877
28	Atlantic	Trindle	SE NE 25-15N-5W	.09304908
29	Sohio	Messenbaugh	SW NW 30-15N-4W	.07368854
30	Sohio	Messenbaugh	SE NW 30-15N-4W	.05163808
31	Stanolind	Christner	SW NE 30-15N-4W	.03246931
32	Stanolind	Christner	SE NE 30-15N-4W	.03321717
33	Barnsdall	Anderson	SW NW 29-15N-4W	.02950299
34	Phillips	Barr	NW SW 25-15N-5W	.10542767
35	Phillips	Barr	NE SW 25-15N-5W	.11252288
36	Atlantic	Trindle	NW SE 25-15N-5W	.11048840
37	Atlantic	Trindle	NE SE 25-15N-5W	.08007174
38	Cities Service	Messenbaugh	NW SW 30-15N-4W	.06758704
39	Cities Service	Messenbaugh	NE SW 30-15N-4W	.05923837
40	Phillips	Lenhart	NW SE 30-15N-4W	.03876344
41	Phillips	Lenhart	NE SE 30-15N-4W	.07092616
42	Phillips	Derr	NW SW 29-15N-4W	.02531887
43	Phillips	Barr	SE SW 25-15N-5W	.12011450

Tract	Operator	Lease	Description	Percentage Interest in Unit
44	Atlantic	Trindle	SW SE 25-15N-5W	.11385957
45	Atlantic	Trindle	SE SE 25-15N-5W	.08176555
46	Cities Service	Messenbaugh	SW SW 30-15N-4W	.06218456
47	Cities Service	Messenbaugh	SE SW 30-15N-4W	.08861145
48	Phillips	Lenhart	SW SE 30-15N-4W	.07570875
49	Phillips	Lenhart	SE SE 30-15N-4W	.03563122
50	Phillips	Derr	SW SW 29-15N-4W	.06529702
51	Phillips	Derr	SE SW 29-15N-4W	.04983135
52	Phillips	Delbridge	NE NW 36-15N-5W	.11578103
53	Phillips	Tapp	NW NE 36-15N-5W	.08219178
54	Phillips	Cushman	NE NE 36-15N-5W	.08443228
55	Phillips	Beutler "A"	NW NW 31-15N-4W	.06420268
56	Phillips	Beutler "A"	NE NW 31-15N-4W	.08193739
57	Phillips	Burge	NW NE 31-15N-4W	.08230777
58	Phillips	Burge	NE NE 31-15N-4W	.06786100
59	Phillips	Cavan	NW NW 32-15N-4W	.06638836
60	Phillips	Cavan	NE NW 32-15N-4W	.05094779
61	Phillips	Dial	NW NE 32-15N-4W	.06498147
62	Phillips	Delbridge	SE NW 36-15N-5W	.12458909
63	Phillips	Tapp	SW NE 36-15N-5W	.08701473
64	Phillips	Tapp	SE NE 36-15N-5W	.07215703
65	Phillips	Beutler "A"	SW NW 31-15N-4W	.07357790
66	Phillips	Beutler "A"	SE NW 31-15N-4W	.10670387
67	Phillips	Burge	SW NE 31-15N-4W	.07962676
68	Phillips	Burge	SE NE 31-15N-4W	.05480882
69	Phillips	Cavan	SW NW 32-15N-4W	.05946626
70	Phillips	Cavan	SE NW 32-15N-4W	.05118006
71	Phillips	Dial	SW NE 32-15N-4W	.02191245
72	Phillips	Dial	SE NE 32-15N-4W	.02547552
73	Stanolind	State	NW SW 36-15N-5W	.10502097
74	Tide Water	State	NE SW 36-15N-5W	.13301325
75	Phillips	Tapp	NW SE 36-15N-5W	.08548858
76	Phillips	Tapp	NE SE 36-15N-5W	.07567725
77	Phillips	Beutler "B"	NW SW 31-15N-4W	.11330401
78	Phillips	Beutler "B"	NE SW 31-15N-4W	.10675690
79	Cities Service	Ziebell	NW SE 31-15N-4W	.07897702
80	Allied	Faris	NE SE 31-15N-4W	.08869622
81	Phillips	Knuth	NW SW 32-15N-4W	.04990259
82	Phillips	Hat	NE SW 32-15N-4W	.04421524
83	Continental	Boone	NW SE 32-15N-4W	.06021685
84	Continental	Boone	NE SE 32-15N-4W	.09310041
85	Continental	Sellers	NW SW 33-15N-4W	.02017822
86	Stanolind	State	SW SW 36-15N-5W	.12447953
87	Tide Water	State	SE SW 36-15N-5W	.12133285
88	Magnolia	School Land	SW SE 36-15N-5W	.12469866
89	Magnolia	School Land	SE SE 36-15N-5W	.11837463
90	Phillips	Beutler "B"	SW SW 31-15N-4W	.11343110
91	Phillips	Beutler "B"	SE SW 31-15N-4W	.10429682

Tract	Operator	Lease	Description	Percentage Interest in Unit
92	Cities Service	Ziebell	SW SE 31-15N-4W	.08842626
93	Allied	Faris	SE SE 31-15N-4W	.10361855
94	Phillips	Knuth	SW SW 32-15N-4W	.06627993
95	Phillips	Hat	SE SW 32-15N-4W	.05112031
96	Continental	Boone	SW SE 32-15N-4W	.05880888
97	Continental	Boone	SE SE 32-15N-4W	.08712177
98	Continental	Sellers	SW SW 33-15N-4W	.03637139
99	Continental	Sellers	SE SW 33-15N-4W	.04021499
100	Continental	Murphy "A"	SW SE 33-15N-4W	.10070810
101	Continental	M. Lenhart	SE SE 33-15N-4W	.12136791
102	Carter	McKinnis	SW SW 34-15N-4W	.12361836
103	Fox	Roush	NW NW 1-14N-5W	.11349026
104	Fox	Roush	NE NW 1-14N-5W	.13599470
105	Stanolind	Reherman "B"	NW NE 1-14N-5W	.12811705
106	Stanolind	Reherman "B"	NE NE 1-14N-5W	.12469866
107	Stanolind	Derr	NW NW 6-14N-4W	.11974637
108	Stanolind	Derr	NE NW 6-14N-4W	.11129855
109	Phillips	Clell	NW NE 6-14N-4W	.10113597
110	Phillips	Clell	NE NE 6-14N-4W	.10528177
111	Sohio	Murphy	NW NW 5-14N-4W	.09631088
112	Sohio	Murphy	NE NW 5-14N-4W	.07069754
113	Continental	H. Lenhart	NW NE 5-14N-4W	.06211094
114	Continental	H. Lenhart	NE NE 5-14N-4W	.06861032
115	Continental	McAuliff	NW NW 4-14N-4W	.05722015
116	Continental	McAuliff	NE NW 4-14N-4W	.10455379
117	Continental	Murphy	NW NE 4-14N-4W	.11041152
118	Continental	Murphy	NE NE 4-14N-4W	.11834395
119	Carter	Blehm	NW NW 3-14N-4W	.13231993
120	Carter	Blehm	NE NW 3-14N-4W	.11957106
121	Carter	Whisler	NW NE 3-14N-4W	.15547298
122	Phillips	Abbott	SW NW 1-14N-5W	.10190936
123	Phillips	Abbott	SE NW 1-14N-5W	.12754732
124	Stanolind	Reherman "B"	SW NE 1-14N-5W	.13182031
125	Stanolind	Reherman "B"	SE NE 1-14N-5W	.13179183
126	Stanolind	Derr	SW NW 6-14N-4W	.11831560
127	Stanolind	Derr	SE NW 6-14N-4W	.11365358
128	Phillips	Clell	SW NE 6-14N-4W	.10931588
129	Phillips	Clell	SE NE 6-14N-4W	.11136692
130	Sohio	Murphy	SW NW 5-14N-4W	.08772811
131	Sohio	Murphy	SE NW 5-14N-4W	.08476200
132	Continental	H. Lenhart	SW NE 5-14N-4W	.08407175
133	Continental	H. Lenhart	SE NE 5-14N-4W	.07263351
134	Continental	McAuliff	SW NW 4-14N-4W	.10624809
135	Continental	McAuliff	SE NW 4-14N-4W	.11831560
136	Phillips	Kosar	SW NE 4-14N-4W	.14755633
137	Phillips	Kosar	SE NE 4-14N-4W	.18212332
138	Carter	Blehm	SW NW 3-14N-4W	.15498520

Tract	Operator	Lease	Description	Percentage Interest in Unit
139	Carter	Blehm	SE NW 3-14N-4W	.16091612
140	Carter	Whisler	SW NE 3-14N-4W	.16567558
141	Tide Water	Balyeat	NE SW 1-14N-5W	.12475344
142	Stanolind	Abercrombie	NW SE 1-14N-5W	.11820614
143	Stanolind	Abercrombie	NE SE 1-14N-5W	.12968382
144	Stanolind	J. Kelly "B"	NW SW 6-14N-4W	.11808118
145	Stanolind	J. Kelly "B"	NE SW 6-14N-4W	.09862506
146	Phillips	Edmond	NW SE 6-14N-4W	.08398863
147	Phillips	Edmond	NE SE 6-14N-4W	.09770900
148	Cities Service	J. O'Brien "B"	NW SW 5-14N-4W	.05586296
149	Cities Service	J. O'Brien "B"	NE SW 5-14N-4W	.09966679
150	Continental	Mason	NW SE 5-14N-4W	.09131680
151	Continental	Mason	NE SE 5-14N-4W	.09221440
152	Sohio	Whisler	NW SW 4-14N-4W	.12136791
153	Sohio	Whisler	NE SW 4-14N-4W	.13561561
154	Continental	Seyller	NW SE 4-14N-4W	.20774813
155	Continental	Seyller	NE SE 4-14N-4W	.19249683
156	Cities Service	Seyller	NW SW 3-14N-4W	.21694756
157	Cities Service	Seyller	NE SW 3-14N-4W	.18618244
158	Carter	Hoover	NW SE 3-14N-4W	.14779474
159	Carter	Hoover	NE SE 3-14N-4W	.14420104
160	Anderson-Prichard	Balyeat	SE SW 1-14N-5W	.12410701
161	Stanolind	Reherman "A"	SW SE 1-14N-5W	.12897165
162	Stanolind	Reherman "A"	SE SE 1-14N-5W	.11109343
163	Stanolind	J. Kelly "B"	SW SW 6-14N-4W	.11016312
164	Stanolind	J. Kelly "A"	SE SW 6-14N-4W	.11678936
165	Phillips	Edmond	SW SE 6-14N-4W	.09896796
166	Phillips	Edmond	SE SE 6-14N-4W	.11494103
167	Cities Service	J. O'Brien "B"	SW SW 5-14N-4W	.11351744
168	Peppers	J. O'Brien	SE SW 5-14N-4W	.08412439
169	Continental	Mason	SW SE 5-14N-4W	.07917769
170	Continental	Mason	SE SE 5-14N-4W	.11922046
171	Sohio	Whisler	SW SW 4-14N-4W	.14424487
172	Sohio	Whisler	SE SW 4-14N-4W	.17597459
173	Continental	Seyller	SW SE 4-14N-4W	.20047309
174	Continental	Seyller	SE SE 4-14N-4W	.18939267
175	Cities Service	Seyller	SW SW 3-14N-4W	.23831209
176	Cities Service	Seyller	SE SW 3-14N-4W	.18743498
177	Carter	Hoover	SW SE 3-14N-4W	.15686137
178	Sohio	Swope	NW NE 12-14N-5W	.09701256
179	Sohio	Swope	NE NE 12-14N-5W	.13076938
180	Fox	Williams	NW NW 7-14N-4W	.13271874
181	Fox	Williams	NE NW 7-14N-4W	.12612299
182	Anderson-Prichard	Mosier	NW NE 7-14N-4W	.12083324
183	Anderson-Prichard	Mosier	NE NE 7-14N-4W	.11610446
184	Cities Service	O'Brien "A"	NW NW 8-14N-4W	.11349246
185	Peppers	M. O'Brien	NE NW 8-14N-4W	.11624032
186	Peppers	M. O'Brien	NW NE 8-14N-4W	.13691723

Tract	Operator	Lease	Description	Percentage Interest in Unit
187	Sohio	Lachenmaier	NE NE 8-14N-4W	.14034439
188	Peppers	C. O'Brien	NW NW 9-14N-4W	.17344147
189	Sinclair	O'Brien	NE NW 9-14N-4W	.21596543
190	Continental	Johnson	NW NE 9-14N-4W	.20286158
191	Continental	Johnson	NE NE 9-14N-4W	.26817485
192	Phillips	Jorgenson	NW NW 10-14N-4W	.25976910
193	Phillips	Vida	NE NW 10-14N-4W	.21662281
194	Cities Service	Odle	NW NE 10-14N-4W	.20503095
195	Allied	Kelly	SE NW 12-14N-5W	.10543862
196	Sohio	Swope	SW NE 12-14N-5W	.13140397
197	Sohio	Swope	SE NE 12-14N-5W	.12978242
198	Fox	Williams	SW NW 7-14N-4W	.12790844
199	Fox	Williams	SE NW 7-14N-4W	.12626761
200	Anderson-Prichard	Mosier	SW NE 7-14N-4W	.09545116
201	Anderson-Prichard	Mosier	SE NE 7-14N-4W	.11974637
202	Cities Service	O'Brien "A"	SW NW 8-14N-4W	.11427255
203	Peppers	M. O'Brien	SE NW 8-14N-4W	.13339804
204	Sohio	Lachenmaier	SW NE 8-14N-4W	.13951170
205	Sohio	Lachenmaier	SE NE 8-14N-4W	.14651153
206	Sinclair	Lynn	SW NW 9-14N-4W	.16988283
207	Sinclair	C. O'Brien	SE NW 9-14N-4W	.25261676
208	Phillips	Coder "B"	SW NE 9-14N-4W	.24350981
209	Phillips	Coder "A"	SE NE 9-14N-4W	.20419914
210	Phillips	Jorgenson	SW NW 10-14N-4W	.24174276
211	Phillips	Vida	SE NW 10-14N-4W	.17980933
212	Cities Service	Odle	SW NE 10-14N-4W	.22725052
213	Phillips	Struble	SE NE 10-14N-4W	.11069305
214	Allied	Mulvey	NE SW 12-14N-5W	.09615105
215	Fox	O'Brien	NW SE 12-14N-5W	.13070276
216	Fox	O'Brien	NE SE 12-14N-5W	.13306934
217	Sohio	Williams "B"	NW SE 7-14N-4W	.12862543
218	Sohio	Williams "B"	NE SW 7-14N-4W	.12465921
219	Gulf	Christner	NW SE 7-14N-4W	.12334006
220	Gulf	Christner	NE SE 7-14N-4W	.12145118
221	Peppers	Long	NW SW 8-14N-4W	.11030039
222	Peppers	Long	NE SW 8-14N-4W	.11826223
223	Phillips	Rodkey	NW SE 8-14N-4W	.09818382
224	Phillips	Rodkey	NE SE 8-14N-4W	.15040236
225	Sohio	Casey	NW SW 9-14N-4W	.16094241
226	Sohio	Casey	NE SW 9-14N-4W	.20327792
227	Sohio	Harris	NW SE 9-14N-4W	.25117490
228	Sohio	Harris	NE SE 9-14N-4W	.29798851
229	Phillips	McKinnis	NW SW 10-14N-4W	.24792743
230	Phillips	McKinnis	NE SW 10-14N-4W	.19428492
231	Phillips	Whis	NW SE 10-14N-4W	.22354287
232	Phillips	Whis	NE SE 10-14N-4W	.18622455
233	Allied	O'Brien	SW SE 12-14N-5W	.12839096
234	Allied	O'Brien	SE SE 12-14N-5W	.12916887

Tract	Operator	Lease	Description	Percentage Interest in Unit
235	Sohio	Williams "B"	SW SW 7-14N-4W	.12824415
236	Sohio	Williams "B"	SE SW 7-14N-4W	.12263009
237	Gulf	Christner	SW SE 7-14N-4W	.12105587
238	Gulf	Christner	SE SE 7-14N-4W	.12123644
239	Peppers	Long	SW SW 8-14N-4W	.13097448
240	Peppers	Long	SE SW 8-14N-4W	.11480527
241	Peppers	Fentem	SW SE 8-14N-4W	.12737859
242	Peppers	Fentem	SE SE 8-14N-4W	.13542735
243	Sohio	Casey	SW SW 9-14N-4W	.15726106
244	Sohio	Casey	SE SW 9-14N-4W	.14967047
245	Sohio	Harris	SW SE 9-14N-4W	.22981431
246	Sohio	Harris	SE SE 9-14N-4W	.30109427
247	Anderson-Prichard	McKinnis	SW SW 10-14N-4W	.23530128
248	Anderson-Prichard	McKinnis	SE SW 10-14N-4W	.21243221
249	Deep Rock	Whisler	SW SE 10-14N-4W	.22677545
250	Deep Rock	Whisler	SE SE 10-14N-4W	.17847265
251	Stanolind	Drake	NW NE 13-14N-5W	.12535604
252	Stanolind	Drake	NE NE 13-14N-5W	.10698800
253	Mid-Continent	E. Lynch	NW NW 18-14N-4W	.12919078
254	Mid-Continent	E. Lynch	NE NW 18-14N-4W	.12076872
255	Sohio	E. Lynch	NW NE 18-14N-4W	.07902011
256	Sohio	E. Lynch	NE NE 18-14N-4W	.11814020
257	Gulf	Wright	NW NW 17-14N-4W	.12184999
258	Gulf	Wright	NE NW 17-14N-4W	.12665985
259	Peppers	McCune	NW NE 17-14N-4W	.10121505
260	Peppers	McCune	NE NE 17-14N-4W	.12646921
261	Phillips	Gomer	NW NW 16-14N-4W	.14765011
262	Phillips	Gomer	NE NW 16-14N-4W	.15949091
263	Anderson-Prichard	State "A"	NW NE 16-14N-4W	.19828181
264	Anderson-Prichard	State "B"	NE NE 16-14N-4W	.25584671
265	Phillips	Gilmore	NW NW 15-14N-4W	.21910597
266	Phillips	Gilmore	NE NW 15-14N-4W	.19722999
267	Cities Service	Gilmore	NW NE 15-14N-4W	.24166913
268	Cities Service	Gilmore	NE NE 15-14N-4W	.18132131
269	Magnolia	Kibby	NW NW 14-14N-4W	.08769499
270	Stanolind	Drake	SE NE 13-14N-5W	.12660069
271	Mid-Continent	E. Lynch	SW NW 18-14N-4W	.12736325
272	Mid-Continent	E. Lynch	SE NW 18-14N-4W	.13041351
273	Sohio	E. Lynch	SW NE 18-14N-4W	.10622106
274	Sohio	E. Lynch	SE NE 18-14N-4W	.07242908
275	Gulf	Wright	SW NW 17-14N-4W	.12431562
276	Gulf	Wright	SE NW 17-14N-4W	.12442694
277	Peppers	McCune	SW NE 17-14N-4W	.13412116
278	Peppers	McCune	SE NE 17-14N-4W	.13260172
279	Phillips	Gomer	SW NW 16-14N-4W	.14518712
280	Phillips	Gomer	SE NW 16-14N-4W	.15391279
281	Anderson-Prichard	State "A"	SW NE 16-14N-4W	.19517896
282	Anderson-Prichard	State "B"	SE NE 16-14N-4W	.22096768

Tract	Operator	Lease	Description	Percentage Interest in Unit
283	Phillips	Ralph	SW NW 15-14N-4W	.23472716
284	Phillips	Ralph	SE NW 15-14N-4W	.23593675
285	Cities Service	Gilmore	SW NE 15-14N-4W	.25402269
286	Cities Service	Gilmore	SE NE 15-14N-4W	.18311816
287	Peppers	McKinnis "A"	NE SE 13-14N-5W	.12919078
288	Peppers	McKinnis	NW SW 18-14N-4W	.12583812
289	Peppers	McKinnis	NE SW 18-14N-4W	.12736325
290	Anderson-Prichard	Cypher	NW SE 18-14N-4W	.12278786
291	Anderson-Prichard	Cypher	NE SE 18-14N-4W	.12180159
292	Sohio	K. Lynch	NW SW 17-14N-4W	.11742053
293	Sohio	K. Lynch	NE SW 17-14N-4W	.14140935
294	Peppers	McCune	NW SE 17-14N-4W	.10973912
295	Peppers	McCune	NE SE 17-14N-4W	.13540963
296	Sohio	State	NW SW 16-14N-4W	.15239642
297	Phillips	Bluff "D"	NE SW 16-14N-4W	.16609630
298	Phillips	Bluff "D"	NW SE 16-14N-4W	.18161932
299	Phillips	Bluff "D"	NE SE 16-14N-4W	.19867624
300	Phillips	Whisler	NW SW 15-14N-4W	.25408054
301	Phillips	Whisler	NE SW 15-14N-4W	.21900254
302	Stanolind	Fleming	NW SE 15-14N-4W	.20701186
303	Sinclair	Boling	NE SE 15-14N-4W	.20749964
304	Peppers	McKinnis "A"	SE SE 13-14N-5W	.12210437
305	Peppers	McKinnis	SW SW 18-14N-4W	.11480750
306	Peppers	McKinnis	SE SW 18-14N-4W	.12660069
307	Anderson-Prichard	Cypher	SW SE 18-14N-4W	.12507556
308	Anderson-Prichard	Cypher	SE SE 18-14N-4W	.12535604
309	Anderson-Prichard	Cypher	SW SW 17-14N-4W	.12632853
310	Anderson-Prichard	Cypher	SE SW 17-14N-4W	.12535604
311	Peppers	McCune	SW SE 17-14N-4W	.11688372
312	Peppers	McCune	SE SE 17-14N-4W	.13321397
313	Sohio	State	SW SW 16-14N-4W	.15866348
314	Phillips	Bluff "D"	SE SW 16-14N-4W	.20974658
315	Phillips	Bluff "D"	SW SE 16-14N-4W	.19430683
316	Phillips	Bluff "E"	SE SE 16-14N-4W	.23530566
317	Phillips	Whisler	SW SW 15-14N-4W	.20170371
318	Phillips	Whisler	SE SW 15-14N-4W	.23535825
319	Stanolind	Fleming	SW SE 15-14N-4W	.17388849
320	Sinclair	Boling	SE SE 15-14N-4W	.21377853
321	Stanolind	Sellers	SW SW 14-14N-4W	.14676659
322	Sohio	Silberberger	NE NE 24-14N-5W	.10093710
323	Peppers	Waller	NW NW 19-14N-4W	.13117608
324	Peppers	Waller	NE NW 19-14N-4W	.12176234
325	Peppers	Winter	NW NE 19-14N-4W	.12782780
326	Peppers	Winter	NE NE 19-14N-4W	.10459522
327	Sohio	Williams "A"	NW NW 20-14N-4W	.11888962
328	Sohio	Williams "A"	NE NW 20-14N-4W	.11718062
329	Gulf	Messenbaugh	NW NE 20-14N-4W	.12891468

Tract	Operator	Lease	Description	Percentage Interest in Unit
330	Gulf	Messenbaugh	NE NE 20-14N-4W	.13789016
331	Sohio	King "B"	NW NW 21-14N-4W	.16700349
332	Sohio	King "B"	NE NW 21-14N-4W	.20122689
333	Sohio	King "A"	NW NE 21-14N-4W	.18334167
334	Sohio	King "A"	NE NE 21-14N-4W	.21243747
335	Phillips	Shinn	NW NW 22-14N-4W	.18679951
336	Phillips	Shinn	NE NW 22-14N-4W	.21849110
337	Anderson-Prichard	Davis	NW NE 22-14N-4W	.18802662
338	Anderson-Prichard	Davis	NE NE 22-14N-4W	.13247770
339	Fox	Surbeck	NW NW 23-14N-4W	.11203306
340	Sohio	Waller	SE NE 24-14N-5W	.11393650
341	Peppers	Waller	SW NW 19-14N-4W	.12888838
342	Peppers	Waller	SE NW 19-14N-4W	.12327871
343	Peppers	Winter	SW NE 19-14N-4W	.11683741
344	Peppers	Winter	SE NE 19-14N-4W	.10970304
345	Sohio	Williams "A"	SW NW 20-14N-4W	.11336788
346	Sohio	Williams "A"	SE NW 20-14N-4W	.12383762
347	Gulf	Messenbaugh	SW NE 20-14N-4W	.12868328
348	Gulf	Messenbaugh	SE NE 20-14N-4W	.14005076
349	Sohio	King "B"	SW NW 21-14N-4W	.17005813
350	Sohio	King "B"	SE NW 21-14N-4W	.20373853
351	Sohio	King "A"	SW NE 21-14N-4W	.19474070
352	Sohio	King "A"	SE NE 21-14N-4W	.19996471
353	Phillips	Shinn	SW NW 22-14N-4W	.19830810
354	Phillips	Shinn	SE NW 22-14N-4W	.19116015
355	Anderson-Prichard	Davis	SW NE 22-14N-4W	.16338525
356	Sohio	Waller	NE SE 24-14N-5W	.13916110
357	Chudacoff	McCain	NW SW 19-14N-4W	.12355043
358	Fox	Peterson	NE SW 19-14N-4W	.13149162
359	Mid-Continent	Peterson	NW SE 19-14N-4W	.11592282
360	Mid-Continent	Peterson	NE SE 19-14N-4W	.12225879
361	Stanolind	Briscoe	NW SW 20-14N-4W	.08618121
362	Sohio	Ward	NE SW 20-14N-4W	.13149162
363	Sohio	Ward	NW SE 20-14N-4W	.12736325
364	Stanolind	King	NE SE 20-14N-4W	.13422634
365	West Edmond	King	NW SW 21-14N-4W	.15441065
366	West Edmond	King	NE SW 21-14N-4W	.16869954
367	Continental	Casey	NW SE 21-14N-4W	.17093465
368	Continental	Casey	NE SE 21-14N-4W	.17382713
369	Peppers	Van Bibber	NW SW 22-14N-4W	.17737043
370	Peppers	Van Bibber	NE SW 22-14N-4W	.17754354
371	Peppers	Lowry	NW SE 22-14N-4W	.15036292
372	Sohio	Funk	SE SE 24-14N-5W	.13379247
373	Sohio	McCain	SW SW 19-14N-4W	.13609331
374	Fox	Peterson	SE SW 19-14N-4W	.14046885
375	Mid-Continent	Peterson	SW SE 19-14N-4W	.13103584
376	Mid-Continent	Peterson	SE SE 19-14N-4W	.12966673
377	Stanolind	Briscoe	SW SW 20-14N-4W	.09319779

Tract	Operator	Lease	Description	Percentage Interest in Unit
378	Sohio	Ward	SE SW 20-14N-4W	.13075535
379	Sohio	Ward	SW SE 20-14N-4W	.12805219
380	Stanolind	King	SE SE 20-14N-4W	.13305181
381	West Edmond	King	SW SW 21-14N-4W	.14496799
382	West Edmond	King	SE SW 21-14N-4W	.14768956
383	Continental	Casey	SW SE 21-14N-4W	.14809056
384	Continental	Casey	SE SE 21-14N-4W	.15986869
385	Peppers	Lyons	SW SW 22-14N-4W	.15279085
386	Peppers	Lyons	SE SW 22-14N-4W	.14647997
387	Peppers	Lowry	SW SE 22-14N-4W	.06368023
388	Stanolind	K. Young	NE NE 25-14N-5W	.08870464
389	Sohio	M. Leonard	NW NW 30-14N-4W	.13992805
390	Sohio	M. Leonard "B"	NE NW 30-14N-4W	.14298269
391	Fox	Briscoe	NW NE 30-14N-4W	.13616781
392	Sohio	Briscoe "B"	NE NE 30-14N-4W	.13075535
393	Sohio	Beam	NW NW 29-14N-4W	.12777960
394	Sohio	Beam	NE NW 29-14N-4W	.12754732
395	Sohio	Cook	NW NE 29-14N-4W	.12621502
396	Sohio	Baker	NE NE 29-14N-4W	.14005076
397	Stanolind	Crookham	NW NW 28-14N-4W	.14935055
398	Stanolind	Crookham	NE NW 28-14N-4W	.14372772
399	Sohio	McDowell	NW NE 28-14N-4W	.13543592
400	Anderson	Patten	NE NE 28-14N-4W	.13112349
401	Stanolind	Pauly	NW NW 27-14N-4W	.12641925
402	Russell	Pauly	NE NW 27-14N-4W	.12686364
403	Stanolind	Kirchner	NW NE 27-14N-4W	.03993125
404	Stanolind	K. Young	SE NE 25-14N-5W	.10427344
405	Sohio	M. Leonard	SW NW 30-14N-4W	.13803916
406	Sohio	M. Leonard "B"	SE NW 30-14N-4W	.14718995
407	Sohio	Briscoe 509	SW NE 30-14N-4W	.13738178
408	Sohio	Briscoe	SE NE 30-14N-4W	.12984816
409	Sohio	Beam	SW NW 29-14N-4W	.12504926
410	Sohio	Beam	SE NW 29-14N-4W	.06908018
411	Wescott	Cook	SW NE 29-14N-4W	.02883723
412	Sohio	Baker	SE NE 29-14N-4W	.09816227
413	Stanolind	Crookham	SW NW 28-14N-4W	.15191128
414	Stanolind	Crookham	SE NW 28-14N-4W	.14302652
415	Sohio	McDowell "D"	SW NE 28-14N-4W	.15175482
416	Anderson	Patten	SE NE 28-14N-4W	.12767880
417	Stanolind	Pauly	SW NW 27-14N-4W	.11049479
418	Russell	Pauly	SE NW 27-14N-4W	.10407872
419	Stanolind	Kirchner	SW NE 27-14N-4W	.06699287
420	Stanolind	Hunsicker	NE SE 25-14N-5W	.13839415
421	Skelly	Spivey	NW SW 30-14N-4W	.14450782
422	Skelly	Spivey	NE SW 30-14N-4W	.14481460
423	Sohio	Cargill	NW SE 30-14N-4W	.13262670
424	Sohio	Cargill	NE SE 30-14N-4W	.13614239

Tract	Operator	Lease	Description	Percentage Interest in Unit
425	Fox	Arnold	NW SW 29-14N-4W	.01117552
426	Fox	Arnold	NE SW 29-14N-4W	.07050208
427	Stanolind	Banks	NW SE 29-14N-4W	.05887597
428	Stanolind	Banks	NE SE 29-14N-4W	.02138688
429	Peppers	Ella McDowell	NW SW 28-14N-4W	.08235588
430	Fox	McDowell	NE SW 28-14N-4W	.10421020
431	Peppers	Deal	NW SE 28-14N-4W	.12097348
432	Anderson-Prichard	Deal	NE SE 28-14N-4W	.11539449
433	Sohio	Patten	NW SW 27-14N-4W	.09063813
434	Stanolind	Patten	NE SW 27-14N-4W	.10703695
435	Stanolind	Hunsicker	SE SE 25-14N-5W	.11402117
436	Skelly	Spivey	SW SW 30-14N-4W	.14374964
437	Skelly	Spivey	SE SW 30-14N-4W	.14474448
438	Sohio	Cargill	SW SE 30-14N-4W	.10817212
439	Sohio	Cargill	SE SE 30-14N-4W	.01084683
440	Peppers	Arnold	SW SW 29-14N-4W	.11643353
441	Peppers	Arnold	SE SW 29-14N-4W	.12874083
442	Stanolind	Banks	SW SE 29-14N-4W	.09929364
443	Stanolind	Banks	SE SE 29-14N-4W	.06010494
444	Peppers	Ella McDowell	SW SW 28-14N-4W	.06751600
445	Chudacoff	McDowell	SE SW 28-14N-4W	.01851193
446	Peppers	Deal	SW SE 28-14N-4W	.03981375
447	Anderson-Prichard	Dillon	SE SE 28-14N-4W	.06930014
448	Sohio	Patten	SW SW 27-14N-4W	.08147787
449	Sohio	Harper	NW NE 31-14N-4W	.14257949
450	Sohio	Harper	NE NE 31-14N-4W	.13885432
451	Stanolind	J. Young	NW NW 32-14N-4W	.14481460
452	Champlin	Young	NE NW 32-14N-4W	.14521779
453	Sohio	K. Young	NW NE 32-14N-4W	.14805769
454	Sohio	K. Young	NE NE 32-14N-4W	.14176896
455	Atkinson	French	NW NW 33-14N-4W	.15428092
456	Peppers	French	NE NW 33-14N-4W	.13311009
457	Peppers	Graham	NW NE 33-14N-4W	.10907737
458	Peppers	Williams	NE NE 33-14N-4W	.02254910
459	Fox	Spivey	SW NW 31-14N-4W	.14222889
460	Sohio	Spivey	SE NW 31-14N-4W	.15109042
461	Sohio	Harper	SW NE 31-14N-4W	.16111772
462	Sohio	Harper	SE NE 31-14N-4W	.15194064
463	Stanolind	J. Young	SW NW 32-14N-4W	.15270583
464	Champlin	J. Young	SE NW 32-14N-4W	.15121313
465	Sohio	J. Young	SW NE 32-14N-4W	.15175482
466	Sohio	J. Young	SE NE 32-14N-4W	.10440408
467	Atkinson	French	SW NW 33-14N-4W	.14538565
468	Peppers	French	SE NW 33-14N-4W	.13176791
469	Peppers	Earl McDowell	SW NE 33-14N-4W	.12419028
470	Peppers	Earl McDowell	SE NE 33-14N-4W	.11531122
471	Champlin	Cargill "B"	SW NW 34-14N-4W	.10332930

Tract	Operator	Lease	Description	Percentage Interest in Unit
472	Peppers	Meeker	NE SW 31-14N-4W	.15559569
473	Sohio	Ringer	NW SE 31-14N-4W	.16879596
474	Sohio	Ringer	NE SE 31-14N-4W	.15690281
475	Fox-Schmitz	Wagner	NW SW 32-14N-4W	.15647220
476	Fox-Schmitz	Wagner	NE SW 32-14N-4W	.15922445
477	Peppers	Young	NW SE 32-14N-4W	.16054623
478	McMahon	Young	NE SE 32-14N-4W	.14733793
479	West Edmond	Flynn	NW SW 33-14N-4W	.13576462
480	West Edmond	Flynn	NE SW 33-14N-4W	.10280778
481	Sohio	McDowell 511	NW SE 33-14N-4W	.10565132
482	Sohio	McDowell "B"	NE SE 33-14N-4W	.12838001
483	Champlin	Cargill "A"	NW SW 34-14N-4W	.11801789
484	Champlin	Cargill "A"	NE SW 34-14N-4W	.04335208
485	Amerada	Meeker	SW SW 31-14N-4W	.11218133
486	Peppers	Meeker	SE SW 31-14N-4W	.07378037
487	Magnolia	Ringer	SW SE 31-14N-4W	.16951031
488	Magnolia	Ringer	SE SE 31-14N-4W	.16707799
489	Fox-Schmitz	Wagner	SW SW 32-14N-4W	.16788877
490	Fox-Schmitz	Wagner	SE SW 32-14N-4W	.16784713
491	Peppers	Young	SW SE 32-14N-4W	.16182243
492	McMahon	Burns	SE SE 32-14N-4W	.15744513
493	Peppers	Flynn	SW SW 33-14N-4W	.16479161
494	Peppers	Flynn	SE SW 33-14N-4W	.13433171
495	Fox	McDowell	SW SE 33-14N-4W	.13399845
496	Sohio	McDowell "A"	SE SE 33-14N-4W	.13520803
497	Champlin	Cargill "A"	SW SW 34-14N-4W	.11722424
498	Champlin	Cargill "A"	SE SW 34-14N-4W	.03271020
499	Champlin	Cargill "C"	SW SE 34-14N-4W	.02282476
500	Chudacoff	Meeker	NE NW 6-13N-4W	.14630467
501	Sinclair	Ringer Tract 1	NW NE 6-13N-4W	.15910174
502	Sinclair	Ringer Tract 1	NE NE 6-13N-4W	.17536103
503	Champlin	Genzer	NW NW 5-13N-4W	.17839376
504	Sohio	Genzer	NE NW 5-13N-4W	.17661269
505	West Edmond	Lenhart	NW NE 5-13N-4W	.17303827
506	West Edmond	Lenhart	NE NE 5-13N-4W	.16762143
507	Fox	Keefer	NW NW 4-13N-4W	.15874237
508	Sohio	Keefer	NE NW 4-13N-4W	.14478392
509	Sohio	Habben	NW NE 4-13N-4W	.13892006
510	Sohio	Habben 512	NE NE 4-13N-4W	.13768418
511	Champlin	Kuehne	NW NW 3-13N-4W	.11622454
512	Champlin	Kuehne	NE NW 3-13N-4W	.05048108
513	Champlin	Smith	NW NE 3-13N-4W	.04205874
514	Sinclair	Ringer Tract 2	SW NE 6-13N-4W	.14816726
515	Sinclair	Ringer Tract 2	SE NE 6-13N-4W	.16931310
516	Champlin	Genzer	SW NW 5-13N-4W	.18216495
517	Sohio	Genzer	SE NW 5-13N-4W	.18138705
518	West Edmond	Keefer Comm.	SW NE 5-13N-4W	.17455026

Tract	Operator	Lease	Description	Percentage Interest in Unit
519	West Edmond	Keefer Comm.	SE NE 5-13N-4W	.17545569
520	Peppers	Keefer	SW NW 4-13N-4W	.17079134
521	Peppers	Keefer	SE NW 4-13N-4W	.15159125
522	Champlin	Tegtmeyer	SW NE 4-13N-4W	.13918739
523	Champlin	Tegtmeyer "B"	SE NE 4-13N-4W	.15452635
524	Champlin	Kuehne	SW NW 3-13N-4W	.11574444
525	Champlin	Kuehne	SE NW 3-13N-4W	.03549761
526	Champlin	Smith	SW NE 3-13N-4W	.03245479
527	Peppers	Heidbrink	NW SE 6-13N-4W	.13325341
528	Peppers	Heidbrink	NE SE 6-13N-4W	.14879396
529	Mid-Continent	A. Q. Lynch	NW SW 5-13N-4W	.17927246
530	Mid-Continent	A. Q. Lynch	NE SW 5-13N-4W	.18473970
531	West Edmond	Keefer	NW SE 5-13N-4W	.18213646
532	West Edmond	Keefer	NE SE 5-13N-4W	.18126872
533	Magnolia	Lynch Est.	NW SW 4-13N-4W	.17923433
534	Magnolia	Lynch Est.	NE SW 4-13N-4W	.17172351
535	Champlin	D. Barber	NW SE 4-13N-4W	.13382314
536	Champlin	D. Barber	NE SE 4-13N-4W	.13632558
537	Champlin	H. Barber	NW SW 3-13N-4W	.13895293
538	Champlin	H. Barber	NE SW 3-13N-4W	.07077140
539	Champlin	Bierschenk	NW SE 3-13N-4W	.06658514
540	Stanolind	Heidbrink	SE SE 6-13N-4W	.14361378
541	Mid-Continent	A. Q. Lynch	SW SW 5-13N-4W	.16519788
542	Mid-Continent	A. Q. Lynch	SE SW 5-13N-4W	.18300421
543	Sohio	Hassell	SW SE 5-13N-4W	.18621487
544	Fox	Hassell	SE SE 5-13N-4W	.18703178
545	Magnolia	Lynch Est.	SW SW 4-13N-4W	.18267114
546	Magnolia	Lynch Est.	SE SW 4-13N-4W	.16564928
547	Champlin	D. Barber	SW SE 4-13N-4W	.13811805
548	Champlin	D. Barber	SE SE 4-13N-4W	.12208841
549	Champlin	H. Barber	SW SW 3-13N-4W	.09814726
550	Champlin	H. Barber	SE SW 3-13N-4W	.11374226
551	Champlin	Bierschenk	SW SE 3-13N-4W	.04273292
552	Stanolind	Shinn	NW NW 8-13N-4W	.14239283
553	Peppers	Shinn	NE NW 8-13N-4W	.18246516
554	Peppers	Barber	NW NE 8-13N-4W	.18560745
555	Sohio	Barber	NE NE 8-13N-4W	.19377216
556	Sohio	Gray	NW NW 9-13N-4W	.18478309
557	Sohio	Hardy	NE NW 9-13N-4W	.18126872
558	Anderson-Prichard	Berry	NW NE 9-13N-4W	.16338262
559	Anderson-Prichard	Berry	NE NE 9-13N-4W	.12897165
560	Champlin	T. Sitlington	NW NW 10-13N-4W	.06753138
561	Champlin	T. Sitlington	NE NW 10-13N-4W	.07350360
562	Champlin	S. Sitlington	NW NE 10-13N-4W	.11851487
563	Peppers	Shinn	SE NW 8-13N-4W	.18505525
564	Peppers	Barber	SW NE 8-13N-4W	.18332852
565	Sohio	Barber	SE NE 8-13N-4W	.18734294

Tract	Operator	Lease	Description	Percentage Interest in Unit
566	Sohio	Gray	SW NW 9-13N-4W	.16034471
567	Sohio	Hardy	SE NW 9-13N-4W	.17210479
568	Champlin	Conneway	SW NE 9-13N-4W	.15813888
569	Champlin	Conneway	SE NE 9-13N-4W	.15121313
570	Champlin	T. Sitlington	SW NW 10-13N-4W	.12350679
571	Champlin	T. Sitlington	SE NW 10-13N-4W	.11133867
572	Champlin	S. Sitlington	SW NE 10-13N-4W	.06147814
573	Champlin	S. Sitlington	SE NE 10-13N-4W	.02682126
574	Anderson-Prichard	Mariner	NE SW 8-13N-4W	.17728497
575	Gulf	P. Paul	NW SE 8-13N-4W	.17814834
576	Gulf	A. Paul	NE SE 8-13N-4W	.18591861
577	Sohio	Hardy	NW SW 9-13N-4W	.18387196
578	Sohio	Hardy	NE SW 9-13N-4W	.17333629
579	Anderson-Prichard	Crookham "A"	NW SE 9-13N-4W	.17009845
580	Anderson-Prichard	Crookham "A"	NE SE 9-13N-4W	.15364107
581	Champlin	Meeker	NW SW 10-13N-4W	.12282423
582	Champlin	Meeker	NE SW 10-13N-4W	.13057129
583	West Edmond	Meeker	NW SE 10-13N-4W	.13852300
584	West Edmond	Meeker	NE SE 10-13N-4W	.11283946
585	Champlin	Collett	NW SW 11-13N-4W	.02778167
586	Anderson-Prichard	Mariner	SE SW 8-13N-4W	.17642161
587	Gulf	A. Paul	SW SE 8-13N-4W	.17383152
588	Gulf	A. Paul	SE SE 8-13N-4W	.17955952
589	Sohio	Hardy	SW SW 9-13N-4W	.18245727
590	Sohio	Hardy	SE SW 9-13N-4W	.17763119
591	Anderson-Prichard	Crookham "A"	SW SE 9-13N-4W	.17102230
592	Anderson-Prichard	Crookham "A"	SE SE 9-13N-4W	.15647220
593	Champlin	Meeker	SW SW 10-13N-4W	.09960601
594	Champlin	Meeker	SE SW 10-13N-4W	.13547537
595	West Edmond	Meeker	SW SE 10-13N-4W	.12833618
596	Mid-Continent	Jones	NE NW 17-13N-4W	.12663018
597	Anderson-Prichard	Crookham	NW NE 17-13N-4W	.17113186
598	Anderson-Prichard	Crookham	NE NE 17-13N-4W	.17685548
599	Phillips	Bluff "A"	NW NW 16-13N-4W	.17505425
600	Phillips	Bluff "A"	NE NW 16-13N-4W	.17198646
601	Phillips	Bluff "B"	NW NE 16-13N-4W	.13903839
602	Phillips	Bluff "B"	NE NE 16-13N-4W	.12177786
603	Midstates	McClure	NW NW 15-13N-4W	.13313508
604	Midstates	McClure	NE NW 15-13N-4W	.11234861
605	Champlin	Johnston	NW NE 15-13N-4W	.04372888
606	Mid-Continent	Jones	SE NW 17-13N-4W	.12781027
607	Anderson-Prichard	Crookham	SW NE 17-13N-4W	.15745828
608	Anderson-Prichard	Crookham	SE NE 17-13N-4W	.17113186
609	Phillips	Bluff "A"	SW NW 16-13N-4W	.17404626
610	Phillips	Bluff "A"	SE NW 16-13N-4W	.17135537
611	Phillips	Bluff "B"	SW NE 16-13N-4W	.15776739
612	Phillips	Bluff "B"	SE NE 16-13N-4W	.14836447

Tract	Operator	Lease	Description	Percentage Interest in Unit
613	Midstates	McClure	SW NW 15-13N-4W	.14300022
614	Midstates	McClure	SE NW 15-13N-4W	.11604311
615	Champlin	Johnston	SW NE 15-13N-4W	.01153489
616	Stanolind	Lowenstein	NE SW 17-13N-4W	.11800156
617	Phillips	Crookham	NW SE 17-13N-4W	.16646444
618	Phillips	Crookham	NE SE 17-13N-4W	.17113186
619	Magnolia	Motter Heirs	NW SW 16-13N-4W	.16775072
620	Magnolia	Motter Heirs	NE SW 16-13N-4W	.16560107
621	Phillips	Bluff "C"	NW SE 16-13N-4W	.14539344
622	Phillips	Bluff "C"	NE SE 16-13N-4W	.15303739
623	Stanolind	West	NW SW 15-13N-4W	.13584024
624	Stanolind	West	NE SW 15-13N-4W	.11133633
625	Phillips	Crookham	SW SE 17-13N-4W	.16904138
626	Phillips	Crookham	SE SE 17-13N-4W	.17100038
627	Magnolia	Motter Heirs	SW SW 16-13N-4W	.16423810
628	Magnolia	Motter Heirs	SE SW 16-13N-4W	.16140258
629	Phillips	Bluff "C"	SW SE 16-13N-4W	.15143226
630	Phillips	Bluff "C"	SE SE 16-13N-4W	.14400821
631	Stanolind	West	SW SW 15-13N-4W	.11860690
632	Stanolind	West	SE SW 15-13N-4W	.04690716
633	Tide Water	Motter	NW NE 20-13N-4W	.17642161
634	Tide Water	Motter	NE NE 20-13N-4W	.16865133
635	Anderson-Prichard	Perdue	NW NW 21-13N-4W	.15916309
636	Anderson-Prichard	Perdue	NE NW 21-13N-4W	.15042427
637	Magnolia	Holloway	NW NE 21-13N-4W	.13759214
638	Magnolia	Holloway	NE NE 21-13N-4W	.14253567
639	Peppers	Anderson	NW NW 22-13N-4W	.12499930
640	Peppers	Anderson	NE NW 22-13N-4W	.08097323
641	Stanolind	Edney	SE NW 20-13N-4W	.17779773
642	Tide Water	Motter	SW NE 20-13N-4W	.17779773
643	Tide Water	Motter	SE NE 20-13N-4W	.17259125
644	Anderson-Prichard	Perdue	SW NW 21-13N-4W	.15959259
645	Anderson-Prichard	Perdue	SE NW 21-13N-4W	.14710054
646	Magnolia	Holloway	SW NE 21-13N-4W	.13824514
647	Magnolia	Holloway	SE NE 21-13N-4W	.13356019
648	Peppers	Anderson	SW NW 22-13N-4W	.12155198
649	Peppers	Anderson	SE NW 22-13N-4W	.08679327
650	Gulf	Streeter	NW SE 20-13N-4W	.17998025
651	Gulf	Streeter	NE SE 20-13N-4W	.18057627
652	Gulf	Flynn	NW SW 21-13N-4W	.15481384
653	Gulf	Flynn	NE SW 21-13N-4W	.14647559
654	Stanolind	Parman "A"	NW SE 21-13N-4W	.13047575
655	Stanolind	Parman "A"	NE SE 21-13N-4W	.12255120
656	Phillips	Halmbacher	NW SW 22-13N-4W	.12813239
657	Phillips	Halmbacher	NE SW 22-13N-4W	.03135375
658	Gulf	Streeter	SW SE 20-13N-4W	.17093465
659	Gulf	Streeter	SE SE 20-13N-4W	.18797403
660	Gulf	Flynn	SW SW 21-13N-4W	.17372195

Tract	Operator	Lease	Description	Percentage Interest in Unit
661	Gulf	Flynn	SE SW 21-13N-4W	.14584888
662	Stanolind	Parman "A"	SW SE 21-13N-4W	.14527039
663	Stanolind	Parman "A"	SE SE 21-13N-4W	.14647997
664	Phillips	Halmbacher	SW SW 22-13N-4W	.12995773
665	Magnolia	Lay	NW NE 29-13N-4W	.13508532
666	Magnolia	Lay	NE NE 29-13N-4W	.19091911
667	Magnolia	Talbot	NW NW 28-13N-4W	.18580204
668	Magnolia	Talbot	NE NW 28-13N-4W	.17654432
669	Stanolind	Parman "B"	NW NE 28-13N-4W	.17817901
670	Stanolind	Parman "B"	NE NE 28-13N-4W	.13382314
671	Stanolind	Parman "C"	NW NW 27-13N-4W	.05387596
672	Magnolia	Lay	SW NE 29-13N-4W	.19537442
673	Magnolia	Lay	SE NE 29-13N-4W	.18916609
674	Magnolia	Talbot	SW NW 28-13N-4W	.17404626
675	Magnolia	Talbot	SE NW 28-13N-4W	.15151115
676	Stanolind	Parman "B"	SW NE 28-13N-4W	.15187052
677	Stanolind	Parman "B"	SE NE 28-13N-4W	.12351537
678	Phillips	Luf	NE SW 29-13N-4W	.14752321
679	Phillips	Lufkin	NW SE 29-13N-4W	.19521402
680	Phillips	Lufkin	NE SE 29-13N-4W	.18686524
681	Phillips	Stinchcomb	NW SW 28-13N-4W	.17597459
682	Cities Service	Stinchcomb "A"	NE SW 28-13N-4W	.15650902
683	Cities Service	Stinchcomb "C"	NW SE 28-13N-4W	.16207311
684	Cities Service	Stinchcomb "D"	NE SE 28-13N-4W	.13837312
685	Stanolind	Replogle "A"	NW SW 27-13N-4W	.01639077
686	Phillips	Lufkin	SW SE 29-13N-4W	.18802662
687	Phillips	Lufkin	SE SE 29-13N-4W	.20695314
688	Phillips	Stinchcomb	SW SW 28-13N-4W	.20489071
689	Cities Service	Stinchcomb "A"	SE SW 28-13N-4W	.19315422
690	Cities Service	Stinchcomb "B"	SW SE 28-13N-4W	.18090935
691	Cities Service	Emerson "B"	SE SE 28-13N-4W	.18229424
692	Stanolind	Replogle "B"	SW SW 27-13N-4W	.15708226
693	Phillips	Orphanage	NW NE 32-13N-4W	.18958681
694	Phillips	Orphanage	NE NE 32-13N-4W	.20630189
695	Phillips	Piersol	NW NW 33-13N-4W	.18643575
696	Phillips	Piersol	NE NW 33-13N-4W	.19340840
697	Stanolind	Urschel	NW NE 33-13N-4W	.15887648
698	Stanolind	Urschel	NE NE 33-13N-4W	.16198546
699	Midstates	Anderson Unit	NW NW 34-13N-4W	.13186666
700	Phillips	Orphanage	SE NE 32-13N-4W	.19319804
701	Phillips	Piersol	SW NW 33-13N-4W	.20730988
702	Phillips	Piersol	SE NW 33-13N-4W	.17351159
703	Stanolind	Urschel	SW NE 33-13N-4W	.15849256
704	Stanolind	Urschel	SE NE 33-13N-4W	.14974059
705	Midstates	Anderson	SW NW 34-13N-4W	.13760266
706	Magnolia	Reust	NE SE 32-13N-4W	.18158426
707	Stanolind	Dietz "A"	NW SW 33-13N-4W	.19614312
708	Phillips	Specht	NE SW 33-13N-4W	.18637440

Tract	Operator	Lease	Description	Percentage Interest in Unit
709	Magnolia	Whetstone	NW SE 33-13N-4W	.15605323
710	Stanolind	Y.M.C.A.	NE SE 33-13N-4W	.12949318
711	Stanolind	Shellenberger	NW SW 34-13N-4W	.11957106
712	Stanolind	Dietz "B"	SW SW 33-13N-4W	.18000654
713	Phillips	Specht	SE SW 33-13N-4W	.17544298
714	Magnolia	Whetstone Unit	SW SE 33-13N-4W	.14470942
715	Stanolind	Y.M.C.A. Unit	SE SE 33-13N-4W	.12137230
716	Stanolind	Gaylord	NE NE 5-12N-4W	.14727573
717	Deep Rock	Tolbert	NW NW 4-12N-4W	.18965693
718	Deep Rock	Tolbert	NE NW 4-12N-4W	.16107389
719	Champlin	Campbell	NW NE 4-12N-4W	.12791545
720	Stanolind	Evans	NE NE 4-12N-4W	.11823877
721	Stanolind	Gaylord	SE NE 5-12N-4W	.14556840
722	Deep Rock	Tolbert	SW NW 4-12N-4W	.17255663
723	Deep Rock	Tolbert	SE NW 4-12N-4W	.14529668
724	Champlin	Campbell	SW NE 4-12N-4W	.12513691
725	Stanolind	Evans Unit	SE NE 4-12N-4W	.11729213
726	Stanolind	Gaylord	NE SE 5-12N-4W	.15081870
727	British-American	Tom Tom Ranch	NW SW 4-12N-4W	.16651703
728	British-American	Tom Tom Ranch	NE SW 4-12N-4W	.16803558
729	Magnolia	Twin Lakes	NW SE 4-12N-4W	.12261694
730	Magnolia	Twin Lakes	NE SE 4-12N-4W	.10519101
731	Stanolind	Gaylord	SE SE 5-12N-4W	.14889914
732	British-American	Tom Tom Ranch	SW SW 4-12N-4W	.16772223
733	British-American	Tom Tom Ranch	SE SW 4-12N-4W	.18040097
734	Phillips	Mee	SW SE 4-12N-4W	.12412892
735	Phillips	Airport	NE NE 8-12N-4W	.11268104
736	Stanolind	Harris	NW NW 9-12N-4W	.15462295
737	Phillips	Dole	NE NW 9-12N-4W	.16812236
738	Stanolind	Halbert	NW NE 9-12N-4W	.15812881
739	Sinclair	Clausewitz	NE NE 9-12N-4W	.14008144
740	Magnolia	Housel	NW NW 10-12N-4W	.14963541
741	Magnolia	Housel	SW NW 10-12N-4W	.13473472
742	Magnolia	Kibby	SW NW 14-14N-4W	.09961375
743	Stanolind	Kirchner	NW SE 27-14N-4W	.04015018
744	R. Olsen	Mee	SE SE 4-12N-4W	.12737202
745	Stanolind	Shellenberger "B"	SW SW 3-12N-4W	.04280211
746	Magnolia	Housel	NE NW 10-12N-4W	.10162925
747	Stanolind	Halbert "B"	SW NE 9-12N-4W	.17750848
748	Sinclair	Clausewitz	SE NE 9-12N-4W	.15778697
				100.00000000

EXHIBIT "C"

ACCOUNTING PROCEDURE

I.

DEVELOPMENT AND OPERATING CHARGES

Subject to the limitations herein contained, the costs and expenses to be charged as Unit Expense under the Plan of Unitization for the West Edmond Hunton Lime Unit shall include amounts expended by Unit Operator for the following:

(1) Materials, equipment and supplies purchased for use on the Unit Area or for the development and operation thereof. In so far as it is practical and consistent with efficient and economical operation, only such materials shall be purchased for the Unit Area as are required for immediate use and the accumulation of warehouse stocks on the Unit Area shall be avoided, unless authorized by the Operating Committee.

(2) Moving materials to the Unit Area from railway receiving point or from nearest reliable supply store.

(3) Moving surplus materials from the Unit Area to outside vendees, if sold f. o. b. destination.

(4) The salaries and wages or other compensation of employees of Unit Operator who perform duties for Unit Operator only on, or in connection with the development and operation of, the Unit Area, including all personnel up to and including the operating general manager of the Unit Area, together with so-called "Social Security" taxes and any and all other taxes or governmental charges imposed by governmental authority, whether federal, state or local, and payable by Unit Operator upon or in respect of such salaries, wages or other compensation.

(5) The acquisition, maintenance and operation of camp facilities, warehouse facilities and office facilities on, or in connection with the development and operation of, the Unit Area and the acquisition of which is authorized or approved by the Operating Committee, all such facilities to be used exclusively in connection with operations conducted pursuant to the Plan of Unitization.

(6) Trucking, teaming and like services required in the conduct of operations pursuant to the Plan of Unitization.

(7) Engineering, geological and other technical services obtained from outside sources with the approval of the Operating Committee.

(8) Use of and service by Unit Operator's exclusively owned equipment and utilities, as provided in Section II entitled "Basis of Charges to Unit Expense".

(9) Damage or losses incurred by fire, flood, storm, or any other cause not controllable by Unit Operator through the exercise of reasonable diligence. Unit Operator shall furnish the Operating Committee written notice of damages or losses incurred by fire, flood, storm, or other natural or accidental cause as soon as practicable after the happening thereof.

(10) Litigation, liens, judgments and liquidated claims involving the Unit Area or incident to the conduct of operations pursuant to the Plan of Unitization, including actual expenses incurred by Unit Operator in securing evidence for use in any such litigation. In event of litigation affecting the Unit Area, or the joint interests of Lessees, within the Unit Area, or arising out of operations conducted pursuant to the Plan of Unitization, the Operating Committee may authorize the employment of outside counsel whose fees and expenses shall be paid by Unit Operator and charged as Unit Expense, or the Operating Committee may authorize the use of Unit Operator's legal staff, in which event the compensation and expenses of members of Operator's legal staff for time devoted to such litigation shall be charged as Unit Expense.

(11) Insurance authorized or approved by the Operating Committee and all actual expenditures incurred and paid by Unit Operator in settlement or satisfaction of claims, judgments, losses and damages to the extent that the same are not covered by insurance authorized or approved by the Operating Committee. Unit Operator shall not pay in excess of Five Hundred Dollars ($500.00) to settle or compromise any claim involving the Unit Area or arising out of the operations conducted pursuant to the Plan of Unitization without first obtaining the approval of the Operating Committee.

(12) Taxes paid by Unit Operator for the benefit of the Lessees within the Unit Area, including ad valorem, property,

gross production, occupation and any other taxes assessed against the Unit Area or any jointly owned property of any kind, the production from the Unit Area or the operations carried on pursuant to the Plan of Unitization.

(13) Overhead charges, which shall be in lieu of any charge for any part of the staff and expenses of Unit Operator's district office, division office and principal business office, wherever located, and in lieu of the compensation or salaries paid to managing officers and employees of Unit Operator (other than compensation, salaries and expenses of employees of Unit Operator provided for in Subdivision (4) hereof), but not in lieu of Unit Area field office expenses in connection with operations conducted pursuant to the Plan of Unitization, and not in lieu of any other expenses incurred by Unit Operator in operations conducted pursuant to the Plan of Unitization to the extent that the same are a proper direct charge to Unit Expense in accordance with accepted accounting practices, which overhead charges shall be as follows:

1. $13.00 per well per month for all wells producing from the Unit Area at any time during the month.

2. $6.00 per well per month for all wells in the Unit Area which are not in production at any time during the month.

For the purpose of computing said overhead charges, the status of wells shall be as follows:

(a) Input or key wells and gas wells shall be included in the overhead schedule the same as producing oil wells.

(b) Wells permanently shut down but on which plugging operations are deferred shall be dropped from the overhead schedule at the time the shut down is effected, and no overhead shall be charged in connection with the plugging operations when performed.

(c) Salt water disposal wells shall not be included in the overhead schedule.

The overhead charges above provided for may be increased or decreased from time to time by agreement between Unit Operator and the Operating Committee if in practice they are found to be greater or less than the indirect expenses in lieu of which they are allowed. At the end of two years after the Effective Date of the Plan of Unitization the overhead rates

above specified shall be reduced to $10.00 per well per month for wells in production at any time during the month and $5.00 per well per month for wells not in production during the month, unless the Operating Committee specifically approves overhead charges at higher rates, after submission by Unit Operator of acceptable evidence that the charging of higher rates is reasonably required to cover the indirect expenses in lieu of which the overhead charges are allowed.

(14) Any other necessary and reasonable expenditure made by Unit Operator in the conduct of operations pursuant to the Plan of Unitization or for the maintenance or protection of the Unit Area or property of any kind owned jointly by the Lessees within the Unit Area, except that Unit Operator shall not charge as Unit Expense any expenditure or contribution made by Unit Operator toward any stock purchase plan, group life insurance, pension, retirement or bonus for employees of Unit Operator, other than expenditures or contributions which are imposed or assessed by governmental authority and other than such bonuses as may be authorized by the Operating Committee.

II.

BASIS OF CHARGES TO UNIT EXPENSE

(1) All materials and equipment purchased by Unit Operator for the Unit Area shall be procured from outside sources and shall be charged at their actual cost to Unit Operator after deducting any and all trade or cash discounts actually allowed off invoices or received by Unit Operator; Unit Operator may furnish materials or equipment from its own stocks only with the approval of the Operating Committee, on such basis as may be specified by the Operating Committee.

(2) Materials and equipment purchased from outside sources or furnished by Unit Operator from its own stocks, with the approval of the Operating Committee, shall not be warranted by Unit Operator beyond or back of the dealer's or manufacturer's guarantee, and in case of defective materials, credit shall not be passed until adjustment has been received by Unit Operator from the dealer or manufacturer.

(3) All services procured from outside sources shall be charged at their actual cost to Operator, after deducting any and all cash or other discounts actually allowed off invoices or received by Unit Operator.

(4) It is contemplated that all automotive equipment and other equipment and facilities required in the conduct of operations pursuant

to the Plan of Unitization will be acquired, maintained and operated at Unit Expense, and that Unit Operator's exclusively owned equipment and facilities will be used in the conduct of such operations only if and when jointly owned equipment and facilities are inadequate or unavailable. For the use of Unit Operator's exclusively owned equipment and facilities, the following rates shall apply:

1. Water, gas, teaming, power and compressor service shall be charged at rates prevailing in the locality of the Unit Area.

2. Rates for automotive equipment shall be commensurate with cost of ownership and operation and in line with the schedule of rates adopted by the Petroleum Motor Transport Association as recommended uniform and standardized charges and in effect from time to time, charges to be based on use in actual service on the Unit Area or in connection with the operations provided for in the Plan of Unitization. Truck, tractor and pulling unit rates shall include rates and expenses of drivers.

3. Rates for the use of drilling and cleaning out tools and other items of Unit Operator's exclusively owned machinery or equipment shall be sufficient to cover maintenance, repairs, depreciation and service furnished, but not in excess of rates prevailing in the locality of the Unit Area.

III

DISPOSITION OF SURPLUS MATERIALS AND EQUIPMENT

(1) Jointly owned materials and equipment shall be classed as surplus only with the approval of the Operating Committee, and materials and equipment so classed as surplus shall be disposed of or divided in kind in such manner and on such basis as may be authorized by the Operating Committee.

IV

INVENTORIES

(1) Inventories of materials and equipment on the Unit Area shall be taken at such times (not oftener than annually) and in such manner as may be directed from time to time by the Operating Committee. Each inventory shall include such materials and equipment as are ordinarily considered controllable by Operators of oil and gas properties.

(2) Reconciliation of inventory with charges to Unit Expense shall be made in such manner as may be directed by the Operating Committee from time to time.

(3) Inventory adjustments shall be made by Unit Operator for overages and shortages, but Unit Operator shall be held accountable only for shortages due to lack of reasonable diligence.

EXHIBIT "D"

PROCESSING AND COMPRESSION OF GAS

DEFINITIONS

As used in this Exhibit "D":

A. The term "Unit gas" shall mean gas produced and saved from the Unit Area and not required in the conduct of operations provided for in said Plan of Unitization.

B. The term "liquids" shall mean unstabilized propane and heavier liquid hydrocarbons extracted from gas by processing as herein provided.

C. The term "liquid products" shall mean and include 26-70 natural gasoline, excess butane and propane.

D. The term "excess butane" shall mean and include butane in excess of that which is required to produce 26-70 natural gasoline.

E. The terms "26-70 natural gasoline", "butane" and "propane" shall mean the commercial liquids respectively defined as such according to the latest definitions issued by the Natural Gasoline Association of America from time to time, except that if at any time said Association should cease to define any of said terms, such of said terms as are no longer defined by said Association shall have the meaning generally accepted in the industry from time to time thereafter.

F. The term "residue gas" shall mean that portion of the gas remaining after extraction of the liquids therefrom, but shall not include any part thereof which is reasonably required in the operation of facilities used in the processing of gas.

G. The term "Unit residue gas" shall mean residue gas allocated to Unit gas, as hereinafter provided.

H. A "cubic foot" of residue gas shall be that quantity of residue gas which occupies one cubic foot of space at an absolute pressure of sixteen and four-tenths (16.4) pounds per square inch and at a temperature of 60° Fahrenheit without correction for deviation from Boyle's law.

I. A "standard cubic foot" of gas shall be that quantity of gas which occupies one cubic foot of space at a pressure of four (4) ounces above an assumed atmospheric pressure of fourteen and four-tenths (14.4) pounds per square inch and at a temperature of 60° Fahrenheit.

PART I

THE PROCESSING OF UNIT GAS BY PHILLIPS PETROLEUM COMPANY AND CONTINENTAL OIL COMPANY

ARTICLE I.

DEFINITIONS

As used in this Part I:

A. The term "Plant Owner" shall mean Phillips Petroleum Company and Continental Oil Company, and their respective successors and assigns.

B. The term "plant facilities" shall mean and include the gas processing plant and facilities now owned by Plant Owner and located in and adjacent to the Unit Area including all the gas receiving and gathering facilities, residue gas delivery facilities, residue gas dehydration and compression facilities and all other facilities appurtenant thereto, and all additions thereto herein provided to be made by Plant Owner.

ARTICLE II.

PLANT FACILITIES

1. The plant facilities to be provided by Plant Owner shall include the following:

A. All facilities required for the receipt and gathering of Unit gas in Townships 13 and 14 in the Unit Area; and

B. Additions to Plant Owner's present processing, dehydration and compression facilities,

to the end that the plant facilities shall have sufficient capacity to gather, receive and process approximately 125,000,000 standard cubic feet of gas per day, delivered from oil and gas separators at a pressure of forty (40) pounds per square inch gauge, and to dehydrate and deliver at a pressure of five hundred (500) pounds per square inch gauge, approximately 70,000,000 cubic feet of residue gas per day.

2. The plant facilities to be provided by Plant Owner shall also include the facilities specified in Part III of this Exhibit "D".

3. The plant facilities shall be provided, maintained and operated by Plant Owner at Plant Owner's expense except as otherwise hereinafter specifically provided. Use of the plant facilities, as

they may exist from time to time, shall be confined to the gathering and processing of Unit gas, except as follows:

A. Plant Owner shall have the right to use the plant facilities for the receipt and processing of approximately 5,500,000 standard cubic feet of gas per day from the presently producing horizons in the Edmond Field and in the Britton Field, in the vicinity of Plant Owner's processing plant.

B. If at any time the capacity of the plant facilities should be substantially in excess of the quantity of Unit gas, plus the quantity of said Edmond and Britton Fields gas then deliverable to Plant Owner, Plant Owner shall have the right to receive and process in the plant facilities, gas from other sources, to the extent of the excess of the capacity of the then existing plant facilities over the quantity of Unit gas and said Edmond and Britton Fields gas then deliverable to Plant Owner; provided, however, that residue gas from the gas from such other sources so received and processed shall not be marketed by Plant Owner except to the extent that the market demand for residue gas from Plant Owner's processing plant may be in excess of the quantity of Unit residue gas and said Edmond and Britton Fields residue gas available for sale at Plant Owner's processing plant.

C. If Plant Owner should increase the capacity of the plant facilities for the purpose of receiving and processing gas other than Unit gas, Plant Owner shall have the right to receive and process gas other than Unit gas to the extent of the increased capacity provided for such other gas, but Plant Owner shall not sell or contract to sell residue gas from such other gas except to the extent that the market demand for residue gas from Plant Owner's processing plant at the time of such sale or the making of such contract to sell may be in excess of the quantity of Unit residue gas and said Edmond and Britton Fields residue gas available for sale at Plant Owner's processing plant.

The capacity of the plant facilities herein specified to be provided by Plant Owner, minus the quantity of gas (other than Unit gas), which Plant Owner is permitted to receive in accordance with this Section 3, is hereinafter referred to as the "available capacity" of the plant facilities.

ARTICLE III.

QUANTITY OF UNIT GAS DELIVERABLE TO PLANT OWNER

1. There shall be delivered to Plant Owner for processing, in each month, a quantity of Unit gas equal to the lesser of (a) the available capacity of the plant facilities during such month, or (b) two-thirds

(2/3) of the Unit gas produced and saved during such month. However, if at any time the available capacity of the plant facilities should exceed two-thirds (2/3) of the Unit gas then being produced and saved, and if the available capacity of the processing plant and gathering facilities referred to in Part II hereof should be less than one-third (1/3) of the Unit gas then being produced and saved, then, during the time such condition continues, there shall be delivered to Plant Owner for processing a daily quantity of Unit gas equal to the lesser of (a) the available capacity of the plant facilities, or (b) the total quantity of Unit gas then being produced and saved, minus the available capacity of the processing plant and gathering facilities referred to in Part II hereof.

2. The Unit gas deliverable to Plant Owner shall be delivered in accordance with Part III hereof.

3. The Unit gas received by Plant Owner shall be processed by Plant Owner for the extraction of all liquids economically recoverable therefrom by the efficient operation of the installed plant facilities in accordance with customary and accepted practices in the operation of like facilities.

ARTICLE IV.

APPORTIONMENT OF LIQUIDS

1. The quantity of liquids recovered from the Unit gas delivered to Plant Owner in each month shall be determined as follows:

A. The quantity of liquids recoverable from the Unit gas delivered to Plant Owner during the month shall be calculated by testing samples of such Unit gas to determine the test gallons recoverable per thousand cubic feet thereof and multiplying the quantity so determined by the number of thousands of cubic feet of Unit gas delivered to Plant Owner during the month.

B. The quantity of liquids recoverable from gas (other than Unit gas) delivered to Plant Owner during the month shall be calculated by testing samples of such other gas to determine the test gallons recoverable per thousand cubic feet thereof and multiplying the quantity so determined by the number of thousands of cubic feet of such other gas delivered to Plant Owner during the month.

C. The total quantity of liquids actually recovered during the month shall be apportioned between Unit gas and other gas in the ratio that the quantity of liquids calculated to be recoverable from the Unit gas delivered to Plant Owner during the month, as provided in A. above, bears to the quantity of

liquids calculated to be recoverable from all other gas received by Plant Owner during the month, as provided in B. above.

D. The quantity of liquids apportioned to Unit gas for the month, in accordance with Subdivision C. hereof, shall be deemed to constitute the quantity of liquids recovered from Unit gas during the month.

2. The quantity of each liquid product contained in the liquids recovered from Unit gas in each month shall be determined by making a test or tests of a representative composite sample or samples of all the liquid hydrocarbons actually recovered from all gas processed in the plant facilities during the month and by applying the results of such test to the quantity of liquids recovered from Unit gas during each month. Such test shall be made once a month, or oftener if requested by either party, in accordance with customary and accepted practices and in such manner as to determine, as accurately as reasonably possible, the quantity of each liquid product contained in such liquids.

3. As full compensation to Plant Owner for the gathering and processing of the Unit gas delivered to Plant Owner in each month, and for the delivery of Unit residue gas (other than that deliverable at a pressure of five hundred (500) pounds per square inch gauge) as hereinafter provided, Plant Owner shall own and be entitled to retain that percentage of the liquids recovered from Unit gas during such month which is applicable for such month, on the basis of the weighted average value (determined as hereinafter provided) per gallon of the liquids recovered from Unit gas during such month, in accordance with the following table:

Weighted Average Value Per Gallon of Liquids	Plant Owner's Percentage
Less than 1.25¢	88.46
1.25¢, but less than 1.50¢	86.10
1.50¢, but less than 1.75¢	83.70
1.75¢, but less than 2.00¢	81.70
2.00¢, but less than 2.25¢	79.80
2.25¢, but less than 2.50¢	78.20
2.50¢, but less than 2.75¢	76.85
2.75¢, but less than 3.00¢	75.65

3.00¢, but less than 3.25¢	74.60
3.25¢, but less than 3.50¢	73.70
3.50¢, but less than 3.75¢	72.80
3.75¢, but less than 4.00¢	72.00
4.00¢, but less than 4.25¢	71.30
4.25¢, but less than 4.50¢	70.50
4.50¢, but less than 4.75¢	69.75
4.75¢, but less than 5.00¢	68.95
5.00¢, but less than 5.25¢	68.20
5.25¢, but less than 5.50¢	67.45
5.50¢, but less than 5.75¢	66.65
5.75¢, but less than 6.00¢	65.85
6.00¢ and above	65.10

4. The weighted average value per gallon of the liquids recovered from Unit gas during any month shall be the higher of the following prices:

A. The weighted average price per gallon received by Plant Owner for any such liquids sold by them during such month to a bona fide purchaser or purchasers in a bona fide sale or sales, and delivered in the form in which recovered in Plant Owner's processing plant, less transportation charges thereon if delivery thereof is made elsewhere than at or in the immediate vicinity of said processing plant and if such charges are included in the price received by Plant Owner; or

B. The weighted average price per gallon of the liquid products contained in such liquids, calculated as follows:

(1) Multiply the price applicable to 26-70 natural gasoline for such month by 100% of the number of gallons of 26-70 natural gasoline contained in such liquids;

(2) Multiply the price applicable to butane for such month by 75% of the number of gallons of excess butane contained in such liquids;

(3) Multiply the price applicable to propane for such month by 50% of the number of gallons of propane contained in such liquids;

(4) Divide the total of the three amounts obtained by the multiplications above provided for by the total number of gallons comprised in 100% of the 26-70 natural gasoline, 75% of the excess butane and 50% of the propane contained in such liquids, the quotient thus obtained being such weighted average price.

For the purposes of the foregoing calculation, the quantity of each liquid product contained in such liquids shall be as determined in accordance with Section 2 of this ARTICLE IV, and the prices applicable thereto shall be the following:

(1) The price per gallon of 26-70 natural gasoline for such month shall be one-fourth cent (1/4¢) less than the daily average of the low prices quoted during such month for 26-70 natural gasoline or the nearest equivalent thereof, for Group III, in The National Petroleum News or in such other publication of like nature as may hereafter succeed said The National Petroleum News and whose quotations are generally accepted in the industry as accurate; provided, however, that if neither The National Petroleum News nor any such successor publication should publish quotations for 26-70 natural gasoline or its nearest equivalent for Group III, then the price of 26-70 natural gasoline for such month shall be one-fourth cent (1/4¢) per gallon less than the daily average market price of such natural gasoline or its nearest equivalent as determined by bona fide sales made during the month in the area comprising Group III.

(2) The price per gallon of excess butane for such month shall be one-fourth cent (1/4¢) less than the weighted average price received by Phillips Petroleum Company for all butane sold by it during the month and delivered from its fractionating plant in Oklahoma City to bona fide purchasers f.o.b. railroad tank cars.

(3) The price per gallon of propane for such month shall be one-fourth cent (1/4¢) less than the weighted average price received by Phillips Petroleum Company for all propane sold by it during the month and delivered from its fractionating plant in Oklahoma City to bona fide purchasers f.o.b. railroad tank cars.

5. That portion of the liquids recovered from Unit gas in each month which remains after deduction of the percentage thereof which becomes the property of Plant Owner as above provided, shall constitute Unit Production and shall be allocated as such in accordance with the Plan of Unitization.

PART II

THE PROCESSING OF UNIT GAS BY PEPPERS REFINING COMPANY

ARTICLE I.

DEFINITIONS

As used in this Part II:

A. The term "Plant Owner" shall mean Peppers Refining Company, its successors and assigns.

B. The term "plant facilities" shall mean and include the gas processing plant and facilities now owned by Plant Owner and located within the Unit Area, including all the gas receiving and gathering facilities, residue gas delivery facilities, residue gas dehydration and compression facilities, and all other facilities appurtenant thereto and all additions thereto herein provided to be made by Plant Owner.

ARTICLE II.

PLANT FACILITIES

1. The plant facilities to be provided by Plant Owner shall include the plant facilities as now constituted and such additions thereto and enlargements thereof as may be required to the end that the plant facilities shall have sufficient capacity to gather, receive, and process approximately 60,000,000 standard cubic feet of gas per day, delivered from oil and gas separators at a pressure of forty (40) pounds per square inch gauge, and to dehydrate and deliver at a pressure of five hundred (500) pounds per square inch gauge approximately 30,000,000 cubic feet of residue gas per day.

2. The plant facilities to be provided by Plant Owner shall also include the facilities specified in Part III of this Exhibit "D".

3. The plant facilities shall be provided, maintained, and operated at Plant Owner's expense except as otherwise hereinafter specifically provided. Use of the plant facilities, as they may exist from time to time, shall be confined to the gathering and processing of Unit gas, except as follows:

A. If at any time the capacity of the plant facilities should be substantially in excess of the quantity of Unit gas then deliverable to Plant Owner, Plant Owner shall have the right to receive and process in the plant facilities, gas from

other sources, to the extent of the excess of the capacity of the then existing plant facilities over the quantity of Unit gas then deliverable to Plant Owner; provided, however, that residue gas from the gas from such other sources so received and processed shall not be marketed by Plant Owner except to the extent that the market demand for residue gas from Plant Owner's processing plant may be in excess of the quantity of Unit residue gas available for sale at Plant Owner's processing plant.

B. If Plant Owner should increase the capacity of the plant facilities for the purpose of receiving and processing gas other than Unit gas, Plant Owner shall have the right to receive and process gas other than Unit gas to the extent of the increased capacity provided for such other gas, but Plant Owner shall not market residue gas from such other gas except to the extent that the market demand for residue gas from Plant Owner's processing plant may be in excess of the quantity of Unit residue gas available for sale at Plant Owner's processing plant.

The capacity of the plant facilities herein specified to be provided by Plant Owner, minus the quantity of gas (other than Unit gas), which Plant Owner is permitted to receive in accordance with this Section 3, is hereinafter referred to as the "available capacity" of the plant facilities.

ARTICLE III.

DELIVERY OF UNIT GAS TO PLANT OWNER

1. All Unit gas not deliverable to Phillips Petroleum Company and Continental Oil Company pursuant to Part I hereof shall be delivered to Plant Owner, up to but not in excess of the available capacity of the plant facilities.

2. The Unit gas deliverable to Plant Owner shall be delivered as provided in Part III hereof.

3. The Unit gas delivered to Plant Owner shall be processed by Plant Owner for the extraction of all liquids economically recoverable therefrom, and such liquids shall be processed for the recovery, in stabilized form, of the liquid products economically recoverable therefrom, by the efficient operation of the installed plant facilities in accordance with customary and accepted practices in the operation of like facilities.

ARTICLE IV.

APPORTIONMENT OF LIQUID PRODUCTS

1. The quantity of liquid products recovered from the Unit gas delivered to Plant Owner in each month shall be determined as follows:

A. The quantity of liquids recoverable from the Unit gas delivered to Plant Owner during the month shall be calculated by testing samples of such Unit gas to determine the quantity of test gallons recoverable per thousand cubic feet thereof and multiplying the quantity so determined by the number of thousands of cubic feet of Unit gas delivered to Plant Owner during the month.

B. The quantity of liquids recoverable from gas (other than Unit gas) delivered to Plant Owner during the month shall be calculated by testing samples of such other gas to determine the quantity of test gallons recoverable per thousand cubic feet thereof and multiplying the quantity so determined by the number of thousands of cubic feet of such other gas delivered to Plant Owner during the month.

C. The quantity of each liquid product actually recovered from all the gas processed by Plant Owner during the month shall be apportioned between Unit gas and other gas in the ratio that the quantity of liquids calculated to be recoverable from the Unit gas received by Plant Owner during the month bears to the quantity of liquids calculated to be recoverable from all other gas received by Plant Owner during the month.

2. As full compensation to Plant Owner for the gathering and processing of the Unit gas delivered to Plant Owner in each month, and for the delivery of Unit residue gas (other than that deliverable at a pressure of five hundred (500) pounds per square inch gauge) as hereinafter provided, Plant Owner shall own and be entitled to retain that percentage of the liquid products recovered from Unit gas during such month which is applicable for such month, on the basis of the weighted average value (determined as hereinafter provided) per gallon of the liquid products recovered from Unit gas during such month, in accordance with the table set forth in Section 3 of Article IV of Part I of this Exhibit "D".

3. The weighted average value per gallon of the liquid products recovered from Unit gas during any month shall be the weighted average price per gallon of such products determined by pricing the same as follows:

A. The price per gallon of 26-70 natural gasoline for such month shall be one-fourth cent (1/4¢) less than the daily

average of the low price quoted during such month for 26-70 natural gasoline or the nearest equivalent thereof, for Group III, in The National Petroleum News or in such other publication of like nature as may hereafter succeed said The National Petroleum News and whose quotations are generally accepted in the industry as accurate; provided, however, that if neither The National Petroleum News nor any such successor publication should publish quotations for 26-70 natural gasoline or its nearest equivalent for Group III, then the price of 26-70 natural gasoline for such month shall be one-fourth cent (1/4¢) per gallon less than the daily average market price of such natural gasoline or its nearest equivalent as determined by bona fide sales made during the month in the area comprising Group III.

B. The price per gallon of excess butane for such month shall be one-fourth cent (1/4¢) less than the weighted average price received by Plant Owner for all butane sold by Plant Owner during the month to bona fide purchasers and delivered at or in the immediate vicinity of Plant Owner's processing plant f.o.b. railroad tank cars or tank trucks.

C. The price per gallon of propane for such month shall be one-fourth cent (1/4¢) less than the weighted average price received by Plant Owner for all propane sold by Plant Owner during the month to bona fide purchasers and delivered at or in the immediate vicinity of Plant Owner's processing plant f.o.b. railroad tank cars or tank trucks.

4. That portion of the liquid products recovered from Unit gas in each month, which remains after deduction of the percentage thereof which becomes the property of Plant Owner as above provided, shall constitute Unit Production and shall be allocated as such in accordance with the Plan of Unitization.

ARTICLE V.

NATURAL GASOLINE TO BE RECOVERED BY PLANT OWNER

Nothing contained herein shall be deemed to obligate Plant Owner to recover 26-70 natural gasoline in lieu of natural gasoline of any other specification and Plant Owner shall be free to operate the plant facilities for the recovery from Unit gas of natural gasoline of such specifications as Plant Owner may from time to time deem suitable. However, the quantities of 26-70 natural gasoline, excess butane and propane recovered from Unit gas delivered to Plant Owner shall be determined and computed as if the natural gasoline actually recovered therefrom contained the quantity of butane required for the making of 26-70 natural gasoline.

PART III

PROVISIONS APPLICABLE BOTH TO PHILLIPS PETROLEUM COMPANY AND CONTINENTAL OIL COMPANY AND TO PEPPERS REFINING COMPANY

ARTICLE I.

APPLICABILITY OF PROVISIONS

1. In this Part III, Phillips Petroleum Company and Continental Oil Company and their respective successors and assigns are together referred to as "Plant Owner" and Peppers Refining Company and its successors and assigns are also referred to as "Plant Owner", and the facilities specified in this Exhibit "D" to be provided by a Plant Owner are referred to as the "plant facilities" of such Plant Owner.

2. Except as otherwise expressly specified, the provisions of this Part III shall apply to each Plant Owner.

ARTICLE II.

PLANT FACILITIES

1. The plant facilities to be provided by each Plant Owner shall include the following:

A. The residue gas delivery system heretofore installed by such Plant Owner for the delivery of residue gas for lease operating purposes to the leases in the Unit area from which such Plant Owner is now taking gas and such additions thereto as may be required to enable such Plant Owner to deliver residue gas for use in Unit operations (other than gas injection) at the nearest boundary line of each lease in the Unit Area to which such Plant Owner is now obligated to deliver residue gas. If such Plant Owner and Unit Operator agree upon the delivery of Unit residue gas for use in Unit operations (other than gas injection) at points other than said lease boundary lines, such Plant Owner shall provide any necessary additions to, or modifications in, its residue gas delivery system.

B. A meter at each point at which Unit gas is deliverable to such Plant Owner, for the measurement of the quantity of Unit gas delivered to such Plant Owner at such point.

C. Sufficient meters to provide adequate measurement of the quantity of Unit residue gas delivered by such Plant Owner for use in Unit operations (other than gas injection), such meters to be located within the boundaries of the Unit area.

D. A meter or meters at the point at which Unit residue gas is deliverable to the Unit by such Plant Owner, for the purpose of gas injection, such meter or meters to be adequate for the measurement of the quantity of Unit residue gas so delivered.

E. Equipment adequate for the tests provided in this Exhibit "D" to be made by such Plant Owner.

Unless otherwise agreed between a Plant Owner and the Operating Committee, each meter provided by such Plant Owner shall be an orifice-type meter of standard manufacture. The testing equipment above provided for shall be suitable for the intended purpose and shall conform to standards accepted in the industry.

2. Phillips Petroleum Company and Continental Oil Company shall provide adequate and suitable equipment for measurement of the quantity of liquid hydrocarbons actually recovered from all the gas processed by them. Peppers Refining Company shall provide adequate and suitable equipment for measurement of the quantity of liquid products actually recovered from all the gas processed by it.

3. Upon the Effective Date, each plant owner shall proceed with due diligence to install the additions herein provided to be made to its present plant facilities.

4. When the Operating Committee completes plans for construction of central tank batteries for oil produced from the Unit area, the Operating Committee shall designate, by written notice to each Plant Owner, the central tank battery or batteries from which Unit gas will be delivered to such Plant Owner, the battery or batteries so designated for each Plant Owner to be the battery or batteries from which such Plant Owner can receive Unit gas with the least modification reasonably possible in the gathering facilities of such Plant Owner; however, the central tank battery or batteries so designated for Phillips Petroleum Company and Continental Oil Company may include batteries located in Townships 12 and 15 in the Unit area. Within thirty (30) days after commencement of actual construction of a central tank battery so designated for a Plant Owner, such Plant Owner shall commence and thereafter prosecute to completion with reasonable diligence actual construction of such additions to, and modifications in, such Plant Owner's gathering facilities as may be necessary to enable such Plant Owner to receive Unit gas at or in the immediate vicinity of each central tank battery so designated for such Plant Owner.

5. Within six (6) months after the Effective Date of the Plan of Unitization, the Operating Committee shall submit to each Plant Owner a statement showing the estimated average daily production of crude oil from the Unit area and the estimated average daily production of Unit gas, during each of the next succeeding five (5) years; the estimates shown in

such statement shall be considered estimates only, and the submission of such statement shall not be deemed to require production of the estimated quantities or to prevent the production of greater or lesser quantities than those estimated. If it should appear from such statement that the quantity of Unit gas deliverable to either Plant Owner during such five-year period will be substantially in excess of the capacity of such Plant Owner's plant facilities, such Plant Owner shall make a bona fide investigation with a view to providing such additions to its plant facilities as such Plant Owner may find necessary and advisable to enable it to receive and process the full quantity of Unit gas deliverable to it during such five-year period. However, neither Plant Owner shall be obligated to provide any additional plant facilities which in the judgment of such Plant Owner will not prove reasonably profitable to it.

6. If and whenever the Operating Committee gives either Plant Owner written notice that the Operating Committee has determined that, in order to prevent waste or to facilitate the conduct of operations under the Plan of Unitization, additions should be made to the plant facilities of such Plant Owner, such Plant Owner shall make a bona fide investigation of the necessity for, and profitability to such Plant Owner of, the additional facilities specified in the notice given by the Operating Committee and shall give the Operating Committee written notice, within sixty (60) days after receipt of the notice given by the Operating Committee, stating whether or not such Plant Owner will provide such additional facilities. Such Plant Owner shall not be obligated to provide at its own expense the additional facilities so specified by the Operating Committee if deemed unnecessary or unprofitable to such Plant Owner, but if the Operating Committee determines that the additional facilities which such Plant Owner is unwilling to provide at its own expense should nevertheless be installed, and makes written request of such Plant Owner to proceed with the installation thereof, such Plant Owner shall proceed with reasonable diligence to install the additional facilities so requested by the Operating Committee and shall pay all costs and expenses incurred in the installation thereof, but the Operating Committee shall cause the Unit Operator to reimburse such Plant Owner for the intangible cost of such additional facilities, as hereinafter provided.

7. If after a Plant Owner has made an initial installation of gathering facilities for the receipt of Unit gas at or in the vicinity of a central tank battery, as hereinabove provided, a relocation of such tank battery or other change in Unit operations authorized by the Operating Committee should require relocation of, or modification in, such Plant Owner's gathering facilities, such relocation or modification shall be made by such Plant Owner at its own expense, except that if the total cost of any one such relocation or modification should exceed One Thousand Dollars ($1,000.00), the Operating Committee shall cause the Unit Operator to reimburse such Plant Owner for the intangible cost of such relocation or modification, as hereinafter provided.

8. The "intangible cost" of additional facilities installed by a Plant Owner at the request of the Operating Committee pursuant to

section 5 hereof, and the "intangible cost" of a relocation of, or other modification in, Plant Owner's gathering facilities pursuant to Section 6 hereof, shall include all necessary and reasonable costs and expenses which are incurred therein and which are a proper direct charge thereto in conformity with accepted accounting practices, excepting (a) the cost of salvageable machinery, equipment and appliances, (b) the cost of acquisition of land acquired therefor, (c) losses, damages and liabilities arising from risks or hazards which are generally considered to be insurable, such losses, damages and liabilities to be excluded from intangible cost whether or not insured against, and (d) overhead and administrative expense and cost of supervision (other than direct on the job field supervision and other than field accounting, the cost of which shall be a proper direct charge); said excepted costs and expenses shall be borne by such Plant Owner without reimbursement. A Plant Owner entitled to reimbursement for intangible cost shall keep a complete and accurate record of all costs and expenses incurred in performance of the work in respect of which the intangible cost is incurred, which record, together with supporting receipts and vouchers, shall be available to inspection by a duly authorized representative or representatives of the Operating Committee at all reasonable times. As soon as reasonably possible after the end of each month during performance of such work, such Plant Owner shall submit to the Operating Committee a properly itemized statement of all such costs and expenses incurred and paid during the month with its invoice for the intangible cost included therein. Upon approval by the Operating Committee, the amount of such intangible cost shall be paid by Unit Operator to the Plant Owner entitled thereto and charged as Unit Expense. Notwithstanding receipt of reimbursement for the intangible cost thereof, all facilities installed by a Plant Owner pursuant to Section 5 or Section 6 hereof shall be the sole property of such Plant Owner.

9. A Plant Owner shall not decrease the available capacity of its plant facilities below the quantity of Unit gas reasonably estimated to be thereafter deliverable to such Plant Owner in accordance with this Exhibit "D". A Plant Owner shall not remove from its plant facilities any major item of equipment comprised therein, except for the purpose of substituting other equipment of like capacity, without giving to the Operating Committee at least ninety (90) days' written notice of intention so to do.

ARTICLE III.

DELIVERY OF UNIT GAS

1. The Unit gas deliverable to a Plant Owner shall be delivered from oil and gas separators into such Plant Owner's meters, one such meter to be installed at or in the immediate vicinity of each tank battery from which such Plant Owner receives Unit gas, at the pressures from time to time maintained in such separators. All necessary lines between such separators and the Plant Owner's meters shall be installed and maintained by Unit Operator at Unit Expense and Unit gas delivered to a Plant Owner

hereunder shall be deemed delivered at the inlet valves of such Plant Owner's meters. Each Plant Owner shall be responsible for Unit gas delivered to it from and after delivery thereof into its meters, and for any and all liability of any nature arising out of the handling, transporting or processing of the gas delivered to it, after delivery thereof into its meters. However, a Plant Owner shall not be liable for loss of Unit gas delivered to it, unless such loss results from failure on the part of the Plant Owner to exercise the care and diligence customarily exercised in the industry.

2. It is understood that the primary objective of the Plan of Unitization is the production from the Unit area of the maximum quantity of crude oil economically recoverable therefrom and therefore nothing herein contained shall be deemed to impose any restrictions or limitations on the conduct of operations under the Plan of Unitization in such manner as the Operating Committee may from time to time deem necessary or advisable in connection with the production of crude oil from the Unit area. However, to the extent that, in the judgment of the Operating Committee, the same may be done without impediment to or interference with the production of crude oil from the Unit area, the Unit gas deliverable to a Plant Owner in each month shall be delivered in approximately equal daily quantities and at an even hourly rate during each twenty-four (24) hour period.

ARTICLE IV.

DISPOSITION OF UNIT RESIDUE GAS

1. The quantity of Unit residue gas remaining from the Unit gas delivered to a Plant Owner in any month shall be determined as follows:

A. The theoretical quantity of residue gas remaining from the Unit gas delivered to such Plant Owner during the month shall be calculated by multiplying the volume of such Unit gas by the percentage applicable in the following table, based upon the quantity of 26-70 natural gasoline recoverable per thousand cubic feet of such Unit gas, as determined by the tests provided for in Part I and Part II hereof ("G.P.M." as used in said table meaning the number of gallons of natural gasoline recoverable per thousand cubic feet of gas and "%RET." meaning the percentage of gas remaining after extraction of said natural gasoline):

G.P.M.	%RET.	G.P.M.	%RET.	G.P.M.	%RET.	G.P.M.	%RET.	G.P.M.	%RET.
.00	00.00	2.00	72.90	4.00	54.30	6.00	38.30	8.00	25.10
0.05	93.10	2.05	72.45	4.05	53.85	6.05	37.90	8.05	24.80
0.10	92.60	2.10	72.00	4.10	53.40	6.10	37.50	8.10	24.50
0.15	92.10	2.15	71.50	4.15	52.95	6.15	37.20	8.15	24.25
0.20	91.60	2.20	71.00	4.20	52.50	6.20	36.90	8.20	24.00
0.25	91.05	2.25	70.50	4.25	52.15	6.25	36.55	8.25	23.65
0.30	90.50	2.30	70.10	4.30	51.80	6.30	36.20	8.30	23.30
0.35	90.05	2.35	69.60	4.35	51.30	6.35	35.80	8.35	22.95
0.40	89.60	2.40	69.10	4.40	50.80	6.40	35.40	8.40	22.60
0.45	89.00	2.45	68.65	4.45	50.40	6.45	35.10	8.45	22.30
0.50	88.40	2.50	68.20	4.50	50.00	6.50	34.80	8.50	22.00
0.55	87.85	2.55	67.70	4.55	49.65	6.55	34.45	8.55	21.70
0.60	87.30	2.60	67.20	4.60	49.30	6.60	34.10	8.60	21.40
0.65	86.80	2.65	66.70	4.65	48.85	6.65	33.80	8.65	21.10
0.70	86.30	2.70	66.20	4.70	48.40	6.70	33.50	8.70	20.80
0.75	85.75	2.75	65.75	4.75	47.95	6.75	33.15	8.75	20.55
0.80	85.20	2.80	65.30	4.80	47.50	6.80	32.80	8.80	20.30
0.85	84.70	2.85	64.90	4.85	47.15	6.85	32.50	8.85	20.05
0.90	84.20	2.90	64.50	4.90	46.80	6.90	32.20	8.90	19.80
0.95	83.65	2.95	63.95	4.95	46.35	6.95	31.85	8.95	19.50
1.00	83.10	3.00	63.40	5.00	45.90	7.00	31.50	9.00	19.20
1.05	82.50	3.05	62.95	5.05	45.50	7.05	31.15	9.05	18.85
1.10	81.90	3.10	62.50	5.10	45.10	7.10	30.80	9.10	18.50
1.15	81.40	3.15	62.00	5.15	44.75	7.15	30.50	9.15	18.20
1.20	80.90	3.20	61.50	5.20	44.20	7.20	30.20	9.20	17.90
1.25	80.40	3.25	61.00	5.25	43.85	7.25	29.85	9.25	17.60
1.30	79.90	3.30	60.50	5.30	43.50	7.30	29.50	9.30	17.30
1.35	79.45	3.35	60.15	5.35	43.05	7.35	29.25	9.35	17.05
1.40	79.00	3.40	59.80	5.40	42.60	7.40	29.00	9.40	16.80
1.45	78.50	3.45	59.30	5.45	42.25	7.45	28.65	9.45	16.50
1.50	78.00	3.50	58.80	5.50	41.90	7.50	28.30	9.50	16.20
1.55	77.50	3.55	58.35	5.55	41.55	7.55	28.00	9.55	16.00
1.60	77.00	3.60	57.90	5.60	41.20	7.60	27.70	9.60	15.80
1.65	76.50	3.65	57.40	5.65	40.80	7.65	27.30	9.65	15.50
1.70	76.00	3.70	56.90	5.70	40.40	7.70	26.90	9.70	15.20
1.75	75.50	3.75	56.55	5.75	40.15	7.75	26.70	9.75	14.95
1.80	75.00	3.80	56.20	5.80	39.90	7.80	26.50	9.80	14.70
1.85	74.50	3.85	55.75	5.85	39.50	7.85	26.20	9.85	14.45
1.90	74.00	3.90	55.30	5.90	39.10	7.90	25.90	9.90	14.20
1.95	73.45	3.95	54.80	5.95	38.70	7.95	25.50	9.95	13.95

B. The theoretical quantity of residue gas remaining from gas (other than Unit gas) received by such Plant Owner for processing during the month shall be calculated by multiplying the volume of such gas by the percentage applicable thereto in the table set forth in Subdivision A hereof, based upon the quantity of such natural gasoline recoverable per thousand cubic

feet of such gas as determined by the tests therefor provided for in Part I and Part II hereof.

C. The quantity of residue gas actually remaining from all the gas received by such Plant Owner during the month, after extraction of liquids and plant use, shall be apportioned between Unit gas and other gas in the ratio that the theoretical quantity of Unit residue gas calculated for the month pursuant to Subdivision A hereof bears to the theoretical quantity of other residue gas as calculated for the month pursuant to Subdivision B hereof. The quantity of residue gas so apportioned to Unit gas shall be deemed to be the quantity of Unit residue gas deliverable by such Plant Owner.

2. Each Plant Owner shall deliver to the Unit, without charge, such portion of the Unit residue gas deliverable by such Plant Owner as may be required from time to time in the conduct of Unit operations, delivery thereof to be made by means of the residue gas delivery system hereinabove provided to be furnished by such Plant Owner, at a pressure sufficient for the normal operation of usual lease operating equipment; provided, however, that the quantity of residue gas so delivered by either Plant Owner at any time shall not, except with its consent, exceed that proportion of the Unit's total requirements of residue gas for said purpose at such time equal to the proportion borne by the quantity of Unit gas then being delivered to such Plant Owner to the total quantity of Unit gas then being delivered to both Plant Owners.

3. Each Plant Owner shall deliver to the Unit so much of the Unit residue gas deliverable by such Plant Owner and remaining after delivery of the quantity thereof taken by the Unit, pursuant to the next preceding paragraph hereof, as the Unit may require from time to time for gas injection purposes, delivery thereof to be made at or in the immediate vicinity of such Plant Owner's processing plant at a pressure of five hundred (500) pounds per square inch gauge; provided, however, that the quantity of Unit residue gas deliverable by a Plant Owner at said pressure shall not at any time exceed either (a) the capacity of the dehydration and compression facilities hereinabove specified to be provided by such Plant Owner, plus the capacity at such time of any addition to said facilities which such Plant Owner may see fit to make, minus the quantity of residue gas (other than Unit residue gas) then available for sale at such Plant Owner's plant in accordance with the applicable provisions of this Exhibit "D", or (b) that proportion of the Unit's total requirements of residue gas for said purpose at such time equal to the proportion borne by the quantity of Unit gas then being delivered to such Plant Owner to the total quantity of Unit gas then being delivered to both Plant Owners, except that residue gas required by the Unit for the experimental gas injection projects provided for in Exhibit "E" may be taken by the Unit entirely from either Plant Owner or divided between the Plant Owners in such manner as the

Operating Committee may see fit. All Unit residue gas delivered by a Plant Owner to the Unit, pursuant to this Section 3, shall be dehydrated to a dew point which, at delivery pressure, is at least ten (10) degrees below the prevailing atmospheric wet bulb temperature, except that the Plant Owner shall not be required to reduce the dew point of such Unit residue gas below 30° Fahrenheit. For the Unit residue gas delivered by a Plant Owner to the Unit, pursuant to this Section 3, such Plant Owner shall be entitled to compensation for the dehydration and compression thereof at the rate of two cents (2¢) per thousand (1,000) cubic feet of the Unit residue gas delivered, subject to increase or decrease in accordance with the next succeeding paragraph hereof. Within twenty-five (25) days after the end of each month during which Unit residue gas is delivered by a Plant Owner, pursuant to this Section 3, such Plant Owner shall submit to the Unit Operator a statement of the quantity of Unit residue gas so delivered by such Plant Owner and the compensation owing therefor, and such compensation shall be paid by Unit Operator within ten (10) days after receipt of such statement, the amount so paid by Unit Operator to be charged as Unit Expense.

4. The rate of compensation above specified for the dehydration and compression of Unit residue gas is based upon the annual average of wholesale prices for all commodities as shown by the Annual Index of Wholesale Prices for All Commodities, as published by the United States Department of Labor for the year 1944, said Index as now published being based on the annual average for 1926 as 100% and each "point" being 1% of the annual average published by said Department of Labor for the year 1926. If the annual average of said wholesale prices, as shown in said Index as published by said Department of Labor for the year 1946 or any subsequent year, should be more than 20 points above or below the annual average for the year 1944, as shown in said Annual Index as published for that year, then the rate of compensation for the dehydration and compression of Unit residue gas delivered by a Plant Owner, pursuant to the next preceding paragraph hereof, during the twelve months next succeeding the first day of the calendar month following the date of publication of the Annual Index showing such higher or lower average, shall be increased or decreased, as the case may be, in proportion to the increase or decrease of such annual average above or below the annual average as published in said Annual Index for the year 1944.

5. All Unit residue gas deliverable by a Plant Owner and not taken by the Unit, as hereinabove provided, shall constitute Unit Production and shall be allocated as such in accordance with the Plan of Unitization.

ARTICLE V.

DELIVERY OF UNIT PRODUCTION

1. The liquids, liquid products and residue gas which constitute Unit Production in accordance with this Exhibit "D" shall be

delivered by the respective Plant Owners to the lessees and other persons entitled thereto, the liquids or liquid products and residue gas deliverable by a Plant Owner as Unit Production to be delivered at or in the immediate vicinity of such Plant Owner's plant currently, as and when produced.

2. A Plant Owner shall not be obligated to provide storage facilities for any part of the liquids, or liquid products, and residue gas deliverable by such Plant Owner as Unit Production, and all facilities required for the receipt and further handling thereof, upon delivery by the Plant Owner, shall be provided by the lessees and other persons entitled thereto.

3. Upon delivery by a Plant Owner of the liquids or liquid products and residue gas deliverable by such Plant Owner as Unit Production, the Plant Owner shall be relieved of any and all liability arising out of the receipt and further handling of the liquids, liquid products and residue gas so delivered.

ARTICLE VI.

TAXES

1. The following taxes shall be borne by the Unit whether imposed by law now in force or hereafter enacted and whether or not imposed upon a Plant Owner:

A. Any and all severance, production and like taxes upon or with respect to Unit gas delivered to a Plant Owner pursuant to this Exhibit "D".

B. Any and all taxes upon or with respect to Unit residue gas delivered by a Plant Owner pursuant to this Exhibit D.

C. Any and all taxes upon or with respect to the receipt, gathering or transportion of Unit gas delivered to a Plant Owner pursuant to this Exhibit "D".

D. The same percentage of any and all taxes upon or with respect to the processing of Unit gas delivered to a Plant Owner during any month as the percentage of the liquids or liquid products recovered from Unit gas by such Plant Owner during such month which is allocated as Unit Production in accordance with this Exhibit "D".

2. Except as provided in Section 1 hereof, neither the Unit nor the Unit Operator nor the Lessees shall be under any obligation to bear or reimburse a Plant Owner for any taxes of any nature or description now or hereafter imposed by law upon the Plant Owner.

3. All taxes provided in Section 1 hereof to be borne by the Unit shall be paid and charged by Unit Operator as Unit Expense except that if a Plant Owner should be required by law or by regulation or order of governmental authority to pay any such tax, either for its own account or otherwise, Unit Operator shall reimburse such Plant Owner for the amount so paid by it and charge the same as Unit Expense.

4. For the purpose of computing payments to owners of royalties, overriding royalties, production payments, net profit interests and other interests of like nature upon or in respect of liquids or liquid products or Unit residue gas allocated as Unit Production in accordance with this Exhibit "D", the proceeds or market value of such liquids or liquid products or residue gas shall be reduced by the amount of any and all taxes provided in Section 1 hereof to be borne by the Unit.

ARTICLE VII

NATURAL GASOLINE RECOVERED FROM UNIT GAS

1. During any time when the quantity of butane recovered from the Unit gas delivered to a Plant Owner is insufficient for the recovery of 26-70 natural gasoline from such Unit gas, the natural gasoline recovered from the Unit gas then being delivered to such Plant Owner shall be standard specification natural gasoline of the highest vapor pressure recoverable from such Unit gas, and an adequate description of such natural gasoline shall be substituted for the term "26-70 natural gasoline" in the provisions of this Exhibit "D" applicable to such Plant Owner.

ARTICLE VIII.

MEASUREMENTS, STATEMENTS, AND RECORDS

1. The following measurements shall be made by each Plant Owner:

A. The quantity of Unit gas delivered to the Plant Owner shall be measured at the points of delivery thereof by the meters above provided to be installed by the Plant Owner.

B. The quantity of Unit residue gas delivered by the Plant Owner to the Unit for use in Unit operations other than gas injection shall be measured by the meters above provided to be installed by the Plant Owner for the measurement thereof.

C. The quantity of Unit residue gas delivered to the Unit by the Plant Owner for gas injection purposes at a pressure of five hundred (500) pounds per square inch gauge

gauge shall be measured at the point of delivery thereof by the meter or meters above provided to be installed by the Plant Owner for such measurement.

D. The quantity of gas (other than Unit gas) received by the Plant Owner for processing in its plant facilities and the quantity of residue gas (other than Unit residue gas) delivered by the Plant Owner, shall be measured by suitable meters in the same manner as Unit gas and Unit residue gas, respectively.

Each Plant Owner shall service and maintain the meters installed by it and shall take and keep an accurate record of the meter recordings. Each Plant Owner shall preserve its meter charts for at least two (2) years and upon request shall submit any or all of such charts to Unit Operator for examination and return to Plant Owner within sixty (60) days.

2. Phillips Petroleum Company and Continental Oil Company shall measure and keep a daily record of the quantity of liquids recovered from all the gas processed by them. Peppers Refining Company shall measure and keep a daily record of the quantity of each liquid product recovered from all the gas processed by it. The liquids or liquid products recovered by a Plant Owner shall be measured at the time of delivery thereof from the Plant Owner's plant and only the quantities so measured shall be included in determining the quantity of liquids or liquid products recovered from Unit gas by a Plant Owner.

3. Each Plant Owner shall test at its own expense, at least once every three months, each meter installed by it for the measurement of the Unit gas or other gas or Unit residue gas or other residue gas. Each Plant Owner shall make such additional meter tests as may be requested by Unit Operator, but the expense of each such additional test shall be borne by Unit Operator and charged as Unit Expense, unless the test discloses meter inaccuracy in excess of two per cent (2%), in which event the expense of the additional test shall be borne by the Plant Owner owning the meter found to be inaccurate. If test of any meter discloses inaccuracy, the Plant Owner owning the meter shall make all necessary corrections in the meter, but no retroactive adjustment of measurements shall be made unless a meter is found to be inaccurate by more than two per cent (2%), in which event adjustments shall be made for the period during which the inaccuracy existed, if agreed to by Unit Operator or determined, but otherwise for one-half the time elapsed since the meter was last tested and found to be inaccurate.

4. Each test of Unit gas or other gas to determine the test gallons of liquids recoverable therefrom, as provided in Part I or Part II hereof, shall be a field compression test or charcoal absorption test, at the option of Unit Operator, and shall be made in accordance with the official code of the Natural Gasoline Association of America for testing

natural gas for liquid content. Such tests shall be made quarter-annually and shall be made oftener if requested by a Plant Owner or by Unit Operator.

5. Each Plant Owner, at its own expense, shall make the meter tests and other tests herein provided to be made in respect of the Unit gas and other gas received by such Plant Owner, and Phillips Petroleum Company and Continental Oil Company, at their own expense, shall make the test of liquids herein provided for. Before making any test herein provided to be made by a Plant Owner, such Plant Owner shall give Unit Operator at least ten (10) days' written notice thereof, and Unit Operator shall have the right to have a representative or representatives present to witness and participate in such test and to inspect all equipment and devices used in making the test. An accurate record shall be made of each test made by a Plant Owner and such record, when signed by a representative of the Plant Owner and a representative of Unit Operator, or when signed by Plant Owner's representative if Unit Operator does not have a representative present, shall be presumed to be correct.

6. Unit Operator through its duly authorized representative or representatives, shall have access at all reasonable times to the meters and other measuring facilities of a Plant Owner, for the purpose of inspection and observing the operation thereof.

7. Each Plant Owner shall submit to Unit Operator, within twenty-five (25) days after the end of each month, a statement or statements showing the following:

A. The quantity of Unit gas and the quantity of other gas received by the Plant Owner during such month.

B. The quantity of residue gas remaining from all the gas processed by the Plant Owner during the month and the portion thereof which constitutes Unit residue gas.

C. The quantity of Unit residue gas delivered to the Unit during the month for use in Unit operations other than gas injection.

D. The quantity of Unit residue gas delivered to the Unit for gas injection purposes.

E. The quantity of Unit residue gas delivered by the Plant Owner during the month as Unit Production to the lessees or other persons entitled thereto.

F. The quantity of residue gas (other than Unit residue gas) sold and delivered by the Plant Owner during the month.

All sales of residue gas accounted for in the statements herein provided for shall be computed and reported on a common pressure base of 14.65 pounds per square inch gauge.

8. Phillips Petroleum Company and Continental Oil Company shall include in the statement or statements submitted to Unit Operator for each month, the following information:

A. The quantity of liquids recovered from all the gas processed by them during the month, the quantity of each liquid product contained therein, and the quantity of each liquid product determined to be recovered from Unit gas, as provided in Part I hereof.

B. The weighted average price per gallon received by them for any liquids recovered from gas processed in their plant facilities and sold by them during the month and delivered in the form in which recovered in their processing plant.

C. The weighted average price per gallon received by Phillips Petroleum Company for all butane, and the weighted average price per gallon received by said Company for all propane, sold and delivered during the month f.o.b. railroad tank cars from the Oklahoma City fractionating plant of Phillips Petroleum Company.

D. The weighted average value per gallon of the liquids recovered from Unit gas during the month.

9. Peppers Refining Company shall include in the statement or statements submitted by it to Unit Operator for each month, as provided in Section 7 hereof, the following information:

A. The quantity of each liquid product recovered from all the gas processed by it during the month and the quantity of each such liquid product determined to be recovered from Unit gas, as provided in Part II hereof.

B. The weighted average price per gallon received by it for the quantity of butane and the quantity of propane sold and delivered f.o.b. railroad tank cars or tank trucks, during the month, at or in the vicinity of its processing plant.

10. For the purpose of determining the weighted average price of butane or propane in accordance with this Exhibit "D", and for the purpose of the statements provided for in Sections 8 and 9 hereof, the sale of a mixture of butane and propane shall be deemed to be the sale of the quantity of each comprised in the mixture at the price received for the mixture.

11. Each Plant Owner shall keep an accurate record of all matters required to be shown in the statements herein provided to be submitted by it to Unit Operator. Such records shall be subject to inspection and audit by representatives of Unit Operator at all reasonable times.

ARTICLE IX.

UNIT OPTION ON UNIT RESIDUE GAS INJECTION

1. Each Plant Owner shall perform any or all of the following services for the Unit, if and when requested so to do by the Operating Committee on the basis of the compensation specified in Section 2 hereof, and on such terms and conditions as may be agreed on between the Plant Owner and the Operating Committee:

A. Design, construct and install facilities for the injection into the Unit area of Unit residue gas deliverable to the Unit by such Plant Owner for gas injection purposes, such facilities to be designed in accordance with the directions of the Operating Committee and to be constructed and installed in accordance with such plans and specifications as may be approved by the Operating Committee, the construction and installation thereof to be performed under the direction and supervision of the Unit Operator.

B. Maintain and operate such system as may be constructed and installed for the injection into the Unit area of Unit residue gas deliverable to the Unit by such Plant Owner for gas injection purposes (whether such injection system is constructed and installed by such Plant Owner or otherwise), such system to be operated by such Plant Owner in accordance with the directions of the Operating Committee and to be operated and maintained under the direction and supervision of Unit Operator.

2. For performance by a Plant Owner, at the request of the Operating Committee, of any of the services specified in Section 1 of this Article, such Plant Owner shall be entitled to reimbursement for all necessary and reasonable costs and expenses incurred in the performance of such service or services and which are a proper direct charge thereto in conformity with accepted accounting practices, and in addition shall be entitled to a sum equal to ten per cent (10%) of such direct costs and expenses to cover overhead, administrative and other direct expense and such Plant Owner's compensation. Each Plant Owner performing said services, or either of said services, shall keep an accurate record of all such direct costs and expenses and, within twenty-five (25) days after the end of each month during which any such service is performed, shall submit to Unit Operator a properly itemized

statement showing all the direct costs and expenses incurred during the month in the performance of such service or services. The amount of such direct costs and expenses, plus ten per cent (10%) thereof, shall be paid by Unit Operator to such Plant Owner within ten (10) days after receipt of such statement and approval thereof by the Operating Committee, the amount so paid by Unit Operator to be charged as Unit Expense. At the option of the Plant Owner performing such service, the Plant Owner may obtain payment in advance of the estimated amount of such direct costs and expenses to be incurred in any month, by submitting to Unit Operator, at least ten (10) days prior to the first day of such month, and itemized statement of such estimated amount. Such estimated amount shall be paid by Unit Operator on or before the tenth (10th) day of the month following receipt of such statement.

ARTICLE X.

DURATION OF UNIT GAS PROCESSING ARRANGEMENT AND OPTION TO PURCHASE PLANT FACILITIES

1. The arrangement with each Plant Owner for the processing of Unit gas as set forth in this Exhibit "D" shall become effective on the Effective Date of the Plan of Unitization and shall remain in effect thereafter until the Unit is dissolved unless sooner terminated as follows:

A. If at any time the operation of the plant facilities of either Plant Owner should prove unprofitable to such Plant Owner, such Plant Owner shall have the right to terminate the Unit gas processing arrangement set forth in this Exhibit "D", insofar as it relates to such Plant Owner, by giving to the Operating Committee written notice of such termination at least ninety (90) days in advance of the date upon which such termination is to become effective.

B. The Operating Committee shall have the right to terminate the Unit gas processing arrangement set forth in this Exhibit "D", insofar as it relates to the processing of Unit gas by Phillips Petroleum Company and Continental Oil Company, at any time after the total quantity of 26-70 or lower vapor pressure natural gasoline contained (as determined in the manner specified in this Exhibit "D") in all the liquids theretofore recovered from Unit gas in their plant facilities equals 385,000,000 gallons, by giving to said Phillips Petroleum Company and Continental Oil Company written notice of such termination at least six (6) months in advance of the date upon which such termination is to become effective.

2. If either Plant Owner should give notice of termination as provided in Subdivision A of Section 1 of this Article, and if, within thirty (30) days after the giving of such notice, Lessees who together

Operating Committee, such written objection to be effective only in respect of items therein specified with a statement of the reason for objection thereto.

ARTICLE XII.

RIGHTS OF WAY

Insofar as the Unit has the right so to do, the Unit hereby grants to each Plant Owner the right to install, maintain and operate, on lands within the Unit area, all pipe lines, meters and like facilities herein specified to be provided by such Plant Owner, but such Plant Owner shall be responsible for, and shall indemnify the Unit against all liability for damages to crops, fences or other property occasioned thereby.

ARTICLE XIII.

GENERAL PROVISIONS

1. Neither the Unit, nor the Unit Operator, nor a Plant Owner shall be under any liability for any failure or delay in the performance of its obligations under this Exhibit "D", to the extent that such failure or delay is caused by fire, explosion, action of the elements, strikes or other differences with workmen, inability to procure necessary materials or labor on usual and lawful terms, restrictions or restraints imposed by law or by order or regulation of duly constituted public authority, whether federal, state or local, acts of civil or military authorities, acts of the public enemy, or any other cause reasonably beyond the control of the party in default, whether or not similar to any cause herein enumerated. However, if and whenever any party is prevented from performing or is delayed in the performance of its obligations hereunder by any such cause, such party shall proceed with reasonable diligence to resume performance hereunder upon the removal of such cause, but no party shall be obligated to settle a strike or other difference with workmen otherwise than on such terms as such party may deem proper in its sole discretion.

2. The rights and obligations of each Plant Owner under this Exhibit "D" shall be binding upon and inure to the benefit of the successors and assigns of such Plant Owner. Neither Plant Owner shall make any sale or transfer (other than by mortgage or deed or trust for security purposes only) of its plant facilities without expressly obligating the purchaser or transferee to assume and agree to perform the obligations of such Plant Owner under this Exhibit "D". Any mortgage or deed of trust of the plant facilities of either Plant Owner shall be made expressly subject to the provisions hereof.

3. By written agreement executed by Plant Owner and on behalf of Operating Committee, after authorization by Lessees having at least sixty-six and two-thirds per cent (66-2/3%) of the total voting interest in the Unit, the provisions of this Exhibit "D" may be modified or amended insofar as they relate to the processing of Unit gas by such Plant Owner.

EXHIBIT "E"

PILOT GAS INJECTION PROJECTS

The following constitutes a description of and the procedure to be followed in connection with the pilot gas injection projects referred to in subparagraph (a) of Section XV of the Plan of Unitization to which this exhibit is attached:

PROJECT I:

Project I shall consist of the injection of gas into a relatively thick low gas-oil ratio area in the south central portion of the Unit area. For this purpose one injection well located in the vicinity of the Northwest Quarter (NW¼) of Section 28, Township 13 North, Range 4 West, Oklahoma County, Oklahoma, shall be used. Gas shall be injected into said well at the approximate rate of 4,000,000 cubic feet of gas per day.

PROJECT II:

Project II shall consist of the injection of gas into a relatively low gas-oil ratio area in the north central portion of the Unit area. For this purpose one injection well located in the vicinity of the Southeast Quarter (SE¼) of Section 7, Township 14 North, Range 4 West, Oklahoma County, Oklahoma, shall be used. Gas shall be injected into said well at the approximate rate of 4,000,000 cubic feet of gas per day.

PROJECT III:

Project III shall consist of the injection of gas into upstructure or gas-cap wells. For this purpose two injection wells located in the vicinity of the Northwest Quarter (NW¼) of Section 8, Township 13 North, Range 4 West, and the Southwest Quarter (SW¼) of Section 34, Township 14 North, Range 4 West, Oklahoma County, Oklahoma, shall be used. Gas shall be injected into said wells at the approximate rate of 2,000,000 cubic feet per well per day.

PROJECT IV:

Project IV shall consist of the dispersed injection of gas into a number of injection wells interspersed with producing wells in a relatively thin portion of the Unit area. For this purpose four injection wells located in the vicinity of the West Half (W½) of Section 32, and the East Half (E½) of Section 31, Township 15 North, Range 4 West, Oklahoma County, Oklahoma, shall be used. Gas shall be injected into each of said wells at the approximate rate of 2,000,000 cubic feet per well per day.

GENERAL PROVISIONS:

1. The final selection of injection wells shall be by the affirmative vote of members of the Operating Committee representing lessees owning at least 66-2/3% of the voting interest in the Unit.

2. The total gas injected into all areas aforesaid shall be limited to approximately 20,000,000 cubic feet per day.

3. All gas injection wells and their direct and diagonal offset producing wells shall be wells completed or recompleted only in the Bois d'Arc zone of the Hunton Lime.

4. Immediately prior to the injection of gas into said injection wells, Unit Operator shall make a regular gas-oil ratio and bottom-hole pressure survey of the entire Unit area.

5. Following the injection of the first gas into said injection wells, the bottom-hole pressures in each of the injection wells and each direct and diagonal offset producing well shall be measured at thirty (30) day intervals. In all cases the same shut-in period shall be used.

6. The gas injected into each of the injection wells shall be at as steady a rate as reasonable and shall be metered continuously throughout the entire injection operation.

7. The gas produced from each direct and diagonal offset producing well to each injection well shall be measured continuously for seven (7) consecutive days each month and the gas-oil ratio for such period computed. A similar gas-oil ratio test and computation shall be made of each such well immediately prior to the beginning of the gas injection projects.

8. The total gas produced from each 160-acre tract directly or diagonally offsetting the 160-acre tract on which an injection well is located shall be metered continuously throughout the entire injection operation.

9. The daily rate of oil production from each direct or diagonal offset to the injection wells shall be as constant as is reasonable and the total monthly oil production from such wells shall not vary substantially from the average monthly production attributable to each producible well in the Unit area.

10. The Operating Committee, by the affirmative vote on behalf of Lessees having sixty-six and two-thirds per cent (66-2/3%) of the total voting interest in the Unit, shall name a Pilot Project Committee to observe and supervise the pilot gas injection projects. The Pilot Project Committee by the majority vote of the members of such Committee (a) is authorized to make such changes in any or all of such pilot

projects as, in the opinion of the Committee, are reasonably necessary or desirable because of unusual or unanticipated results or conditions, and (b) is authorized in event excessive gas channeling is found by the Committee to have developed in any one of the producing wells surrounding an injection well, to direct that such well into which gas has channeled be restricted or shut in and the project continued, provided the same information is obtained on its offsetting wells, beyond the original pattern, as is required on the well restricted or shut in.

11. The Operating Committee, by the affirmative vote on behalf of Lessees having sixty-six and two-thirds per cent (66-2/3%) of the total voting interest in the Unit, may terminate any or all of the said pilot projects, in whole or in part, if it appears that to continue will result in injury to the reservoir or in a failure.

12. Helium tracers shall be used in each injection well in an attempt to follow the movement of injected gas, provided helium and detection equipment are available. If helium tracers are not available, other satisfactory tracers may be used, provided their cost is reasonable and comparable to the cost of helium tracers.

13. The aforesaid pilot gas injection projects shall be terminated in each area within thirty (30) days following the injection of 500,000,000 cubic feet of gas into each injection well in that area.

PRODUCTION DEPARTMENT

GEOLOGICAL DEPARTMENT

R E S E R V O I R S T U D Y

O F T H E

W E S T E D M O N D H U N T O N P O O L

O K L A H O M A

GULF OIL CORPORATION

GULF REFINING COMPANY

TULSA DIVISION

June 17, 1946

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I. SUMMARY AND CONCLUSIONS

1. It has been found that porosity in the West Edmond Hunton Pool is of two general types; namely, intergranular porosity and intermediate or fracture porosity. The pore volume of the fracture system amounts to approximately 10% to 15% of the total pore volume; thus, most of the oil is contained in the intergranular porosity of the reservoir.

2. The fracture system is characterized by very high permeabilities whereas the intergranular porosity is characterized by very low permeabilities.

3. The fracture system is three dimensional and is substantially uniform throughout the reservoir. Accordingly, the formation containing intergranular porosity may be visualized as being isolated into small blocks by the fractures. The prevalence of fractures in the cores indicates the linear dimension of these isolated blocks to be rather small, possibly on the order of 6".

4. For practical purposes the only means by which these isolated blocks of intergranular porosity can produce oil is by utilizing the energy of the dissolved gas within them. As this requires that a pressure differential exist between the fracture system and the blocks, the maintenance of pressure in the fracture system by the injection of gas would defeat the process of production.

5. Due to the extreme variance of permeability between the fracture system and the intergranular porosity system, gas injection into the reservoir would essentially fill only the fracture system, bypassing the intergranular porosity which contains by far the greatest volume of oil. Thus, gas would be recycled through the fractures at considerable expense, contributing little if any additional recovery. For a certain period after such an injection program was begun, it would

be anticipated that an apparent benefit would be shown due to gas sweeping out oil contained in the fractures. However, this apparent benefit, or more appropriately termed a "false" benefit would be relatively short lived and would cease when the fractures became filled with gas.

6. Further tangible evidence that a fracture system exists in the reservoir and that gas injection into the reservoir would enter essentially only the fractures, and thus by-pass the blocks of intergranular porosity, is evidenced by the performance of the water encroaching on the west side of the pool. Calculations indicate the volume of water intrusion as of March 15, 1946, to be approximately 18 million barrels which corresponds to a volume replacement of only about 6% of the total void space within the area of encroachment. This performance indicates that water is encroaching primarily through the fracture system as would be anticipated from geological concepts of the formation characteristics. Moreover, it indicates a relatively limited water encroachment, and therefore it is predicted that pressures will continue to decline in the reservoir.

7. The fact that water has encroached through the fractures would clearly indicate that gas would likewise by-pass through the fracture system.

8. A reasonable value of ultimate oil recovery from normal pressure depletion operations is estimated to be 172 million barrels, or 28.7% of the original stock tank oil in place. Regardless of the volume of oil ultimately produced by primary operation, it is believed that little, if any, additional oil will be recovered by gas injection.

9. In general, wells producing water may continue to produce oil for a considerable period of time because as pressure in the fracture system is reduced, oil should continue to bleed from the blocks of intergranular porosity into the fracture system, and thus be produced

along with the water. On the other hand, it might be profitable to make arrangements whereby water wells are produced even after economic limits have been reached in an effort to keep the area of water encroachment to a minimum.

10. Near the end of the producing life of the pool at a time when oil production from the intergranular porosity has become small, it might prove economical to sweep the remaining oil out of the fracture system by a gas injection program. Such a project would be feasible, of course, only at such time when normal operations were virtually at depletion and no more profitable recovery could be obtained from the intergranular porosity.

II. PURPOSE

This geological and engineering study of the Hunton reservoir in the West Edmond Field was prepared for the purposes of analyzing the character of the rock in the reservoir, determining the type of producing mechanism, estimating the probable ultimate recovery, and investigating the feasibility of initiating a pressure maintenance program, returning the produced gas back to the reservoir.

III. RECOMMENDATIONS

The following recommendations are made for the West Edmond Hunton reservoir:

1. Continue to produce the pool under normal pressure depletion.

2. Retard water encroachment by continued production of the water producing wells as long as feasible.

3. Do not inject any gas into the reservoir.

IV. INTRODUCTION AND GENERAL DISCUSSION

A. History

The West Edmond Pool, located in Townships 12, 13, 14, and 15 North, Range 4 West, and Townships 14 and 15 North, Range 5 West, Canadian, Logan, Oklahoma, and Kingfisher Counties, Oklahoma, is now the largest producing limestone oil reservoir in the State of Oklahoma.

The discovery well was drilled in the NW NW SW Section 32-14N-4W, Oklahoma County by Ace Gutowsky and other interests with little geological, geophysical, or other scientific indications of the presence of oil. This well is now known as the Fox-Schmitz-Wagner No. 1. Drilling operations began on January 2, 1943, the objective being the Wilcox sand; however, this sand was tested at a total depth of 7690' and was found to be non-productive. The well was then plugged back to the Bois d'Arc section of the Hunton limestone where porosity and staining had been noted, and after perforating this section an initial production of 535 barrels of 41° API gravity oil per day was obtained through a 9/32" choke.

Development in the field was rather slow at first and by January 1, 1944, some 8 months after the discovery of oil only 14 producing wells had been completed. The reason for this slow initial development was caused by the discovery that the Bois d'Arc section was absent in the Sohio-Cargill No. 1 "A" located in the SE SE of Section 30-14N-4W, only 3/4 miles north of the discovery well. The Bois d'Arc was absent in this well because it was drilled in the middle of an old stream channel which cut out the entire Bois d'Arc section. The well, however, was later plugged back and completed for a producer in the Bartlesville sand. Following this temporary slow down other wells were completed north of the old stream channel and gradually the development program gained momentum, reaching a peak in February 1945 when 62 wells were completed during the

month. As of April 1, 1946, there were 718 Hunton wells completed in the pool, and it appears that no more than 10 to 20 additional wells will be drilled.

The first Gulf well that was drilled in the field was the Christner No. 1 located in the SW SE of Section 7, Township 14 North, Range 4 West which was completed on August 6, 1944, for an initial production of 321 barrels of oil and no water in 21½ hours through 1/8" choke after a 1,000-gallon acid treatment. Development of all Gulf properties comprising 7 leases and 24 wells was completed by May 21, 1945.

B. Areal Extent

At the present time the Hunton reservoir of the West Edmond Field consists of about 28,700 proven productive acres, and it is anticipated that additional drilling will ultimately enlarge the reservoir to an area in excess of 29,000 acres. The Bois d'Arc section of the Hunton group is by far the most prolific producing zone in the pool. Figure No. 1 depicts the structure on top of the Hunton group, and Figure Nos. 2, 3, and 4 are cross-sections of the Bois d'Arc zone. The pool is bounded on the east by the truncation of the upper part of the Hunton and on the north by a thinning of the section. A water table on the west side of the pool, located at approximately -5930' subsea limits the pool on the west as well as on the south. The pool is approximately 17 miles long and 5 miles wide at its widest part, which is through the northern half of the reservoir. The pool is only some 2 to 2½ miles wide in the southern portion. The Bois d'Arc section is completely segregated into two parts by an old stream channel passing through the middle of the pool in an east-west direction.

C. State Regulations

In accordance with State regulations the pool was developed on 40-acre spacing with wells located at the center of each 40-acre tract.

The only exception to this pattern was the discovery well, which was located on 10-acre spacing in a 40-acre unit.

State rules and regulations regarding casing programs and completion methods required that at least 300' of surface casing be set and that this string be cemented to the surface. Originally the oil string had to be set on bottom and cemented with sufficient cement to fill the annular space behind the casing at least 2800' above the casing shoe. The casing had to test 2,800 psi and all production had to be through perforations. Accordingly, if wells were deepened after setting casing, then it was required that a liner be set and cemented in the new hole. However, this order which required the oil string to be set through the producing formation was changed on December 16, 1943, to allow the pipe to be set not higher than the top of the producing formation, and cemented to a point not less than 2700' above the casing shoe. It is required that all production be through tubing and that the tubing size not exceed 2-1/2". However, special requests for a larger tubing size have been granted for many of the pumping wells on the west side of the pool which produce water. It is further required that the tubing should be set not higher than the top of the casing perforations and should be plugged at the bottom of the last joint perforated.

The allowable for the first well completed in the pool was set at 400 barrels per day, but upon completion of the second well the allowable was reduced to 300 barrels per day. The maximum gas-oil ratio permitted without penalty was 2,000 cubic feet per barrel. On May 1, 1944, the allowable was reduced to 200 barrels per well per day with the same penalty attached to any well exceeding 2,000 cubic feet per barrel gas-oil ratio. Allowables of wells penalized for high gas-oil ratio are calculated by multiplying the allowable of such well by 2,000 divided by the actual

gas-oil ratio for that well. In December 1944 the per-well allowable was reduced to 150 barrels per day with the same gas-oil ratio penalty applied. On December 1, 1945, a pool allowable of 80,000 barrels per day was established; however, on March 1, 1946, the pool allowable was reduced to 70,000 barrels per day. Well allowables have steadily declined due to new wells being completed, and at the present time the top oil allowable in the pool is 107 barrels per day per well. Beginning January 1, 1946, the maximum gas-oil ratio allowable without penalty was established on the basis of the average arithmetical gas-oil ratio of all wells tested plus the amount of gas remaining in solution in the oil at that time. This maximum gas-oil ratio for the first quarter of 1946 was set at 5,072 cubic feet per barrel; however, based on the February survey the allowable gas-oil ratio was set at 3,770 cubic feet per barrel to be effective as of April 1, 1946. In the future a new maximum gas-oil ratio will be set after each semi-annual bottom-hole pressure and gas-oil ratio survey.

D. Method of Completion

All wells in the pool were drilled and completed with rotary tools. Generally 10-3/4" surface pipe was used, and pipe was cemented to the surface with approximately 400 sacks of cement. Three different sizes of oil string; namely 5-1/2", 6", and 7", were set with the 7" string being the most common used. Pipe was set on bottom in most cases and cemented with 700 to 1000 sacks of cement. Some operators preferred to perforate the entire section whereas others perforated selectively in accordance with electrical log and geological data. Practically all of the wells were acidized with 1000 to 1500 gallons of acid, and natural flow was obtained in almost all completions.

E. Producing Sections Other Than Bois d'Arc

In addition to wells producing from the Bois d'Arc member of the Hunton group, there have been 23 wells completed which produce only from

the lower Hunton, and also quite a large number of wells have been completed which produce from both the Bois d'Arc as well as the lower Hunton section. No case is known of any well producing exclusively from the Frisco member of the Hunton group.

The only present productive formation in the West Edmond Pool other than the Hunton group is the Bartlesville sand. To date there have been 20 wells completed in this formation with initial productions ranging as high as 500 barrels per day.

F. Status of Each Operator

In Table I on Page 11 a statement is presented which shows the status of each operator in regard to number of Hunton wells, monthly oil production, cumulative oil production, percent of cumulative production, total acres and recovery in barrels per acre. The Sohio Oil Company, with 112 producing wells, has recovered 19.37% of the cumulative production which is more than any other operator. Other large operators include the Phillips Petroleum Company with 16.28% of the total oil produced to date; the Peppers Refining Company with 10.99%; and the Stanolind Oil and Gas Company with 7.72% of the recovery. With 134 Hunton wells which is more than any other operator, Phillips Petroleum Company has the largest present daily oil production in the pool. Fox and Schmitz have 4 wells in the pool, one of which is the discovery well, and have recovered 4,240 barrels per acre, which is the largest barrel-per-acre recovery for any operator. Gulf's 24 wells have recovered 3.83% of the total oil produced, which amounts to 1,565 barrels per acre. To March 1, 1946, total oil recovery is 39,339,891 barrels, which amounts to 1,415 barrels per acre recovery.

TABLE I
WEST EDMOND POOL
OIL PRODUCTION DATA

Operator	No. of Hunton Wells	Feb 1946 Oil Runs Bbl	Cumulative Runs 3-1-46	Percent of Cumulative	Total Acres	Recovery Bbl/Acre
Allied Oil	6	18,810	203,523	0.52	240	848
Amerada	1	2,093	39,232	0.10	40	980
Anderson Prichard	44	152,503	2,543,403	6.47	1,760	1,445
Anderson, W. E.	2	7,309	127,943	0.33	80	1,600
Atlantic	8	28,729	337,694	0.86	320	1,055
Barnsdall	1	1,186	17,848	0.04	40	447
Bourland Atkinson	2	6,375	251,450	0.64	80	3,140
British American	2	6,536	25,421	0.06	80	318
Carter	10	35,327	280,776	0.71	400	702
Champlain	3	14,202	170,885	0.43	120	1,425
Chudacoff	2	7,854	117,226	0.30	80	1,465
Cities Service	25	86,837	1,219,446	3.10	1,000	1,219
Continental	32	107,399	1,412,624	3.59	1,280	1,105
Deep Rock	6	21,675	104,554	0.27	240	433
Denver	34	121,057	1,920,488	4.88	1,360	1,413
Fox & Fox	16	48,173	1,195,806	3.04	640	1,865
Fox-Schmitz	4	11,497	679,278	1.73	160	4,240
Gulf	24	84,548	1,503,769	3.83	960	1,565
Magnolia	28	94,956	1,779,043	4.53	1,120	1,588
McMahon	2	6,696	208,073	0.53	80	2,600
Mid-Continent	14	45,656	1,104,299	2.81	560	1,970
Mid States	4	13,971	189,281	0.48	160	1,182
Peppers	69	243,859	4,321,872	10.99	2,760	1,565
Phillips	134	411,187	6,407,772	16.28	5,360	1,194
Russell	2	6,583	92,877	0.24	80	1,160
Sinclair	8	28,772	651,464	1.65	320	2,003
Skelly	4	12,157	358,060	0.91	160	2,240
Sohio	112	343,156	7,627,917	19.37	4,480	1,700
Stanolind	74	218,006	3,037,605	7.72	2,960	1,025
Tidewater	7	25,731	284,297	0.72	280	1,015
Wegener	15	49,268	1,119,825	2.85	600	1,865
Wescott	1	879	6,140	0.02	40	155
Total	696*	2,262,987	39,339,891		27,840	1,415

* Number of wells produced at end of February 1946.

V. RESERVOIR CHARACTERISTICS

A. Core Analysis

Of the 24 wells that Gulf completed in the West Edmond Pool, 7 of the wells were cored in the Hunton formation. In Table II on Page 13 a summary of the core data such as Hunton interval cored, feet of core taken, feet of core recovered, percent recovery, range of porosity, and range of permeability is presented. The last two columns in this table are explained in Section B below.

Figure No. 6 is a core graph of Gulf-Streeter No. 1 which cored the entire Hunton group with a diamond core drill, and recovered 98% of the core. Tabular information on each test has been prepared, but due to the quantity of material, it will not be included as a part of this report. It will be noted that whereas most of the permeability values ranged from zero to only a few millidarcys, two plugs showed high values of 760 and 168 millidarcys respectively. There is little question but that the permeabilities measured were those of small fractures. Additional tests of fracture permeability would have been made had it been possible to keep the plugs from splitting along the fracture plane.

B. Geological Examination of Cores

Dr. Max Littlefield of the Gulf Geological Department made a microscopic examination of West Edmond cores and classified them into lithologic types, each of which had a particular type of porosity. Quantitative values on these porosity types were obtained directly from the Core Laboratory tests. In this way the comparative values of different types of porosity could be estimated. It is believed that the lithologic types with their particular porosity types have definite ranges of porosity and permeability. Sufficient basic information was available to assign reasonable values to porosity types. Conclusions were reached that the

TABLE II
WEST EDMOND POOL
SUMMARY OF CORE DATA AND GEOLOGICAL EXAMINATION OF CORES

Well	Hunton Interval Cored	Feet of Hunton Cored	Feet of Hunton Recovered	Percent Recovery	Range of Porosity Percent	Range of Permeability Millidarcys	Interval of Pay Zone From Cores Feet	Average "Producing" Porosity Percent
Streeter #1 20-13N-4W	6948-48½ 6954-59 6960-7298	343½	333	98	1.0 - 14.0	0 - 760	111	2.88
Flynn #1 21-13N-4W	6916-7026	110	60	54.5	1.0 - 14.5	0 - 28	94.5	3.04
A. Paul #2 8-13N-4W	6891-7027	136	72½	53.3	1.8 - 17.7	0 - 108	118	5.43
Messenbaugh #2 20-14N-4W	6798-6895	67	41½	62	1.5 - 14.9	0 - 535	56	3.93
Wright #1 17-14N-4W	6813-6884	71	42½	60	2.8 - 20.1	0 - 68	62	6.99
Wright #3 17-14N-4W	6774-7040	266	194½	73.3	2.4 - 19.0	0 - 12	56.5	7.11
Christner #1 7-14N-4W	6894-6952	58	26	44.9	2.0 - 19.8	0 - 4	54	7.94
Sohio-Lynch #4 18-14N-4W	6879-6936	57	47½	83.3	0.5 - 18.2	0 - 5	55	4.05
Total		1,108½	817½	69*			75.9*	5.17*

* Average Values

Hunton reservoir contained both intergranular and intermediate, or fracture, porosity. A detailed discussion of this work together with complete tabular information in Tables VI through XV is presented in the Appendix of this report. It will be noted that the intermediate or fracture porosity amounts to approximately 10% to 15% whereas the intergranular porosity amounts to approximately 85% to 90% of the total pore volume.

In Table II the next to last column shows the total interval from the top of the Hunton to the base of the pay zone as determined from the cores. The last column shows the average producing porosity as determined by the work discussed in the Appendix. These values were obtained by dividing the total void space by the total footage giving an over-all porosity of 5.17%.

Figure Nos. 5 and 5-A are cross-sections of the cored wells showing the distribution of intergranular and intermediate porosities and permeabilities. A detailed discussion of these figures is presented in a section of the Appendix.

VI. RESERVOIR FLUIDS

A. Analysis of Bottom-Hole Samples

Composite curves from several bottom-hole sample analyses of West Edmond oil showing the gas solubility, oil shrinkage, and reservoir oil viscosity as a function of pressure have been plotted in Figures Nos. 7 and 8. The average saturation pressure was determined initially to be 2,770 psia. The amount of gas originally dissolved was 1,010 cubic feet per barrel and the residual shrinkage at initial conditions was 48%. Reservoir oil viscosity at 2,770 psia was 0.58 centipoises, and at atmospheric pressure oil viscosity was 2 centipoises.

B. Water Sample Analysis

A number of samples of water from the Hunton formation have been analyzed in the Gulf Laboratory, and an average analysis shows the following:

Na	63,109 ppm
Ca	7,272
Mg	1,740
SO_4	335
Cl	114,920
Total	187,503
Sp. Gr.	1.129

VII. PERFORMANCE OF RESERVOIR

A. Reservoir Performance Data

In Table III on Page 17 statistics on performance such as average static bottom-hole pressure; cumulative oil, water, and gas production; bottom-hole pressure drop by periods and the cumulative pressure drop; barrels of oil produced per psi drop, and cumulative oil produced per cumulative psi drop; average gas-oil ratio; and the cumulative gas-oil ratio are presented for 10 periods in the history of the reservoir. These data along with other pertinent information such as number of wells and daily production rates are shown graphically in Figure Nos. 12, 13, and 14. It will be noted that reservoir withdrawals to March 15, 1946, include 40,390,000 barrels of stock tank oil, 2,486,000 barrels of water, and 70 billion cubic feet of gas. During this period the reservoir had undergone a pressure decline of 910 psi which amounts to an average of 44,400 barrels of oil production per psi drop in pressure. The average gas-oil ratio on March 15, 1946, was estimated to be 3,100 cubic feet per barrel and the cumulative gas-oil ratio was 1,730 cubic feet per barrel.

The original bottom-hole pressure in the Hunton reservoir was 3,145 psia. The first general pressure survey which was made in March 1944 on 19 wells showed the average pressure to be 2,984 psia at a subsea datum of 5864'. This pressure was 161 psi less than the original reservoir pressure. Since March 1944 periodic pressure surveys have been made at 3-month intervals on approximately 1/4 of the wells in the field, generally the same wells being tested on each survey. The last survey was taken in March 1946 at which time the average bottom-hole pressure was 2,235 psia for the 182 wells tested. Pressures have continually declined throughout the producing history, and there is every reason to anticipate a continuance of this decline in the future. The average pressure on Gulf

TABLE III
WEST EDMOND POOL
RESERVOIR PERFORMANCE DATA

Survey Date	Static BHP Psia	Cumulative Oil Prod. 1000 Bbl	Pres. Drop Psi	Bbl Prod. Per Psi Drop 1000 Bbl	Cumulative Pres. Drop Psi	Cum. Bbl Per Cum. Psi Drop 1000 Bbl	Average GOR Cu Ft/Bbl	Cumulative Gas Prod. MMcf	Cumulative GOR Cu Ft/Bbl	Cumulative Water Prod. 1000 Bbl
Orig.-Apr 43	3,145	0	0	0	0	0	1,010	0	1,010	0
Mar 15, 1944	2,984	1,040	161	6.5	161	6.5	1,010	1,050	1,010	2
May 15, 1944	2,916	1,760	68	10.6	229	7.7	1,010	1,780	1,010	5
Aug 15, 1944	2,814	3,190	102	14.0	331	9.7	1,010	3,370	1,010	36
Nov 15, 1944	2,796	6,100	18	162.0	349	17.5	1,007	6,160	1,010	103
Feb 15, 1945	2,719	10,480	77	56.9	426	24.6	1,283	11,410	1,090	225
May 15, 1945	2,616	16,260	103	56.0	529	30.8	1,485	18,710	1,150	418
Sept 15, 1945	2,483	26,190	133	74.6	662	39.5	1,950	34,610	1,320	975
Dec 15, 1945	2,380	33,120	103	67.3	765	43.9	2,400	49,500	1,495	1,578
Mar 15, 1946	2,235	40,390	145	50.2	910	44.4	3,100*	69,800*	1,730	2,486

* Estimated

wells during the last survey period was 2,302 psia. Figure No. 9 and No. 10 are Isobaric maps of the reservoir as of 12-15-45 and 3-15-46 respectively.

The first general gas-oil ratio survey made between October 15 and November 15, 1944, showed the average gas-oil ratio for the 199 wells tested to be 1,007 cubic feet of gas per barrel of oil. Only six of the wells (3%) had a ratio above 2,000 cubic feet per barrel which was the maximum ratio allowed without penalty. The gas-oil ratio has increased with each periodic survey, and by September 15, 1945, the average ratio was 1,950 cubic feet per barrel with approximately 35% of the wells tested having a ratio in excess of 2,000 cubic feet per barrel. The last gas-oil ratio survey was completed in February 1946, at which time 697 wells were tested, and found to have an average gas-oil ratio of 2,916 cubic feet per barrel. Four hundred sixty-nine wells, or 67%, of those tested, had a ratio in excess of 2,000 cubic feet per barrel. However, as of January 1, 1946, the maximum allowed gas-oil ratio without penalty was increased such that it is now determined as the average gas-oil ratio for the preceding quarter plus the amount of gas remaining in solution at that time.

B. Water Encroachment

The first water was reported on January 31, 1944, in the Schmitz-Specht No. 1, SE NE Section 36-14N-5W, and after this well was worked over with no success it was re-completed in the Bartlesville sand. On September 1, 1944, 10 wells were producing water and the cumulative water produced was 36,497 barrels. By March 1, 1945, the number of water producing wells along the west side had increased to 32 with a cumulative water production of 247,504 barrels. On April 1, 1946, 132 wells were producing water with a cumulative production of 2,677,228 barrels. Nine wells which had formerly produced water are not included above, because 7 of the wells produced

water-free oil in March, water was excluded from one well by remedial work, and another well was plugged back and re-completed as a Bartlesville producer. A water encroachment map, Figure No. 11, shows the chronological history of the advancing water front.

Table IV on Page 20 shows the status of water well production as of April 1, 1946, for each operator in the pool. During the month of April, Gulf had 6 wells producing water with a total water production of 1,135 barrels per day.

C. Interference Tests

A series of tests were made in the Gulf-Christner No. 1, SW SE Section 7-14N-4W, the Sohio-Williams "B" No. 1 SE SW Section 7-14N-4W and the Mid-Continent Lynch No. 1 NE NW Section 18-14N-4W for the purpose of finding out the effect, if any, that the operation of one well would have on an offset well. The 3 wells were tested at rates of 1,028, 1,045, and 1,080 barrels per day, and found to have productivity indices of 2.8, 5.0, and 45.0, respectively. When the Sohio well and the Mid-Continent well were produced at rates of 792 barrels per day and 1,137 barrels per day respectively, the bottom-hole pressure in the Gulf well dropped 30 psi although it was shut in at the time. The results of this series of tests show that communication exists between these wells, and it is interpreted that the communication is through fractures rather than the intergranular porosity. On later build-up tests the Mid-Continent well built up 27 psi to a maximum reservoir pressure of 3,000 psi after being shut in 7 hours. The bottom-hole pressure in the Sohio well built up 6 psi to reservoir pressure in 21 hours; and the Gulf well built up 261 psi to a reservoir pressure of 3,000 psi over a 7-hour period.

D. Bottom-Hole Pressure Flowing Tests

A total of 49 bottom-hole pressure flowing tests have been made

TABLE IV
WEST EDMOND POOL
WATER PRODUCTION DATA

Operator	No. Wells Producing Water	March Production Bbl Oil	March Production Bbl Water	Percent Water	Cumulative Water - Bbl 4-1-46
Allied Oil	4	12,750	4,224	24.8	20,752
Amerada	1	2,446	1,980	44.8	30,472
Anderson-Prichard	15	46,634	10,031	17.7	109,941
Chudacoff	2	8,261	7,650	48.2	78,975
Fox & Fox	8	24,525	14,659	37.5	152,389
Gulf	6	21,311	24,642	53.7	58,637
Magnolia	3	7,688	28,500	79.0	303,127
Mid-Continent	4	11,455	8,825	43.6	75,279
Peppers	18	60,941	77,900	56.1	362,927
Phillips	13	35,863	16,392	31.4	80,285
Schmitz	1	-	-	-	725*
Sinclair	4	11,229	29,600	72.5	347,745
Skelly	4	12,844	19,512	60.3	199,633
Sohio	28	76,725	79,033	50.8	470,126
Stanolind	18	48,834	47,759	49.5	349,783
Tidewater	4	14,050	11,810	45.8	35,657
Wegener	1	-	0	-	775**
Total	134	395,466	382,517	49.1	2,677,228

* Well abandoned in Hunton - now producing from Bartlesville sand.
** Well formerly making water - now water free.

on Gulf wells in the West Edmond Field, every well having been tested at least once and some wells as many as 4 times. These data are tabulated in Table V on Pages 22 through 25. Generally the wells were produced at 3 different rates during each test, and P.I. values were usually smaller at the higher rates of production. Most of the wells indicated relatively high capacities, particularly those on the Porter Paul No. 1 and A. Paul Nos. 1 and 2. An early test on the A. Paul No. 2 showed an apparent capacity of 99,600 barrels per day and on a test 8 months later there was no noticeable draw-down in pressure when producing at a rate of 696 barrels per day. It will be noted that many tests indicate a declining productivity index with time whereas other tests show the opposite.

TABLE V
WEST EDMOND POOL
FLOW DATA ON GULF WELLS

Lease and Well	Date of Test	Static BHP	Flowing BHP	Fluid Production* B/D	P.I.	Apparent Capacity B/D
Christner #1	8-10-44	3,000	2,970	278	9.27	27,810
			2,872	528	4.13	12,390
			2,816	650	3.53	10,600
Christner #1	9-24-45	2,641	2,468	336	1.94	5,123
			2,258	511	1.33	3,513
			2,172	696	1.48	3,909
Christner #1	12-6-45	2,450	2,320	291	2.24	5,488
Christner #2	6- 4-45	2,739	2,616	192	1.56	4,273
			2,073	384	.523	1,432
			1,296	384	.266	729
Christner #3	7-10-45	2,528	2,255	201	.738	1,860
			1,468	367	.346	875
			1,282	330	.264	670
Christner #3	10-13-45	1,845	1,710	175	1.296	2,390
			1,575	243	.900	1,660
Christner #4	7-13-45	2,763	2,325	173	.395	1,091
			1,710	341	.324	895
			1,220	384	.249	658
Christner #4	10-15-45	2,400	1,745	227	.347	831
			1,260	297	.260	625
Christner #4	1- 8-46	2,400	1,500	173	.192	455
			1,295	158	.143	343
			1,115	182	.142	341
Flynn #1	8- 7-45	2,800	1,845	613	.642	1,798
Flynn #2	3-12-45	2,887	2,394	502	1.018	2,938
			1,888	648	.649	1,873
			2,678	194	.928	2,679
Flynn #3	3- 6-45	3,015	2,940	304	4.06	12,230
			2,880	411	3.04	9,160
			2,775	721	3.05	9,050
Flynn #3	4-25-46	2,330	2,295	146	4.17	9,720
			2,195	404	2.99	7,050

TABLE V
(Continued)

Lease and Well	Date of Test	Static BHP	Flowing BHP	Fluid Production* B/D	P.I.	Apparent Capacity B/D
Flynn #4	4-10-45	2,924	2,900	192	8.00	23,392
			2,790	504	3.76	10,994
			2,665	767	2.96	8,655
Messenbaugh #1	8-12-44	2,973	2,933	249	6.20	18,400
			2,861	506	4.50	13,400
			2,781	770	4.00	11,892
Messenbaugh #1	9-15-45	2,567	2,394	459	2.65	6,803
			2,233	816	2.44	6,263
Messenbaugh #2	9-20-45	2,591	2,443	264	1.78	4,612
			2,209	434	1.13	2,928
			1,839	450	.598	1,549
Messenbaugh #2	12-15-45	-	-	155	.689	1,625 E
Messenbaugh #3	5-28-45	2,727	2,567	216	1.35	3,681
			2,382	394	1.14	3,109
			2,061	700	1.05	2,863
Messenbaugh #3	9-30-45	2,620	2,200	212	.505	1,322
			1,910	432	.608	1,594
			1,715	565	.624	1,635
Messenbaugh #4	3-30-45	2,770	2,739	102	3.29	9,115
			2,690	266	3.325	9,210
			2,530	416	1.733	4,800
			2,332	599	1.367	3,786
Porter-Paul #1	4-20-45	2,727	2,715	145	12.08	32,945
			2,705	360	16.36	44,610
			2,690	762	20.75	56,768
Porter-Paul #1	8-22-45	2,702	2,678	180	7.51	20,300
			2,678	265	11.05	29,900
			2,653	435	8.89	24,000
A. Paul #1	7- 6-45	2,760	2,740	307	15.35	42,350
			2,720	620	15.50	42,800
			2,710	772	15.43	42,600
A. Paul #1	8-27-45	2,702	2,690	397	33.00	89.166
			2,665	742	20.00	54,040

TABLE V
(Continued)

Lease and Well	Date of Test	Static BHP	Flowing BHP	Fluid Production* B/D	P.I.	Apparent Capacity B/D
A. Paul #1	10- 9-45	2,977	2,967	251	25.10	74,700
			2,960	534	31.40	93,500
			2,935	733	17.45	51,900
A. Paul #2	9-22-44	3,000	2,985	286	19.05	57,250
			2,975	815	32.60	97,800
			2,980	664	33.20	99,600
A. Paul #2	5-20-45	2,727	2,727	192	No noticeable drawdown	
			2,727	308	No noticeable drawdown	
			2,727	696	No noticeable drawdown	
A. Paul #2	8-30-45	2,678	2,665	197	15.20	40 706
			2,653	408	16.30	43,651
			2,641	864	23.30	62,397
A. Paul #3	5-13-45	2,715	2,665	120	2.40	6,516
			2,431	416	1.46	3,964
			2,233	601	1.24	3,367
A. Paul #3	9-11-45	2,665	2,493	240	1.39	3,704
			2,332	351	1.05	2,798
			2,196	421	0.89	2,371
Streeter #1**	9- 2-45	2,924	1,851	192	.178	520
			1,135	248	.138	403
Streeter #2	4-14-45	2,960	2,850	190	1.73	5,120
			2,440	563	1.08	3,200
			2,250	734	1.03	3,050
Streeter #2	9- 7-45	2,863	2,468	336	.85	2,433
			2,196	464	.69	1,975
			1,888	568	.58	1,660
Streeter #3	5- 8-45	2,930	2,905	153	6.12	17,932
			2,830	427	4.27	12,511
Streeter #4	5-11-45	2,915	2,835	284	3.55	10,350
			2,770	451	3.11	9,090
			2,845	115	1.64	4,780
Streeter #4	9- 9-45	2,966	2,801	160	.969	2,876
			2,604	351	.969	2,876
Wright #1	8-31-44	2,960	2,775	254	1.37	4,060
			2,584	469	1.25	3,700
			2,185	714	0.92	2,720

TABLE V
(Continued)

Lease and Well	Date of Test	Static BHP	Flowing BHP	Fluid Production* B/D	P.I.	Apparent Capacity B/D
Wright #1	9- 4-44	2,960	2,911	65	1.33	3,920
			2,895	90	1.38	4,100
			2,850	195	1.77	5,250
			2,600	424	1.18	3,000
Wright #1	3- 9-45	2,715	2,675	74	1.85	5,025
			2,575	175	1.25	3,390
			2,300	384	0.926	2,510
			2,070	508	0.788	2,140
Wright #1	10- 2-45	2,565	1,750	373	0.458	1,174
			1,240	454	0.342	854
Wright #2	6- 1-45	2,739	2,641	270	2.755	7,545
			2,554	496	2.681	7,343
			2,419	708	2.212	6,058
Wright #2	12- 6-45	2,739	2,420	111	.348	951
			2,230	335	.658	1,810
			2,050	542	.786	2,160
Wright #3	4- 6-45	2,795	2,727	216	3.176	8,876
			2,653	464	3.267	9,131
			2,561	783	3.346	9,352
Wright #3	10-15-45	2,480	2,420	124	2.07	513
			2,360	470	3.92	971
Wright #3	12-13-45	2,410	2,330	259	3.24	7,808
Wright #4	3-16-45	2,640	2,395	113	.461	1,217
			1,962	216	..317	837
			1,263	464	.342	903
			876	672	.380	1,003
Wright #4	10-23-45	2,260	920	115	.086	194
			600	141	.085	192
Wright #4	12-19-45	1,790	1,000	113	.143	256
			915	122	.139	250
			845	186	.197	352

* On every test except Streeter #4 on 9-9-45 the fluid production is clean oil.

** Streeter #1 capacity low because well producing around 5½" liner, Liner was never perforated nor was well acidized.

VIII. INTERPRETATION OF RESERVOIR DATA

A. Type of Producing Mechanism and General Discussion

Although there has been some discussion among operators in the West Edmond Pool as to whether or not the Hunton reservoir initially contained saturated oil, Gulf has analyzed a large number of bottom-hole samples, and data show an initial saturation pressure of 2,770 psia as compared to a bottom-hole pressure of about 3,000 psia at the time of sampling and an initial reservoir pressure of 3,145 psia. Accordingly, it can be said that the early production from the reservoir down to a pressure of approximately 2,770 psi was due to expansion of the liquids in the reservoir plus water encroachment.

At the present time the reservoir is producing oil primarily by the solution gas drive type of mechanism. There has also been some water encroachment into the reservoir along the west side of the pool which has made some contribution to maintaining pressure in the reservoir. However, it is not believed that this water encroachment has acted as a water drive in the sense that it actually contributed toward the efficiency of recovery.

In accordance with evidence presented in this report, the geology of the West Edmond Pool is somewhat unique, at least for pools in this area. The work done by Dr. Littlefield in regard to type and magnitude of porosity is fundamentally classified as research work, and very important interpretations of performance are based directly upon this basic geological study. Dr. Littlefield's studies showed that the pool contained two general classes of porosity; namely, intergranular porosity, and fracture porosity. Further, his work showed that the fracture pore volume was approximately 10% to 15%, and the intergranular pore volume was approximately 85% to 90% of the total pore volume. The geological interpretation is that the fractures, which have very excellent permeability, substantially

isolate the intergranular porosity, which has very low permeability, into blocks whose average linear dimension is on the order of 6". The core graph on Streeter No. 1, Figure No. 6, illustrates this point rather well as most of the tests showed from zero to only small values of permeability whereas one plug measured a fracture permeability of 760 MD and another plug showed 168 MD. More tests of fracture permeability would have been made had it been possible to keep the plugs from splitting at the fractures. This core graph is typical of the 7 Gulf wells cored, and these wells are distributed throughout the pool, as shown by the locations in Table II, Page 13. Wells with apparent capacities as high as 80,000 to 100,000 barrels per day still show the same characteristics. Accordingly, the interpretation is that if no fractures had existed in the Hunton reservoir, well capacities would have been small. It has been calculated that apparent well capacities from intergranular porosity alone would have been less than 300 barrels per day. The fractures, in effect, serve as drainage channels for production of oil from the intergranular porosity in the small isolated blocks. As the fracture system is three dimensional, very good communication exists throughout the various producing sections.

Due to the relatively small pore volume of the fractures as compared to the pore volume of the intergranular porosity, it is necessary to produce the field in such a manner as to obtain maximum recovery from the intergranular porosity within these blocks. It appears that the only medium by which these blocks will produce oil is by the evolution of gas from the oil within each block. Thus, each isolated block would react as a separate reservoir and the only oil produced from each block would be that produced by the energy contained within it. Obviously, it would appear undesirable to put pressure on all sides of a reservoir, when the only means of producing oil from that reservoir would be by creating an outlet

in the form of a drop in pressure. Therefore, it would be detrimental to maintain pressure on the fracture system by the injection of gas. Gas would essentially fill only the fractures and would not contribute in driving oil from the intergranular porosity. While it is believed that good communication exists throughout the reservoir, local high gas-oil ratios and high free gas saturations have developed in certain areas.

B. Material-Balance Calculations

Using the production data tabulated in Table I and bottom-hole sample analysis data in Figure Nos. 7 and 8, material-balance calculations were made on successive dates of 9-15-45, 12-15-45, and 3-15-46. From pool boundaries the areas of water encroachment were measured to be on the order of 5,400, 6,000, and 6,700 acres respectively. Total pore volume in this area is calculated to be on the order of 215, 240, and 265 million barrels respectively. Using an initial value of 600 million barrels of stock tank oil in place as computed from volumetric calculations, the volumes of water intrusion on the successive dates are calculated to range from 13.4 to 18 million barrels. This volume of water intrusion corresponds to only 6% to 7% of the total pore volume within the areas of water encroachment. The fact that the total pore volume in the area of water encroachment is quite large, as compared to the volume of water intrusion, indicates that water entered the reservoir through permeable streaks (fractures) thus by-passing the majority of the void space. From the geological concepts of the Hunton reservoir, this type of performance could be anticipated. A relatively limited water encroachment is indicated, and it can be predicted that pressures should continue to decline.

It could be anticipated that for a certain period after gas injection was begun that an apparent benefit would be shown due to gas sweeping out the oil contained in the fracture system. However, it would be expected that the apparent benefit would cease when the fractures became filled with gas.

In most cases it is believed that wells which produce water will also continue to produce oil for a considerable period of time. Such oil production would be due to a bleeding of the intergranular blocks into the fracture system as the pressure continues to decline. Oil would be produced from the fractures along with water although in many cases water-oil ratios would be quite large. On the other hand it might prove economical for the operators to make arrangements for the production of water producing wells even though the economic limits have been reached in an effort to keep the area of water encroachment to a minimum. At some point near depletion of the reservoir it is possible that a secondary recovery program would be feasible whereby residual oil remaining in the fracture system could be economically recovered by gas injection.

Further evidence that the water encroachment is limited is shown by the behavior of certain wells. For instance, the Peppers-Waller No. 2 and Chudacoff-McCain No. 1, east of Sohio-Waller Nos. 1 and 2 located in Section 24-14N-5W, which were pumping at one time began natural flow again after Kobe pumps had been installed in the Sohio-Waller wells.

Mid-Continent-Jones Nos. 1 and 2, located in the NW/4 Section 17-13N-4W, began making water soon after completion. This water increased to the point where Well No. 1 was put on the pump on 8-21-45 and No. 2 on 7-29-45. Due to lack of salt water disposal facilities Well No. 2 was pumped intermittently and Well No. 1 was shut down entirely until about the first of January 1946 at which time the salt water disposal line was

put in operation in that area. Continued pumping operation since then has unloaded the water from Well No. 2 which is now flowing steadily. The daily water rate decreased since pumping operations began from a reported 175 barrels per day in November to 140 barrels per day in December, and 139 barrels per day in January. Reports are to the effect that this well is now flowing its allowable and has not been pumped during the last 3 months.

Anderson Prichard-Crookham Nos. 3 and 4, located in the NE/4 Section 17-13N-4W, which offsets the Mid-Continent-Jones wells to the east, started making water on 10-23-44 and 4-1-45 respectively. Pumping units were installed and the wells began pumping on 6-9-45 and 5-6-45 respectively. Water production which was reported to be 200 barrels per day on Well No. 3 in June 1945 had decreased to 90 barrels per day in January 1946. Water production in Well No. 4 was reported to be 77 barrels per day in June 1945, then increased to 100 barrels per day in July and August, and then decreased to 72 barrels per day. These wells have not been pumped for 2 or 3 months even though it was necessary to pump them continuously during the period that the offsetting Mid-Continent-Jones wells were pumped only intermittently.

C. Volumentric Calculations and Estimated Oil Recovery

Using the producing porosity data, corrected for connate water, as determined by Dr. Littlefield, the initial stock tank oil in place in the reservoir is calculated as follows:

$$\frac{29{,}000 \times 75.9 \times 7{,}760 \times 0.0517}{1.48} = 597 \times 10^6 \text{ barrels}$$

Assuming that the West Edmond Hunton reservoir initially contained 600 million barrels of stock tank oil and that fractures contained 12.5% of this volume, then the initial volume of stock tank oil in the

fractures amounted to 75 million barrels. The intergranular porosity contained the remainder of the oil which amounted to 525 million barrels.

In terms of oil saturation, the cumulative stock tank oil recovery expressed as a percent of total pore volume is given by:

*Cumulative recovery $= \left(\frac{\rho_o}{B}\right)_i - \frac{\rho_o}{B}$

Where ρ_o = Oil saturation

B = Expansion factor; volume of reservoir oil phase corresponding to unit volume of stock tank oil

i = Subscript referring to initial conditions

Oil production from the isolated blocks of intergranular porosity into the fracture system will be obtained by a solution gas drive mechanism, and assuming a limiting condition of 32% final free gas saturation, the recovery is calculated as follows:

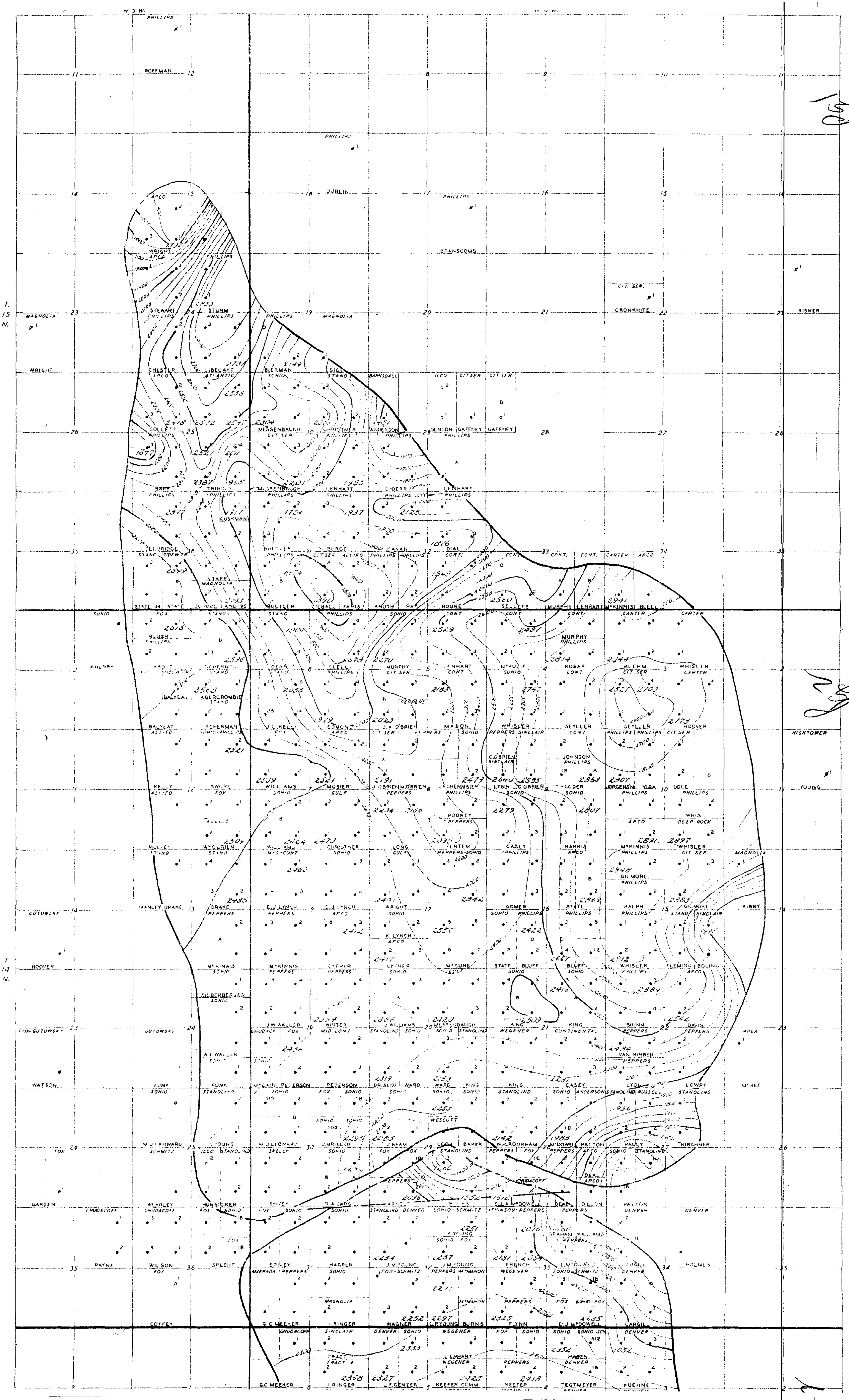
$$\frac{0.8}{1.48} - \frac{0.48}{1.15} = 0.123$$

Total pore volume $= \frac{525 \times 10^6}{.8} \times \frac{1.48}{} = 972 \times 10^6$ barrels

$0.123 \times 972 \times 10^6 = 119.5 \times 10^6$ recoverable stock tank barrels

Oil recovery from the fracture system should be high because the fractures serve as good channels for gravity drainage to become significant. A recovery factor of 70% amounts to 52.5 million barrels of stock tank oil which gives a total ultimate recovery of 172 million barrels. This recovery amounts to 28.7% of the stock tank oil in place, and considering the developed area of approximately 28,700 acres, the recovery amounts to an average of 6,000 barrels per acre.

*M. Muskat, "The Production Histories of Oil Producing Gas Drive Reservoirs," Journal of Applied Physics, Vol. 16, No. 3, March 1945.


T. 15 N.
T. 14 N.
PHILLIPS
ROFFMAN
DUBLIN
BRANSCOMB
CRONKHITE
RISKER
MAGNOLIA
WRIGHT
APCO
STEWART
STORM
CHESTER
LIBECALL
ATLANTIC
BIERMAN
SOHIO
SIGL
STANO
BARNSDALL
ILCO
CIT SER
DENTON
GAFFNEY
MESSENBAUGH
CHRISTNER
ANDERSON
COLLETT
BARR
TRINDLE
KUSHMAN
LENHART
DIAL
BUETLER
BURGE
ALLIED
CAVAN
CONT
CARTER
TAPP
STATE
SCHOOL LAND
FOX
ZIEBAL
FARIS
KNUTH
BOONE
SELLERS
MURPHY
MKINNIS
BUELL
ROUSH
ABERCROMBIE
BALYEAT
MURPHY
MAULIF
KOBAR
BLEHM
WHISLER
PEHERMAN
EDMOND
J.A. O'BRIEN
PEPPERS
MASON
SINCLAIR
SEYLLER
HOOVER
HIGHTOWER
KELLY
SWOPE
WILLIAMS
MOSIER
GULF
LACHENMAIER
LYNN
C. O'BRIEN
CODER
JORGENSEN
VIDA
OOLE
YOUNG
ROOKEY
DEEP ROCK
MBRIEN
MID-CONT
LONG
FENTEM
CASEY
HARRIS
GILMORE
MANLEY
DRAKE
E.J. LYNCH
K. LYNCH
GOMER
RALPH
BOLING
KIBBY
GUTOWSKY
MKINNIS
CYPHER
MGUNE
BLUFF
FLEMING
SILBERBERGER
J.W. WALLER
WINTER
WILLIAMS
KING
WEGENER
CONTINENTAL
SHINN
DAVIS
FOX-GUTOWSKY
A.E. WALLER
VAN BIBBER
FUNK
STANOLIND
PETERSON
MCAIN
BRISCOE
WARD
LYON
LOWRY
RUSSELL
WATSON
WESCOTT
M.J. LEONARD
SCHMITZ
C. YOUNG
SKELLY
J. BEAM
COOK
BAKER
CROOKHAM
MDOWELL
PATTON
PAULY
KIRCHNER
DEAL
GARTEN
CHUDACOFF
BEARLEY
HUNSICKER
SHIVEY
ARNETT
ATKINSON
DILLON
DENVER
PAYNE
WILSON
SPECHT
SPIVEY
HARPER
AMERADA
J.M. YOUNG
FRENCH
GRAHAM
CARGILL
HOLMES
MMAHON
COFFEY
G.C. MEEKER
RINGER
WAGNER
BURNS
FLYNN
E.J. MDOWELL
TRACT
HAGEN
LENHART
KEEFER
TEGTMEYER
KUEHNE
GENZER
2418
2572
1877
2527
2125
1955
1937
2529
2437
2747
2344
2527
2773
2521
2640
2835
2363
2307
2279
2891
2897
2942
2412
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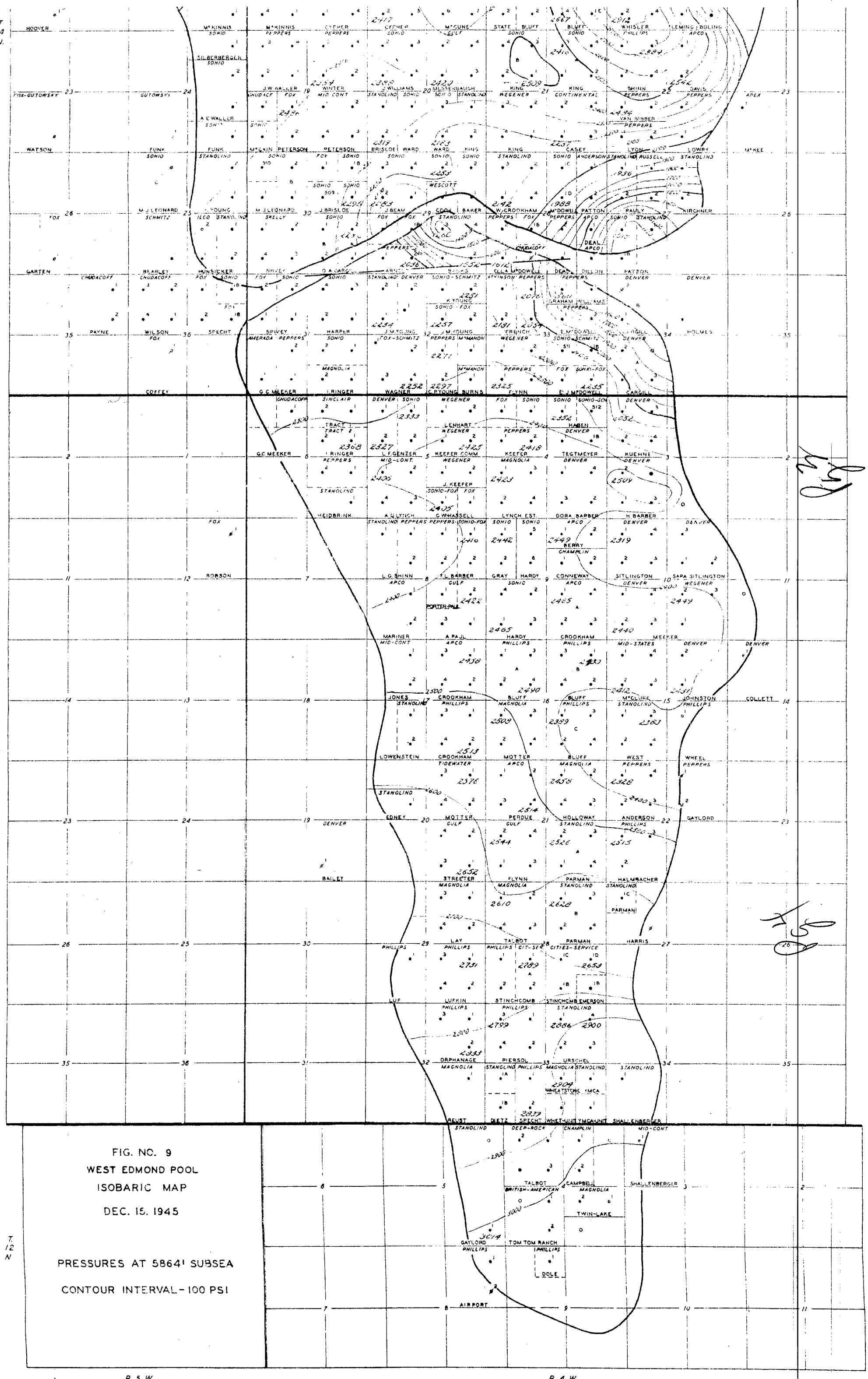
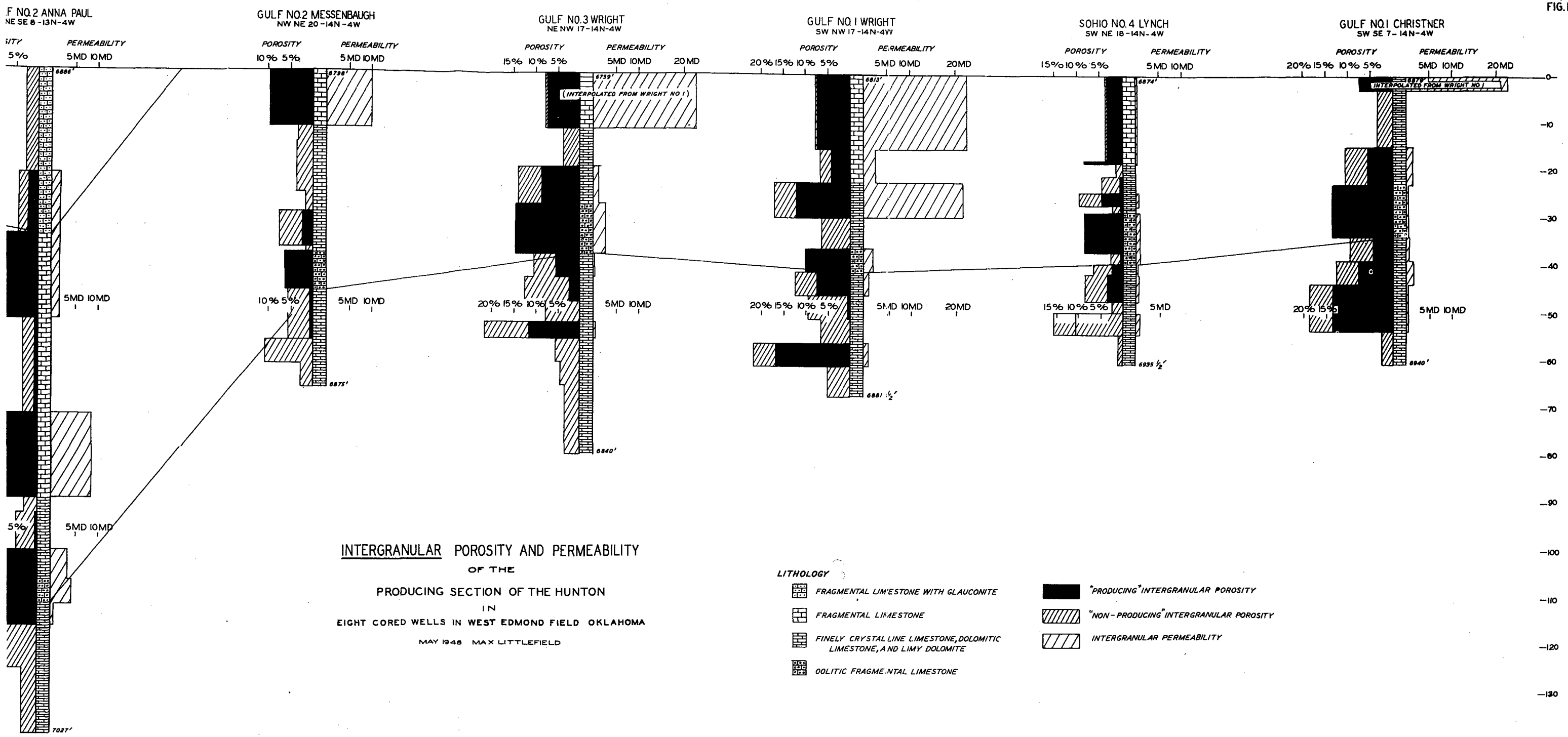
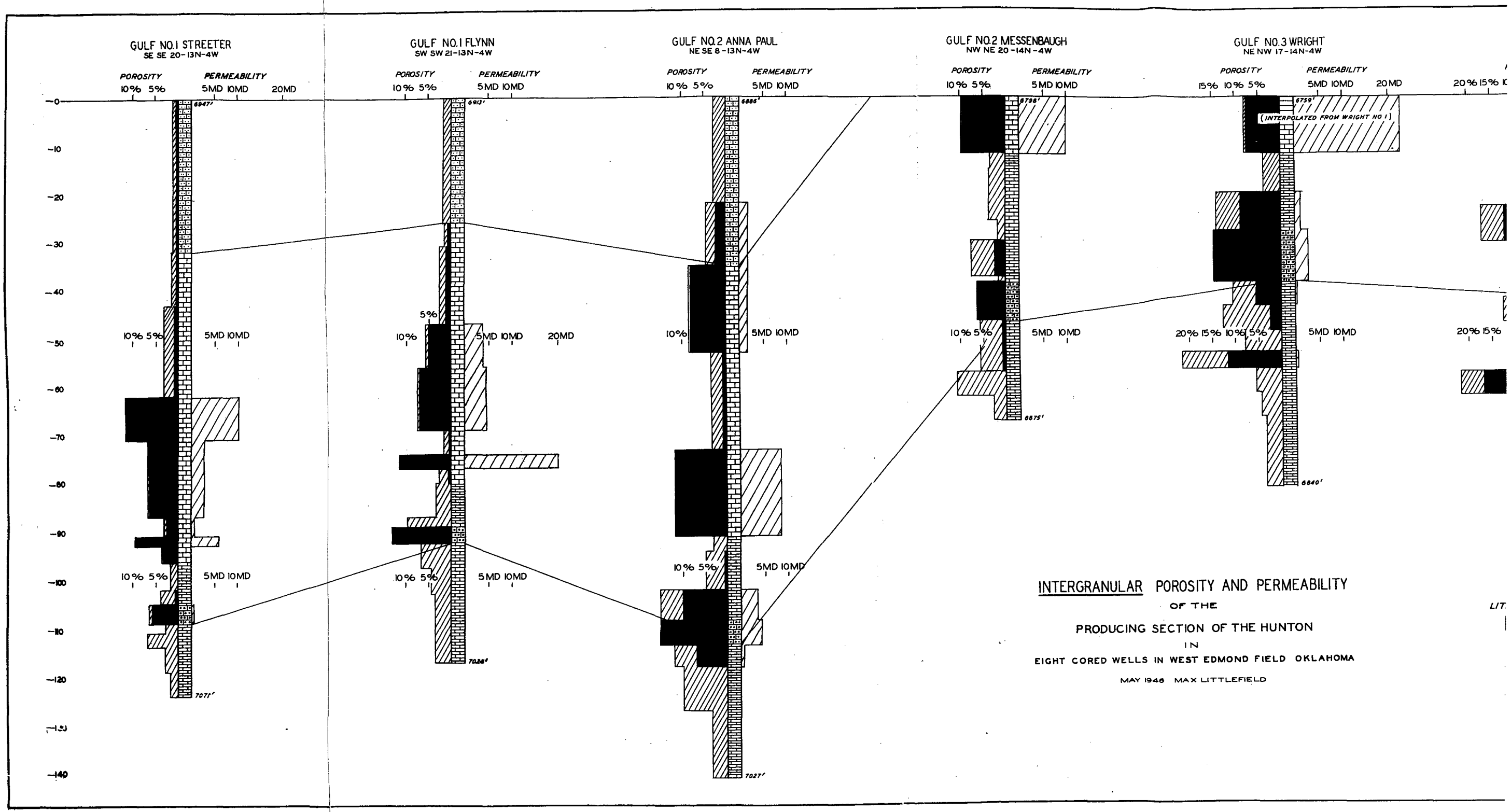

T. 14 N.
T. 13 N.
T. 12 N.
R. 5 W.
R. 4 W.
WEST EDMOND
WESCOTT
DEAL
PATTON
KIRCHNER
LOWRY
VAN BIBBER
SHINN
DAVIS
KING
CASEY
LYON
PAULY
COOK
BAKER
W. CROOKHAM
ELLA McDOWELL
DILLON
FATTON
K. YOUNG
J. M. YOUNG
FRENCH
E. McDOWELL
CARGILL
HOLMES
SPIVEY
HARPER
WAGNER
C. P. YOUNG
BURNS
FLYNN
HABEN
G. C. MEEKER
I. RINGER
L. F. GENZER
KEEFER COMM
KEEFER
TEGTMEYER
KUEHNE
LENHART
J. KEEFER
A. Q. LYNCH
G. WHASSELL
LYNCH EST.
DORA BARBER
H. BARBER
BERRY
L. G. SHINN
F. L. BARBER
GRAY
HARDY
CONNEWAY
SITLINGTON
SAPA SITLINGTON
PORTER-PAUL
MARINER
A. PAUL
CROOKHAM
MEEKER
JONES
BLUFF
McCLURE
JOHNSTON
LOWENSTEIN
MOTTER
WEST
WHEEL
EDNEY
PERDUE
HOLLOWAY
ANDERSON
GAYLORD
STREETER
PARMAN
HALMBACHER
LAY
TALBOT
HARRIS
LUFKIN
STINCHCOMB
EMERSON
DRPHANAGE
PIERSOL
URSCHEL
WHEATSTONE
YMCA
BEUST
DUETZ
SPECHT
WHET-UNIT
YMCA-UNIT
SHALLENBERGER
CAMPBELL
TWIN-LAKE
TOM TOM RANCH
DOLE
AIRPORT
FIG. NO. 9
WEST EDMOND POOL
ISOBARIC MAP
DEC. 15. 1945
PRESSURES AT 5864' SUBSEA
CONTOUR INTERVAL - 100 PSI

FIG. NO. 5



INTERGRANULAR POROSITY AND PERMEABILITY
OF THE
PRODUCING SECTION OF THE HUNTON
IN
EIGHT CORED WELLS IN WEST EDMOND FIELD OKLAHOMA

MAY 1948 MAX LITTLEFIELD



INTERGRANULAR POROSITY AND PERMEABILITY
OF THE
PRODUCING SECTION OF THE HUNTON
IN
EIGHT CORED WELLS IN WEST EDMOND FIELD OKLAHOMA
MAY 1946 MAX LITTLEFIELD

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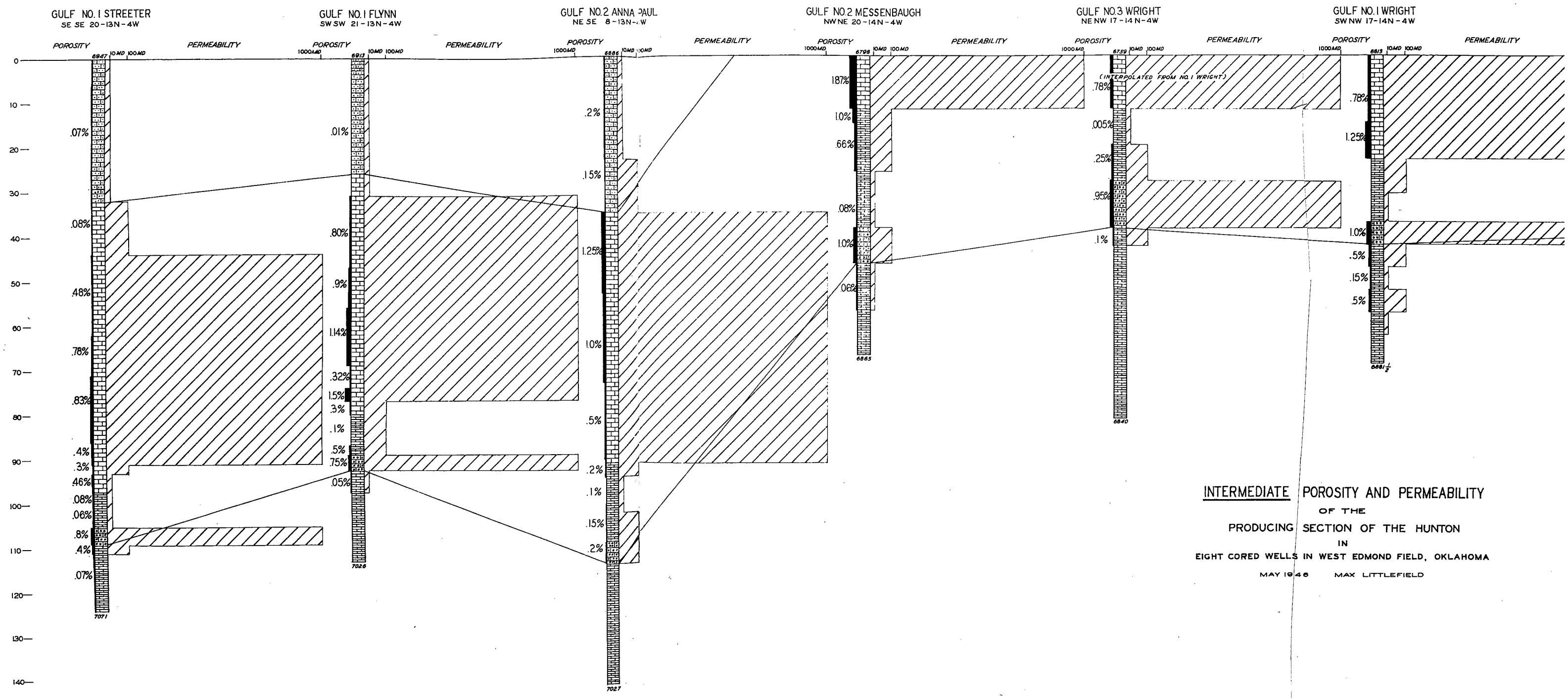


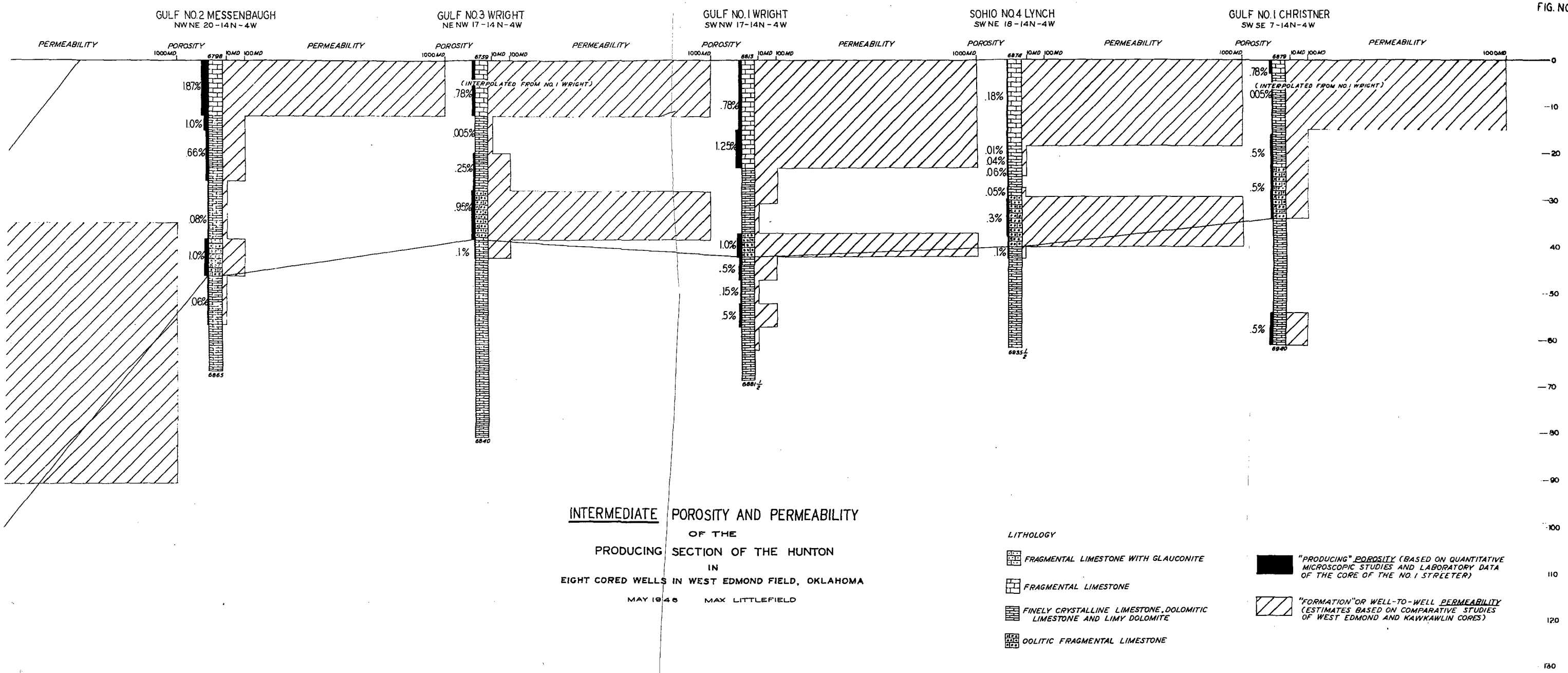
INTERMEDIATE POROSITY AND PERMEABILITY
OF THE
PRODUCING SECTION OF THE HUNTON
IN
EIGHT CORED WELLS IN WEST EDMOND FIELD, OKLAHOMA

MAY 1946 MAX LITTLEFIELD

Pg 1

Pg 2

FIG. NO. 5A



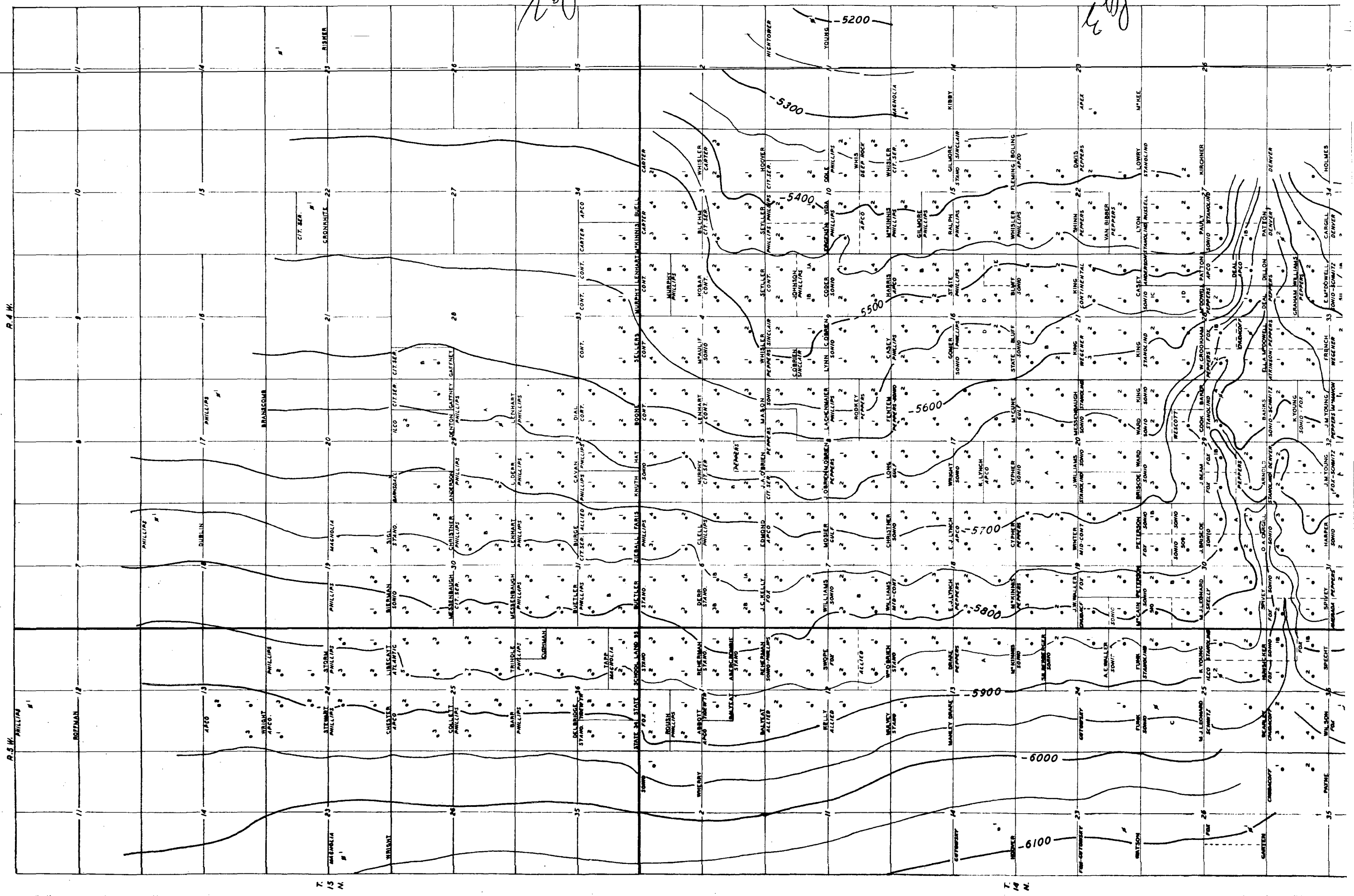
INTERMEDIATE POROSITY AND PERMEABILITY
OF THE
PRODUCING SECTION OF THE HUNTON
IN
EIGHT CORED WELLS IN WEST EDMOND FIELD, OKLAHOMA

MAY 1948 MAX LITTLEFIELD

Pg 4

Pg 2

Pg 3


R.4 W.
R.5 W.
T. 15 N.
T. 14 N.
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-5300
-5400
-5500
-5600
-5700
-5800
-5900
-6000
-6100

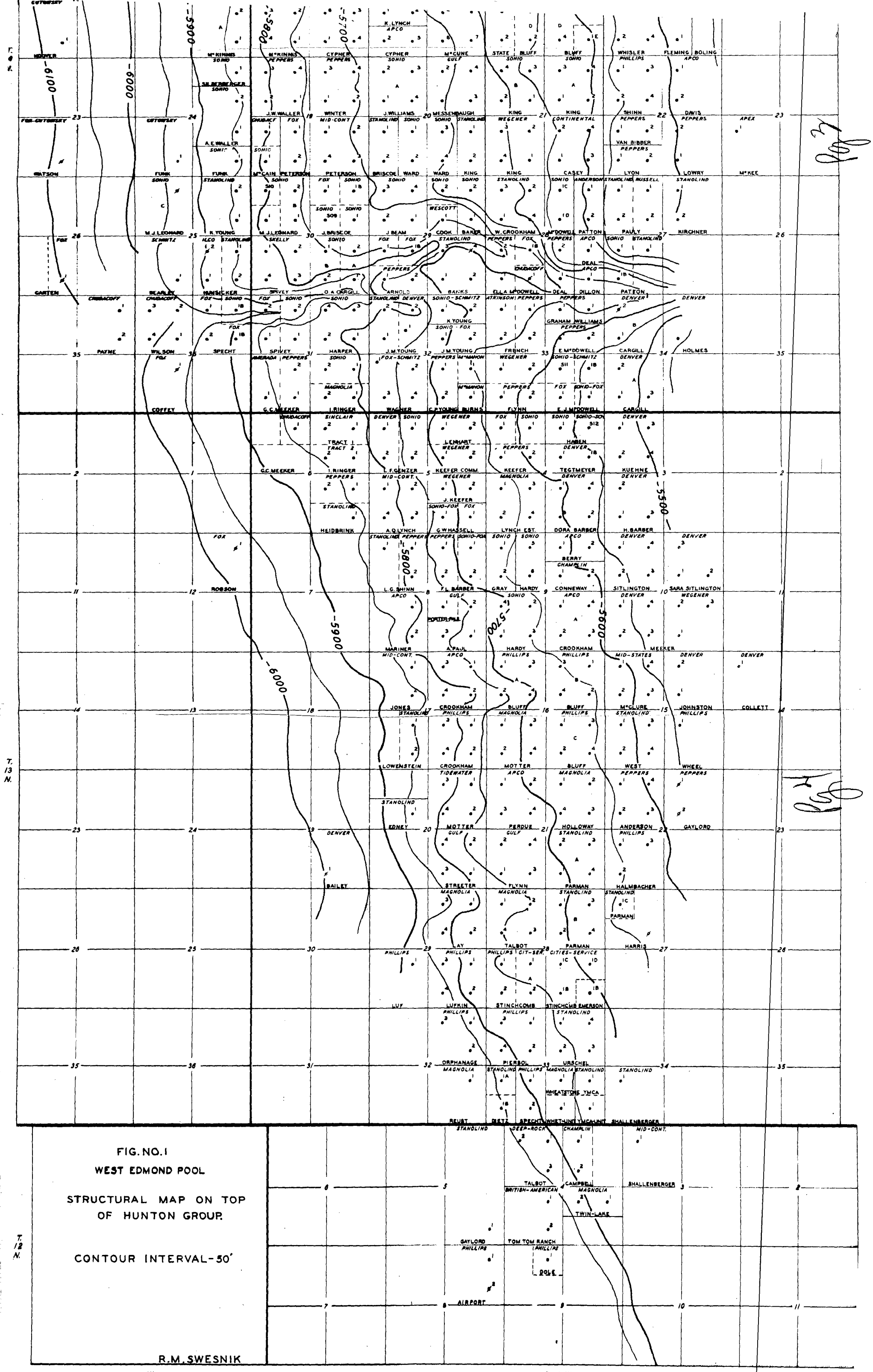


FIG. NO. 1

WEST EDMOND POOL

STRUCTURAL MAP ON TOP OF HUNTON GROUP.

CONTOUR INTERVAL-50'

R.M. SWESNIK

APPENDIX

A. STRUCTURAL HISTORY OF WEST EDMOND
By P. H. Reisher

The West Edmond Pool is located in Townships 12 and 13 North, Range 4 West and Townships 14 and 15 North, Range 4 and 5 West, Oklahoma. It was discovered by an independent operator, Ace Gutowsky, who drilled the discovery test at the NW/c NW/4 SW/4 Section 32, Township 14 North, Range 4 West following a "doodle bug" survey.

This test found water in the original objective, the Wilcox sand of Ordovician age, but disclosed porosity and staining in the Bois d'Arc member of the Hunton limestone. Preliminary perforating on April 5, 1943, resulted in the hole filling with oil of 41° gravity, and further perforating on April 12 resulted in a flow of 535 barrels of oil through a 9/32" choke in 24 hours.

The West Edmond Pool is unique among Oklahoma oil pools in that it is the largest area producing oil from a limestone, and, the oil entrapment occurred solely as a result of truncation. The porosity and the truncation of the limestone are both linked directly with the timing and the amount of upward movement which produced the structural arch known as the Granite Ridge. The axis of this Ridge passes through the older Edmond Pool centering in Section 31, Township 14 North, Range 3 West five miles east of the Gutowsky discovery, and continues southward to the Oklahoma City and Moore pools and northward to the Crescent Pool.

The beginnings of the structural movement which produced the Granite Ridge are observable in Middle Ordovician time, but the amount of movement was small as evidenced by the fact that a rather uniform thickness of Sylvan shale was deposited over the area immediately preceding the deposition of the Hunton limestone.

The maximum thickness of the Hunton limestone so far observed in the West Edmond Pool is 403'. This was disclosed by the dry hole drilled at the C SW SE Section 19, Township 13 North, Range 4 West and it is probable that a comparable thickness of Hunton was deposited over much of the West Edmond area. The thickness of the five members which constitute the Hunton are taken from this dry hole, and are shown in the following table:

	Member	Thickness	Age
	Frisco	15'	Oriskany
	Bois d'Arc	145'	Oriskany
Devonian	Haragan)		Helderberg
Silurian	Henryhouse)	56'	Niagaran
	Chimneyhill	187'	Alexandrian
	Total	403'	

Following the close of Hunton deposition the Granite Ridge was uplifted, causing the westward tilting of the Hunton, and the eventual removal by truncation or beveling of the higher updip portions of that formation. To the west and southwest, the truncation was progressively less. The full extent of this beveling, plus the post-Mississippian pre-Cherokee truncation, is shown by the thickness of Hunton limestone remaining in various key wells. These are listed from north to south and are approximately along strike.

C SE NW Sec. 25-15N-5W
287' of Hunton (51' of Bois d'Arc)

C SE NE Sec. 29-15N-4W
283' of Hunton (10' of Bois d'Arc)

NW NW SW Sec. 32-14N-4W
350' of Hunton (90' of Bois d'Arc)

C SW SW Sec. 27-14N-4W
232' of Hunton (No Bois d'Arc)

C SW SE Sec. 19-13N-4W
403' of Hunton (145' of Bois d'Arc)

C SE NW Sec. 27-13N-4W
224' of Hunton (No Bois d'Arc)

The primary porosity and permeability of the Bois d'Arc member of the Hunton was enhanced by further uplifting of the area to such an extent that the Hunton surface was for a time approximately a hundred feet above the regressing Hunton sea. This is demonstrated by the east-west

stream channel extending from the land area in the vicinity of the older Edmond pool westward through Sections 33, 28, 29, 30, 31, Township 14 North, Range 4 West to Section 36, Township 14 North, Range 5 West. In the deeper western portions of this narrow channel the bottom of the stream was more than 120' below the flat-topped Bois d'Arc cliffs to the north and south. The Bois d'Arc was completely removed from this narrow channel. The age of the stream is now believed to be post-Hunton and pre-Woodford. This is implied by the finding of Woodford on Hunton (Haragan) with a thin Mississippian limestone capping the Woodford in wells situated in the channel.

Subareal erosion is also indicated by a number of shallow tributaries to this main channel, but erosion was not sufficiently prolonged to produce typical karst topography. However, the time required to form a channel was sufficient to permit meteoric waters to greatly amplify, by solution, the natural porosity and permeability of the Bois d'Arc. The rapid movement of such water through the limstone was facilitated by the ease of discharge into the stream channel or into the Hunton sea which was lying a short distance to the west. This may account in part for the fact that the porosity and permeability of the Bois d'Arc in the West Edmond pool surpasses that found in any previous development of that horizon.

The prolific production of the Bois d'Arc has partially obscured the fact that considerable oil is being produced in the northern and southern portions of the pool from the Chimneyhill. It is probable that in the future, when the Bois d'Arc has been depleted, additional oil will also be recovered from the Chimneyhill in the central portion of the pool.

Transgressing Mississippian seas then deposited Woodford shale and Mississippi limestone over the area, thus effectually sealing the porous members of the Hunton. These in turn were truncated during the continued upward movement of the Granite Ridge in post-Mississippian pre-Upper

Cherokee time, as a part of the greatest diastrophic movement of Paleozoic time in the north central Oklahoma area. Using the top of the Oswego limestone as a datum plane, and the wells heretofore listed, the amount of tilting is indicated by the difference in the thickness intervals which are revealed between the top of the Oswego and the top of the Sylvan shale.

C SE NW Sec. 25-15N-5W	887'	
C SE NE Sec. 29-15N-4W	797'	36' per mile
NW NW SW Sec. 32-14N-4W	750'	
C SW SW Sec. 27-14N-4W	628'	56' per mile
C SW SE Sec. 19-13N-4W	813'	
C SE NW Sec. 27-13N-4W	541'	98' per mile

It will be noted that the thickness intervals decrease from northwest to southeast. This is related to the maximum amount of uplift which centered in the Oklahoma City Pool where at least one well found Oswego limestone resting on Arbuckle.

Structurally the West Edmond Pool is located on a west dipping monocline approximately four miles west of the apex of the Granite Ridge. From the pool the west and southwest regional dip continues to the bottom of the Anadarko Basin.

The present rate of westward dip of the base of the Hunton, and of the Hunton surface, as shown by the wells heretofore used for comparative purposes, follows:

Township 15N, Ranges 4 & 5W.	Top of Hunton averages 107' per mile. Base of Hunton averages 109' per mile.
Township 14N, Range 4W.	Top of Hunton averages 83' per mile. Base of Hunton averages 138' per mile.
Township 13N, Range 4W.	Top of Hunton averages 120' per mile. Base of Hunton averages 170' per mile.

The pool is limited to the east by the truncation of the reservoir and to the west by an advancing water front.

B. STRATIGRAPHY OF THE HUNTON GROUP, WEST EDMOND POOL
By J. T. Richards

Production in the West Edmond Pool is primarily from the Hunton limestone group. Considerably confusion exists regarding the nomenclature of the Hunton groups applied to this pool. This is partly due to irregularities in deposition, thickness, porosity and other characteristics.

The original subdivision of the "Hunton Limestone" was made by J. A. Taff as published in the Tishomingo and Atoka Folios and Professional Paper No. 31 of the U.S.G.S. Taff also subdivided all the strata found in the Arbuckle and Wichita Mountain areas. On the accompanying correlation chart are shown the general subdivisions made by Taff between the Sycamore limestone of lower Mississippian age to the Viola limestone of upper Oridivician age.

Some idea of his conception of the relationship of the beds of the Hunton limestone and the adjacent beds may be gained from this chart. His works were published primarily in 1903 and 1904. In 1911 C. A. Reeds published the nomenclature of the Hunton group essentially as it is used today (Amer. Jour. Sci., 4th Ser. Vol. 32) with the exception of the Frisco member which he added in 1926 (Am. Mus. Nat. Hist. Jour. Vol. 26, pp 470-473). His 1911 subdivision is shown. In 1942 Dr. Chas. Ryniker compiled a correlation chart for the use of Gulf employees and his subdivisions from the lower Pennsylvanian to the Viola limestone are shown on the chart. To his subdivisions of the Hunton has been added the Hawkins limestone as described by Dr. Ross Maxwell in his doctorate thesis at Northwestern University (original manuscript) in 1936. This addition has been made because the presence of this bed has been substantiated both on the surface outcrop and in sub-surface. Gun perforator samples show its presence in at least two wells in the Fox pool. In the last column of the correlation

Period	Series	Group	Taff, Ulrich, and Girty. USGS Prof.P.31 1903-1904	Reeds Okla.Geol.Surv. Bull. #3,1911	Ryniker Gulf Correlation Chart for Southcentral Okla. 1942	Richards West Edmond Pool April, 1945
MISSISSIPPIAN	Valmeyer	Meramec	Sycamore ls.		Mayes ls. Sycamore facies	Mississippian ls.
		Osage				
	Kinderhook				Woodford sh.	Woodford sh. Misener sand
					Misener sand	
DEVONIAN	Upper		Woodford sh.			
	Middle	Hamilton Marcellus				
	Lower	Oriskany	Hunton Limestone: Top of the Hunton		Frisco ls.	Frisco ls.
		Helderberg	Hunton Limestone: "Middle Member"	Bois d'Arc ls.	Hunton Group: Bois d'Arc ls.	Hunton Group: Bois d'Arc; Coarse ls. Oolite & dolomite zone
				Haragan sh.	Haragan marl	Haragan ls.
	Cayugan					
SILURIAN	Niagaran		Hunton Limestone: Upper part of basal member; "Lower Member"	Henryhouse sh.	Henryhouse marl; Chimneyhill ls.: Pink Crinoidal	Henryhouse ls.; Hunton Group: Chimneyhill ls.: Pink Crinoidal ls.
	Alexandrian		Sylvan sh.	Chillicothe ls.: Pink Crinoidal; Glauconitic ls.; Oolitic ls.	Glauconitic ls.; Oolitic ls.; Chimneyhill ls.: Hawkins ls.*	Hunton Group: Chimneyhill ls.: Glauconitic ls.
ORDOVICIAN	Cincinnatian	Richmond	Viola ls.	Sylvan sh.	Sylvan sh. Fernvale ls.	Sylvan sh. Fernvale ls.

* Described by Maxwell, 1936. (Added to chart by Richards.)

chart is shown the author's interpretation of the pre-Pennslyvanian beds down to the Viola limestone as they occur in the West Edmond Pool.

Because the characteristics of the several beds of the Hunton have a critical bearing on the production of oil, each will be described in detail, as they have been seen in cuttings and cores from wells in the pool. Because of its intimate association with the Hunton group, a description of the Misener sand will be included.

1. Misener Sand

The Misener sand has a maximum known development of not to exceed five feet of thickness. Samples indicate it to be a fine to medium grained, rounded, frosted sand in a matrix of white, fine grained, usually sucrose, argillaceous limestone with erratic fragments and small pebbles of white, grey and brown chert. The proportion of limestone to sand varies from 20% to 80% limestone. Little porosity, no permeability and no oil stains have been observed. A core from Gulf-Streeter No. 1 at the C SE SE Section 20-13N-4W confirmed sample evidence that limy sandstone, as described, grades into a chert conglomerate composed of white and brown chert pebbles cemented with a hard, sandy limestone. No determinations of porosity or permeability were possible. In the northern part of the pool the Misener sand is absent over most of the area. Where present it gives the first "break" on the resistance side of electric logs and, therefore, is usually called, "top of Hunton" or "top of Bois d'Arc."

2. Frisco Limestone

Most geologists working in the West Edmond pool do not recognize the Frisco as a separate unit but include it with the Bois d'Arc member. It has definite characteristics. It is a coarsely crystalline, clastic, fragmental limestone with sparse crinoid segments and fossil fragments in the upper part but these increase with depth and many of the crystals and

fragments may show a delicate pink tinge. Small nodules of glauconite frequently occur in the lower two-thirds of the bed and disseminated glauconite is frequent in the lower one-third. White translucent and opaque chert is common in the upper half. The most outstanding characteristic of this bed is the blocky, rectangular appearance of the limestone. Many crystals show rhombohedral structure. So far as can be determined, no well in the pool is producing exclusively from the Frisco member. Some of the wells on the west side of the pool are producing from the Frisco and a thin section of the Bois d'Arc. Drilling time is erratic in many cases. In general, it is thickest in the southwest part of the field and thins to the east and northeast, against the unconformity. Over much of the northeast part of the field it is absent.

3. Bois d'Arc Member

The Bois d'Arc member of the Hunton is conformable with the Frisco and the transition is gradational. Therefore, the contact between the two cannot be reduced to a matter of inches but is well within the limits of one sample interval; five or ten feet. In cores the contact has been placed within inches. The upper portion of this member follows the typical description of the Bois d'Arc limestone but if the lower portion has been found on the outcrop, its description is unknown.

The upper limestone, as the term is here used, consists of coarsely crystalline, calcitic limestone fragments, usually white or pink in color, together with coarsely crystalline crinoid segments, usually deep pink in color, and some few fossil fragments in a matrix of finely crystalline, granular to sucrose limestone. In cores all types of porosity have been observed. Drilling time is usually erratic.

The oolitic beds, or the lower beds of the Bois d'Arc, are actually a series of 3 beds, where a maximum development is had, i.e., an upper,

fine grained, sucrose, soft, slightly argillaceous limestone which is usually well oil stained but no cores have yet shown any free oil. The middle bed is the oolitic bed from which the series derives its name. It varies widely in its characteristics. It is universally oolitic. The oolites are large but well below the pisolite size. Generally the oolites are partially, or nearly wholly, dissolved by differential solution. Where solution of the oolites is well advanced the solution of the hard, tight, calcitic cement is retarded. In these cases the cavities of the oolites may contain free oil in cores and cuttings show much staining of the residual oolite material. Such a limestone has great porosity but little permeability. In a very few cases the oolites appear well preserved and the matrix dissolved. In these cases the outer surfaces of the oolites appeared oil stained but the insides of the oolites are hard, tight, unstained limestone. In other cases neither the oolites nor the matrix seemed to have suffered any solution and in these cases no porosity, permeability or staining is indicated. Except in the case where the matrix has been dissolved away, little or no effective permeability exists in this bed. The lower member of this series is a dark grey to black, very finely crystalline, argillaceous, hard limestone in the north part of the pool but is little more than a thin, granular limy shale in the south part of the pool. No oil staining is observable in cuttings and in cores nothing more than a smell of gas has been observed. Due to the presence of so much clay, porosity of the intercrystalline type is negligible.

The thickness of the two members of the Bois d'Arc are greatest in the south end of the field where the upper limestone member reaches a maximum of about 120' and the lower oolitic beds reach a maximum of approximately 35'. The lower oolitic beds, however, reach their maximum development in the north end of the field where a total thickness of 45' has been

recorded. Thinning of this member in the south is due to absence of the lowermost, dolomitic, argillaceous limestone and the lower portion of the oolitic member. These lower oolitic beds have been placed in the Bois d'Arc for the following reasons. Apparently they represent material deposited at an unconformity; therefore, they would be younger than the Haragan. They appear to transgress the Haragan from west to east and northwest to southeast. It has been the practice of the Gulf to include the whole series with the Bois d'Arc. Other geologists include only those beds above the oolitic limestone. Others include the oolitic limestone and the upper limestone. One company excludes the whole series from the Bois d'Arc and includes it with the Haragan.

This difference of classification is the cause of so much confusion regarding the so-called "Base of Bois d'Arc." This confusion has been augmented by the interpretation of electric logs of this section. When electric logs were made of the first wells in the north part of the pool, a rather striking small "bulge" was shown on the self potential curve which was at first thought to be due to high porosity and permeability in the oolitic member. The base of the Bois d'Arc was placed either at the top or the bottom of this bulge according to the interpretation outlined. This interpretation holds very closely in those wells which have no porosity or saturation in the uppermost portion of the Haragan limestone but where staining and porosity occur in the uppermost Haragan, the bulge on the self potential curve appears to follow the staining and porosity down into the Haragan. This set of circumstances has given quite a wide variation to Bois d'Arc limestone thicknesses; much wider than actual sample examination would justify.

The above statements relative to the bulge on the electric log curve was substantiated by sampling the gun perforator in Gulf No. 1

Wright where the bulge occurred in the lower portion of the oolitic limestone and the upper portion of the lowermost dolomitic limestone. In Gulf's No. 1 Paul the bulge occurred in porous Haragan.

4. Haragan-Henryhouse Limestones

The beds of the Haragan and Henryhouse age have usually been termed marls but cores and samples in the West Edmond Pool show that beds of this age are nearly wholly limestone. Therefore, they are so designated in the table. The limestones of this series are usually taken as a unit because they are so similar lithologically and their microfauna is so similar, much difficulty is encountered in differentiating them on either basis. A disconformity exists between the two formations. This is not recognizable in samples or cores.

In the West Edmond Pool, a local development is found that is peculiar to the area; therefore, some differentiation between the horizons must be made. It appears that all of the Haragan and the uppermost part of the Henryhouse follow the typical development of these limestones by being grey to tan, very finely crystalline, hard, sucrose, slightly argillaceous limestone with little or no porosity except locally where minor porosity has been developed by weathering of the uppermost portion of the Haragan. Only in this portion is staining usual, although a smell of gas may be obtained in the unstained portion. Some channel porosity has been reported from this horizon.

The lower portion of the Henryhouse has shown a development throughout the field which appears to be peculiar to the region adjoining the old Granite Ridge. It extends as far north as the Henryhouse is encountered in that direction. Its limits to the west are unknown. Sufficient data for delimiting it on the east side of the ridge is lacking. Instead of the usual fine-grained sucrose limestones, is found a coarsely

crystalline, fragmental limestone with numerous brownish pink crinoid segments set in a matrix of fine-grained, granular to sucrose limestone. This type of limestone may continue down to and apparently be conformable with the underlying Pink Crinoidal member of the Chimneyhill section, or it may be separated from the Pink Crinoidal by a series of fine sucrose limestones. Oil staining is prevalent through the coarsely crystalline section. The upper finer-grained limestones have a maximum development of about 100' while the lower coarsely crystalline beds have a maximum development of approximately 130', including the lowermost finely crystalline limestones where they occur.

5. Chimneyhill Limestone

All members of the Chimneyhill limestone are present in the West Edmond Pool. Only the Pink Crinoidal and Glauconitic members are easily recognizable in samples. The Oolitic and Hawkins members are thin and usually recognizable in cores only. The total thickness of the Chimneyhill limestone varies from a maximum of about 40' to possibly less than 20'. Gulf #1 Streeter in 21-13N-4W cored a total 31'.

The Pink Crinoidal member is a fragmental limestone containing many crinoid stem fragments, set in a matrix of grey to white, finely crystalline, tight, hard limestone. The member derives its name from the color of the included crinoid stems. These are usually colored a deep reddish-pink. The color is sufficiently contracting to be differentiated from the brownish pink of the coarsely crystalline member of the Henryhouse. This member is quite consistently about 20' in thickness. Porosity of some degree is nearly always present but in widely varying degrees. Some oil has been produced from this member in many parts of the pool but the greatest production has been along the east edge of the pool where the member has been truncated.

The Glauconitic member may be absent in parts of the pool due to the overlap of the Hunton series, and the Chimneyhill limestone in particular, onto the Sylvan shale. Samples are usually very poor by the time this horizon has been reached, and the member is not distinctive on the electric logs. Its maximum accredited thickness is 20'. In the Gulf #1 Streeter cores it measured 8'. It is a buff, finely crystalline, compact limestone with fairly abundant nodules of glauconite. Bluish-white to very dark brown translucent chert is often present in the uppermost few feet of the member.

The Oolitic member can be described best from cores. Fragments of it are infrequently found in samples. This indicates its absence over parts of the pool. The maximum thickness indicated is not in excess of 5'. Cores and samples show it to be a finely crystalline, sucrose, hard limestone in which oolites occur at different horizons. These horizons are separated by zones of non-oolitic limestone. Color varies from a dull grey to a deep brown. Oil staining is almost universally found in some zone where porosity has been developed by solution. Too little material from this member has been examined to definitely determine the type of porosity.

The Hawkins member was not recognized until the Gulf #1 Streeter cores were taken. It consists of about one foot of very dark grey-brown granular, soft, highly argillaceous, limy dolomite. No porosity was observed.

6. Truncation

In the above discussion, the thicknesses given for the several members have been for the normal developments of these members. It should be understood that all members of the Hunton group are truncated by the unconformity between them and the lower Pennsylvanian beds, which overlie them. Therefore, some place in the area the thickness of all members will

be zero.

7. Dolomitization

In order to avoid complicating descriptions unduly, no descriptions have been given of the members which have been dolomitized. The reason for this is that dolomitization is found in all members some place in the pool, but seldom is dolomitization found in more than one or two members in any one well. Only in the extreme north end of the pool is dolomitization so complete as to mask the characteristics of a complete unit. The degree of dolomitization varies from the occurrence of rare rhombs in a matrix of finely crystalline Haragan-Henryhouse limestone to the complete dolomitization of the Bois d'Arc limestone, Haragan-Henryhouse limestone and possibly part of the Chimneyhill. In the former case, porosity does not appear to have been increased. In the latter case, porosity and permeability have undoubtedly been greatly increased. No comprehensive study has been made of dolomitization in this pool so bands or zones of dolomitization present no definite pattern or trend. Until such data can be assembled, it is assumed that only patch-work occurrences prevail.

C. GEOLOGICAL HISTORY OF THE DEVELOPMENT OF POROSITY AND CONCLUSIONS AS TO CHARACTER OF POROSITY AT WEST EDMOND

By **Max Littlefield and Charles Ryniker**

The geological history of the West Edmond area permits deductions concerning the times and processes which were operative in the formation of porosity. However, the relative quantitative effect of any given process at any given time cannot be determined.

1. Deposition and Consolidation of the Bois d'Arc Limestone

The coarser fragmental limes of the Bois d'Arc had some interstitial primary porosity immediately after deposition. Although this porosity was greatly reduced during consolidation (by compaction and by some degree of intercrystallization along contact lines) it is certain that some primary porosity was present after consolidation. Regional studies of Hunton well-sections show that the primary porosity and permeability of the Bois d'Arc is not sufficient for a commercial reservoir. The presence of any degree of primary porosity and permeability facilitates the circulation of fluid and may thus become an important factor in the development of solution porosity at some later time.

2. Uplift and exposure during Middle and Upper Devonian Time

Regional studies show that all members of the Hunton were beveled by erosion during this time and that the Woodford shale was deposited across this beveled surface. The pre-Woodford paleo-outcrops of the Chimneyhill, Haragan-Henryhouse, and Bois d'Arc are many miles north and northeast of West Edmond.

In addition to the broader picture of regional beveling, this period of erosion produced a considerable degree of local topographic relief. Within West Edmond the maximum relief is about 120', in a channel less than a quarter-mile in width, trending east-west in the south part of Township 14N-4W. Such deep incisement of drainage, completely through the

Bois d'Arc, gave ample opportunity for the circulation of rain-derived water through the entire Bois d'Arc, and, to some degree, into the lower members of the Hunton. On the basis of the evidence of the development of pre-Woodford topography, the formation of some degree of solution porosity through the whole thickness of the Bois d'Arc is possible and highly probable.

Such deep penetration of pre-Woodford solution at West Edmond is in direct contrast with the relatively shallow penetration of solution shown in well-sections under thick Woodford and Mississippi Lime cover. In such cases the porosity is limited to the upper 20' except near the thin bevel-edges of members of the Hunton where the additional process of dolomitization may affect a greater thickness.

3. Submergence, Followed by Deposition of the Woodford Shale and the Mississippi Lime

The Woodford shale was deposited across the beveled paleo-outcrops of the Hunton members effectively sealing those edges. In West Edmond it is present in the eroded channel but is no thicker in the channel than in nearby areas. Because of such irregularity of the base of the Mississippi Lime, no satisfactory figure can be obtained for the rate of pre-Mississippian dip in the east-west direction.

The total thickness of the Woodford and Mississippi Lime cover is more than 1000' in western Oklahoma and probably exceeded 300' in central Oklahoma.

During this time some secondary dolomite and calcite may have formed in the pre-Woodford solution porosity. In the case of dolomite the porosity may have increased. In the case of calcite, the porosity may have decreased. The factors causing such changes, the manner of change, and the time of the change are not well understood. There is little evidence

of dolomitization or calcite deposition in the upper 20' of the Hunton in the West Edmond pool.

4. Strong Uplift at the Close of the Mississippian Accompanied by Erosion

In addition to the regional uplift, strong differential movements caused local areas to rise. The Oklahoma City sector of the Granite Ridge was faulted on the east side and the west side rose. The West Edmond pool was well down on the west flank. On a top-Oswego datum, the rate of dip on the base of the Hunton did not exceed 40' per mile. It is probable that all lime and dolomite formations were fractured--a three-dimensional fracture system which had an individual space pattern for each rock unit. Such fracture systems can be observed on outcrops of limestones and dolomites in the Arbuckle and Wichita Mountains, or on lime and dolomite outcrops in any structurally disturbed area.

Erosional beveling of the uplift removed the Mississippi lime and Woodford from the crest of the Granite Ridge exposing the Hunton on the surface. Further erosion stripped the Hunton of cover for several miles down flank and, at Oklahoma City, exposed the Arbuckle at the crest of the ridge. The pre-Woodford channel, cutting through the Bois d'Arc, was in part re-excavated and afforded a ready-made opportunity for the down-dip flow of water from the ridge through, rather than on the surface of, the Bois d'Arc. This situation was favorable for extensive solution. The character and distribution of pre-Woodford solution porosity and permeability; the degree and extent of fracturing; the volume of water; the rate of flow; and the capacity of the water for solution are quantitatively unknown factors which would have had strong influence on the distribution of the void space made by solution.

5. Submergence, Followed by Deposition of Pennsylvanian and Later Beds

The deposition of clays, later compacted to form the Cherokee shales, formed an impervious seal over that part of the Hunton which was exposed on the pre-Cherokee erosion surface. The Woodford and Misener cover over much of the Hunton prevented entry of clay into the solution voids.

With increasing load of sediment, compaction tended to close unsupported horizontal and near-horizontal fractures and channels. Vertical and near-vertical fractures and channels were less likely to be closed.

The concentration of dissolved solids in water in the Hunton at this time would be a function of the mixing of connate Devonian water; fresh water derived from pre-Woodford erosion; sea-water from the Woodford; fresh water derived from pre-Cherokee erosion; sea-water from the Pennsylvanian. There is also the possibility of intrusion of water through faults from the Wilcox or other formations through faults. The possible combinations of such water mixtures may be responsible for the dolomitization and the deposition of secondary calcite in the Hunton of some areas. As has been stated, this type of secondary mineralization is not abundant throughout West Edmond, although individual wells may encounter a considerable amount.

Post-Cherokee structural movements were of two types: differential uplift of the Granite Ridge and westward tilting of the whole region. The combined effect of these two movements is shown by the 70-80' per mile west dip of the top of the Oswego in the West Edmond pool. These movements may have caused fracturing or re-fracturing of the compacted, solution-riddled, parts of the Hunton of West Edmond, thus adding to the formation permeability.

6. Conclusions as to the Character of Porosity in the West Edmond Reservoir

Consideration of the physical evidence, plus the data of geologic

history, point to solution as the most important process in the formation of Bois d'Arc porosity at West Edmond. The known structural movements were of a magnitude sufficient to cause the fracturing of the Hunton, at times previous to, during, and after the time during which the Hunton was exposed to solution processes. The structural and topographic conditions during these times of exposure necessitated the passage of surface drainage across the Hunton outcrop. The presence of a marked channel, cutting through the Bois d'Arc, afforded opportunity for such surface drainage to pass through, rather than on, the Bois d'Arc of portions of the area.

From these data it can be deduced that solution operated to enlarge a network of fractures, but no quantitative statement of the size, or of the lateral and vertical distribution of the network can be made. Such extensive solution would be preceded and accompanied by some degree of solution of the limestone in the interfracture rock volumes. From geologic evidence alone no quantitative statement can be made except that the greater part of the interfracture or inter-channel rock volumes would be left in the early stages of solution and some parts would be unaffected.

From a geologic viewpoint it appears that results of laboratory tests of porosity and permeability tend to reflect the conditions in the interfracture and inter-channel rock volumes and that high initial production and relatively uniform equalization of pressures between wells reflects the conditions of a network of solution-enlarged fractures or channels.

D. DISCUSSION OF HUNTON LIMESTONE POROSITY IN THE WEST EDMOND POOL By Max Littlefield

1. Tabulated Data Combining Core Analysis and Geological Examination

Tables VI through XIV, which follow illustrate the results of this study. The various columns in the tables are explained below.

a. The lithology is covered by brief descriptions which relate the lime to a few generalized types. The Hunton section is divided into units which are based mainly on porosity and permeability characteristics but are also lithologically consistent.

The averages of core laboratory figures on porosity and permeability are given in the first two data columns. In some cases, shown by an asterisk, these figures were augmented by estimates.

The column on primary porosity expresses the average percentage, for the whole unit, of porosity in rock untouched by solution, fracturing, or recrystallization. Actual individual primary porosities range from .5% in well-cemented fragmental lime, to 15% in granular, finely crystalline, slightly dolomitic lime. Technically, even these are not true primary porosities as some changes have occurred since deposition. The method used was the recording of test figures on those plugs taken from rocks which observation showed to be free of solution, fracturing, and recrystallization.

The column on solution porosity expresses the average percentage, for the whole unit, of porosity due to solution. The effects of solution can be observed microscopically. The quantitative degree can be obtained by the difference between the test figures from plugs showing solution and those not showing solution, both being in fracture-free rock of the same type. Obviously, a relatively slight degree of solution may be so distributed as to augment and include the primary porosity, in which case all intergranular porosity is considered as solution porosity.

The open fractures can be determined in two ways. The column

labeled "Intermediate, From Cores" was derived from measurements and estimates of open fractures shown on the core. The void space is computed in terms of percentages of rock volume. In cases of badly broken cores this figure was derived by estimation of the number and type of fracture faces. The column labeled "Intermediate, From Plugs" was obtained by noting the occurrence of open fractures in plugs and estimation of the volume of their void space by difference, subtracting primary porosity and solution porosity. This tended to give a higher figure than that obtained by measurement and suggested that the measurements were conservative.

Filled-solution-enlarged fractures were also measured during the study but these data were not included in these tables.

Permeability is shown in two columns, as intergranular and intermediate. The nature of the permeability was established by observation of the plug or the core from which the plug was drilled.

Formation permeability, or well-to-well permeability, was estimated by visual inspection of the core, noting width, continuity, and abundance of fractures. Similar lithologic types tend to have similar fracture characteristics although the degree is variable. The assumption that fractures connect from well to well is based on lack of dry holes, somewhat uniform initials, and equalization of bottom-hole pressures. Such behavior is not compatible with the degree of intergranular permeability.

A column is included showing the footage of each interval. Obviously some of these footages are slightly inaccurate because of core losses.

The average producing porosity as shown is the total of both fracture and solution porosity and is the percentage by volume of void space which is considered to be actual reservoir. Obviously the depletion residue is highly variable, due both to the nature of the intergranular porosity and to the relation of the intergranular porosity to fractures.

The last column shows the total thickness of the producing void space for each unit. The total for the well is shown below. This total is re-divided into intermediate and intergranular porosity.

In the lower right-hand corner is a supplementary table showing porosity percentages by formations.

b. All of the Gulf wells are summarized in Table XIV, dividing the section into Frisco, Bois d'Arc, and Haragan-Henryhouse. Of the latter only that part which might produce is included. No two workers agree exactly on the top and base of the Bois d'Arc.

The Frisco shows little or no solution porosity. Solution-enlarged fractures tend to be filled and later fractures are small although abundant.

The Bois d'Arc has an average fracture porosity of .62% which is mainly late fractures, as most of the earlier fractures which are open are so highly ramified as to be measurable as intergranular porosity. The effective intergranular porosity averages 5.27%. A high average should be understood to indicate the presence of more feet of high porosity rock rather than a greater degree of porosity in each foot.

The Haragan-Henryhouse is finely crystalline and slightly dolomitic, with high primary porosity. Early fractures tend to be sealed and late fractures appear to be wide-spaced or discontinuous. It is probable that the depletion residue will be high.

Table XIV also enables comparison of the overall data by wells. The Christner #1 had the least core and much of the data was interpolated. The Anna Paul #2 shows a high reservoir capacity due to solution through much of the Bois d'Arc. The Messenbaugh #2 has the highest average fracture porosity but relatively little solution porosity.

Table XV shows the intergranular porosity-permeability data by lithologic types. The fragmental limes tend to develop permeability as the

porosity increases. The finely crystalline rocks develop permeability as the dolomite content increases.

2. Cross-Sections Showing Distribution of Intergranular and Intermediate Porosities and Permeabilities in Cored Wells

Figures No. 5 and 5A summarize graphically the data shown on Tables VI through XIV inclusive.

Intergranular porosities and permeabilities, shown on Figure No. 5, have considerable vertical variability. Intergranular porosity is divided into two categories. The "producing" porosity is oil-stained and is considered to be the actual producing reservoir. Several types of "non-producing" porosity can be recognized. One type is not oil-stained and is merely the normal primary porosity in rock which has not been affected by solution. The continuity of permeability is too limited to be recorded by test plugs. Another type is poorly oil-stained and is primary porosity in extremely fine-grained crystalline mixtures of calcite and dolomite. Permeabilities tend to be fractions of a millidarcy. Porosity of this type is discounted for the reasons that parts of it have little oil content and those parts with oil content will have high depletion residues. On the graphs the type of non-producing porosity is not differentiated.

The intergranular character of the permeability was checked by microscopic examination of test plugs or plug holes.

Figure No. 5A shows the vertical distribution of intermediate, or fracture porosity and permeability to be rather uniform vertically, a fact which may be a strong factor in the electrical log picture.

Fracture porosities are low and the figures are believed to be highly conservative, as only open, oil-stained, fractures were considered in the measurements. In the cases of broken cores, where only one wall of a fracture was available, widths of less than 1/4 mm. were assumed. Two types of fractures are present:

a. Solution-widened fractures. Evidenced by varying widths of the "channels" and the presence of fillings of silt, clay, fine sand, calcite, dolomite, and dense brown dolomitic lime. Few of these are continuously open except in a few limited lithologic zones.

b. Open fractures which show no evidence of solution and which contain no filling. These tend to be vertical and cut the solution-enlarged fractures, indicating these later breaks came after the consolidation of the filling material in the earlier ones. In some cases the late fractures can be seen to merge with earlier solution-enlarged fractures and in many cases the age of the fracture cannot be definitely determined. The fact that line of stress fractured during drilling, and in some cases, only after breaking the core with a hammer, has led some workers to consider that all fractures are due to relief of stress after the core was cut. Some of these post-drilling fractures were recognized because of lack of oil-stain, particularly in the cores of the #1 Streeter, which was examined soon after it was cored.

"Formation," or well-to-well permeability, shown on Figure No. 5A, is pure estimation based on observation of the size, abundance, and extent of fractures observed in eight cored wells. Actual measured permeabilities did not exceed 760 MD. However, several open fractures averaging 1-$\frac{1}{2}$ mm in width were observed and many split cores suggested fractures of similar degree. Such opening, if a plug could be run, would give values of the degree of thousands of millidarcys. It is notable that all cored wells are in areas in which the iso-baric maps show good equalization of pressures.

3. Thickness of Pay and Reservoir Capacity

The West Edmond reservoir includes parts of four members of the Hunton: the Frisco, Bois d'Arc, Haragan-Henryhouse, and Chimneyhill. (See Richard's Stratigraphy of Hunton.)

The discovery well was in the Bois d'Arc. Even after development widened to include the other members, the term Bois d'Arc was used as a synonym for Hunton pay. By this usage the overlying Frisco was arbitrarily included in the Bois d'Arc. And lack of agreement among geologists as to the exact criteria for the base of the Bois d'Arc was resolved by extending the base of the Bois d'Arc downward to include all vertically continuous pay.

The Chimneyhill production is a stratigraphically separate zone, from 50-100' below the base of the Bois d'Arc.

Tables VI through XIII differentiate Frisco as fragmental lime with calcite matrix and glauconcite; Bois d'Arc as the rocks between the base of the Frisco and the base of the Bois d'Arc oolitic; and classifies the finely crystalline beds below the oolitic as Haragan-Henryhouse. No Chimneyhill data are included. Table XIV summarizes Frisco, Bois d'Arc, and Haragan-Henryhouse producing porosities and states the total footage of void space for each well. The average intergranular "producing" porosity for the Bois d'Arc averages 5.27% per foot and 5.54% per well. The average intermediate porosity is .62%, both per foot and per well.

The next to last column of Table II on Page 13 shows the total interval from the top of the Hunton to the base of the pay zone which averages 75.9'. The last column shows the average producing porosity and is obtained by dividing the total void space by the total footage giving an over-all porosity of 5.17% per well and 4.87% per foot. In computing oil in place this figure represents virtually 100% saturation as non-stained

porosity has been subtracted, a has been a considerable fraction of the finely crystalline porosity. In computing recovery a maximum figure should be used.

Summary: West Edmond is a complex of two interconnected reservoir systems, one made up of rocks with intergranular porosity and low permeability and the other a system of fractures which cuts rocks of all degrees of intergranular porosity but which itself has about .6% porosity and extremely high permeability.

Constants are the presence of fractures and of intergranular porosity. Non-related variables are the over-all thickness of pay; the total of intergranular porosity per well and the average porosity per foot. Consequently the total of void space per well bears no direct relationship to any one factor.

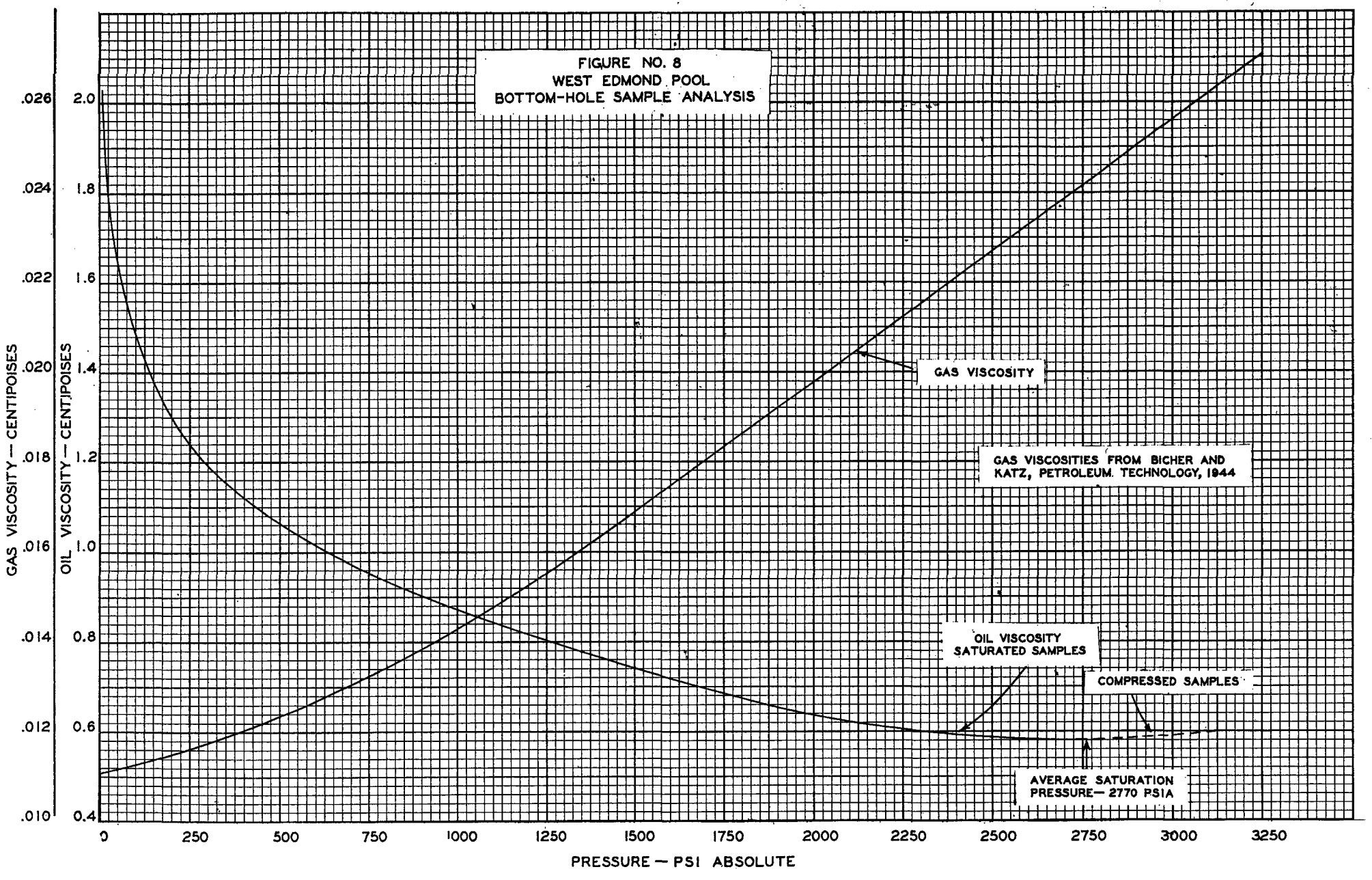


FIGURE NO. 8
WEST EDMOND POOL
BOTTOM-HOLE SAMPLE ANALYSIS
GAS VISCOSITY — CENTIPOISES
OIL VISCOSITY — CENTIPOISES
.026
.024
.022
.020
.018
.016
.014
.012
.010
2.0
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
PRESSURE — PSI ABSOLUTE
GAS VISCOSITY
GAS VISCOSITIES FROM BICHER AND KATZ, PETROLEUM TECHNOLOGY, 1944
OIL VISCOSITY SATURATED SAMPLES
COMPRESSED SAMPLES
AVERAGE SATURATION PRESSURE— 2770 PSIA

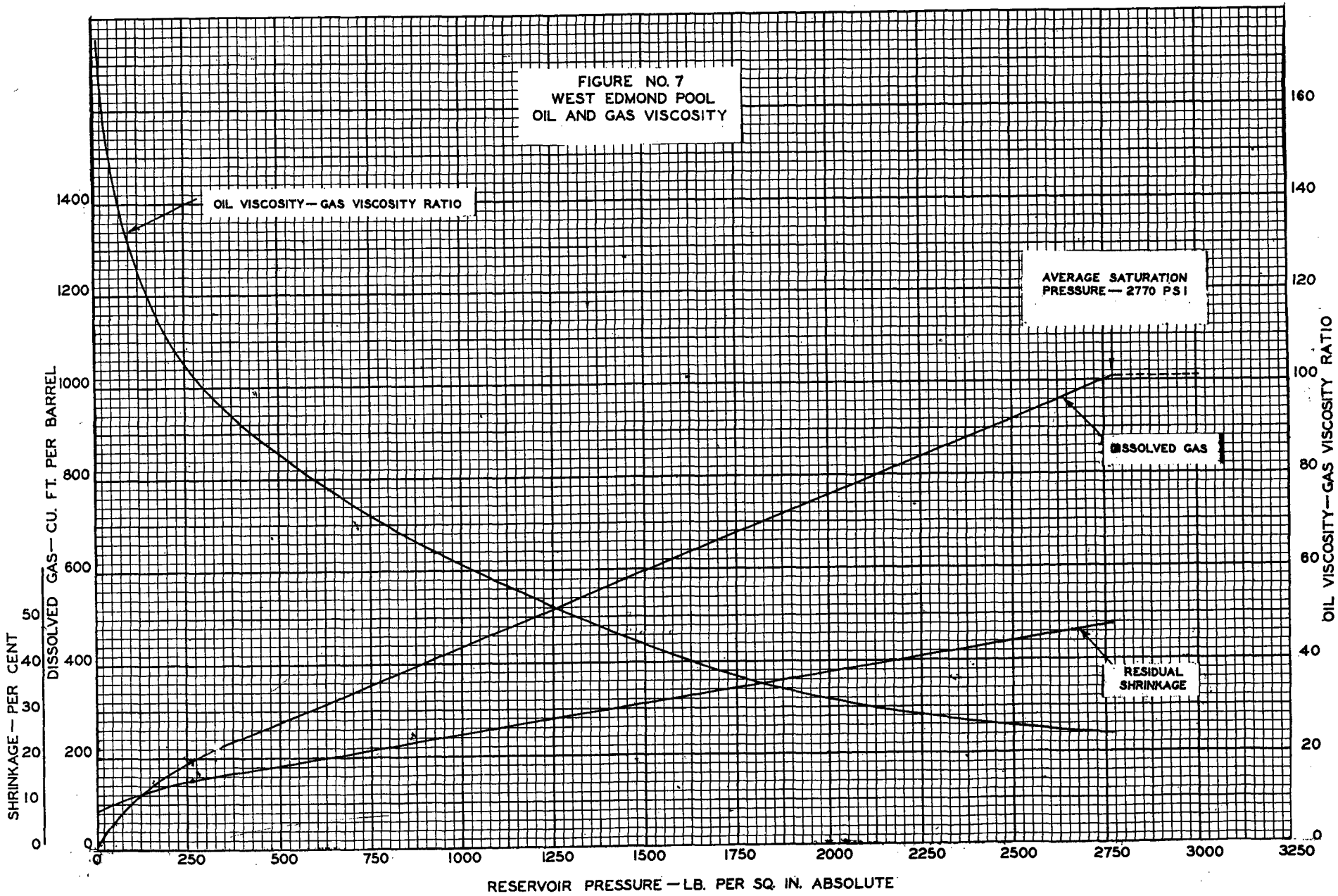
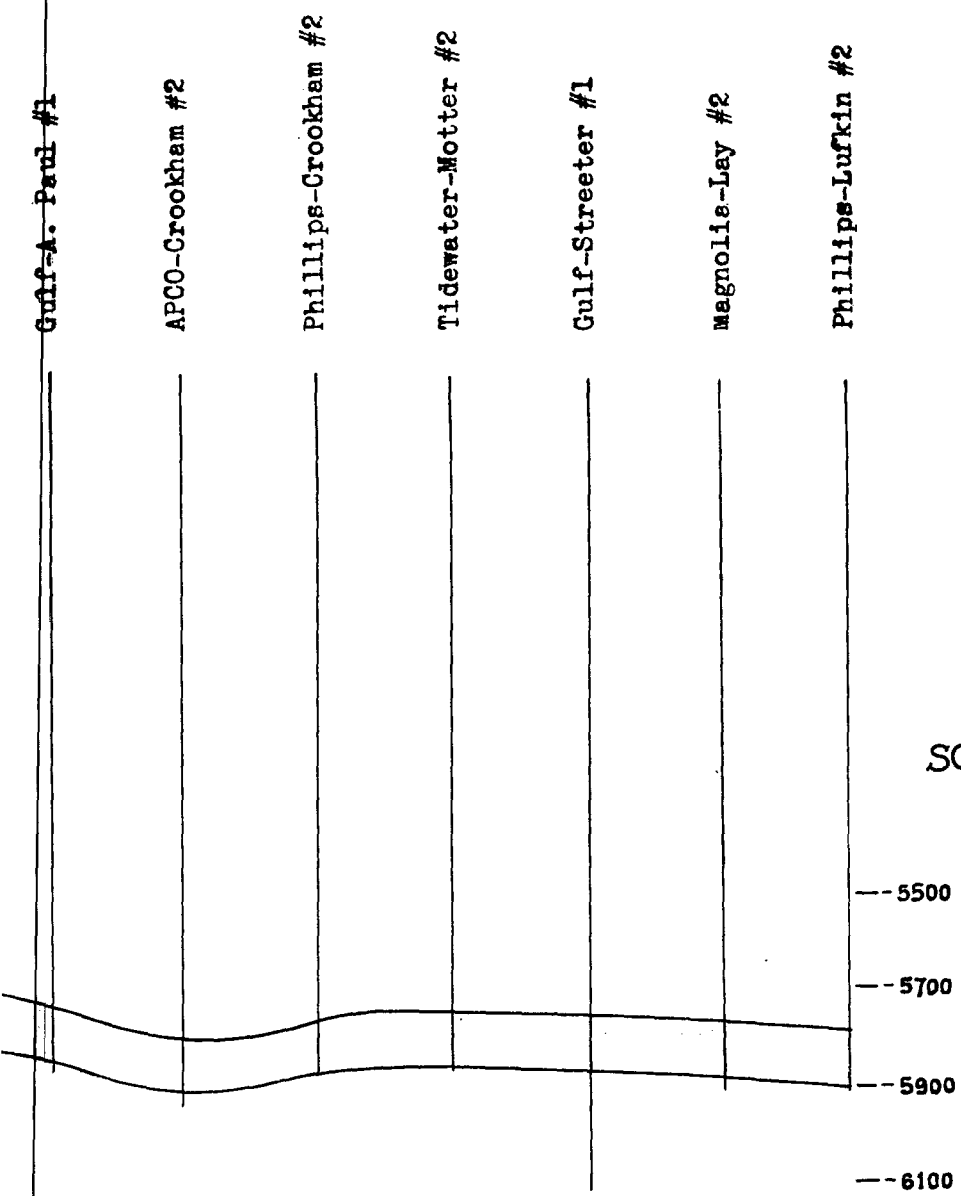


FIGURE NO. 7
WEST EDMOND POOL
OIL AND GAS VISCOSITY
OIL VISCOSITY—GAS VISCOSITY RATIO
AVERAGE SATURATION PRESSURE — 2770 PSI
DISSOLVED GAS
RESIDUAL SHRINKAGE
SHRINKAGE — PER CENT
DISSOLVED GAS — CU. FT. PER BARREL
OIL VISCOSITY—GAS VISCOSITY RATIO
RESERVOIR PRESSURE — LB. PER SQ. IN. ABSOLUTE
0
250
500
750
1000
1250
1500
1750
2000
2250
2500
2750
3000
3250
0
10
20
30
40
50
0
200
400
600
800
1000
1200
1400
0
20
40
60
80
100
120
140
160

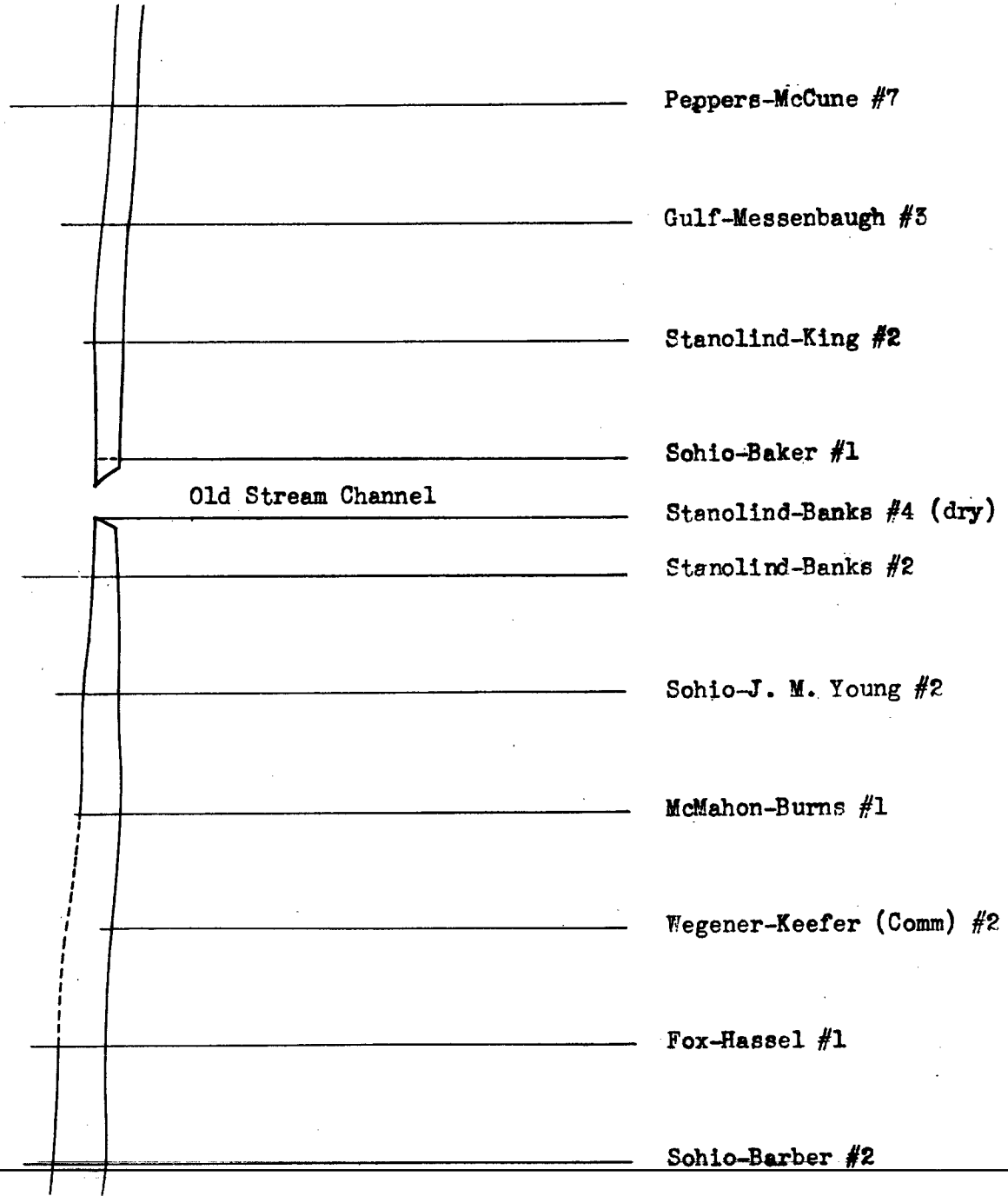


SOUTH

FIG.№ 4
WEST EDMOND POOI
NORTH-SOUTH CROSS SE
OF
BOIS D'ARC INTERVA

Scale: V. 1"= 400'
H. 1"= 3720'

Fig 3


Peppers-McCune #7
Gulf-Messenbaugh #3
Stanolind-King #2
Sohio-Baker #1
Old Stream Channel
Stanolind-Banks #4 (dry)
Stanolind-Banks #2
Sohio-J. M. Young #2
McMahon-Burns #1
Wegener-Keefer (Comm) #2
Fox-Hassel #1
Sohio-Barber #2

Cities-Service-Gaffney #1
Phillips-Diel #3
Cont.-Boone #3
Cont.-Lenhart #3
Cont.-Mason #3
Sohio-Lachenmaier #2
Peppers-Fentem #2
NORTH
-5500
-5700
-5900
-6100

Pg 1

Gulf #1 Streeter, Sec. 20, T.13N., R.4W., West Edmond Pool, Oklahoma

SUMMARY DATA FROM CORE STUDIES OF THE PRODUCING SECTION OF THE HUNTON LIME

Lithologic Unit (See list below)	Depths	Core Laboratory Test Data: Porosity	Core Laboratory Test Data: Perm.	Estimated Data: Porosity: Intergranular: Primary	Estimated Data: Porosity: Intergranular: Solution	Estimated Data: Porosity: Intermediate: From Core	Estimated Data: Porosity: Intermediate: From Plug	Estimated Data: Permeability: Intergranular	Estimated Data: Permeability: Intermediate	Estimated Data: Permeability: Formation (Well-to-well)	Summary: Footage	Summary: Average Producing Porosity	Summary: Total Void Space
A	6947-6979'	1.10%	.17 md	.935%	.028%	.0095%	.137%	0 md	.17 md	0-10 md	32'	.1014%	.0324'
B	6979-6991	1.69	.79	1.505	.068	.0437	.124	0	.79	0-100	12	.1520	.0182
B	6991-7009	3.0	.25	1.441	.983	.365	.60	0	.25	0-1000	18	1.465	.2637
B	7009-7018	11.7	10.1	---	11.7	.777	---	10.1	---	0-1000	9	12.447	1.1202
B	7018-7034	6.54	12.6	.075	6.03	.827	.435	2.8	9.8	0-1000	16	6.857	1.0971
B	7034-7038	2.9	.75	.7	2.2	.4	0	.75	---	0-1000	4	2.65	.1062
B	7038-7040	9.2	6.0	---	9.2	.3	0	6.0	---	0-100	2	9.5	.19
B	7040-7042.5	3.2	.1	---	3.1	.46	.1	0	.1	0-10	2.5	3.56	.089
C	7042.5-7049	1.37	0	1.334	---	.08	.04	0	0	0-10	6.5	.08	.0052
D	7049-7052	3.85	.25	2.75	.25	.063	.85	0	.25	0-10	3	.313	.0094
E	7052-7056	6.2	152.5	---	5.6	.8	.6	.4	152.0	0-1000	4	6.4	.256
F	7056-7058	2.8	0	2.8	---	.4	0	0	0	0-10	2	.4	.008
G	7058-7060	6.66	0	6.66	---	0	0	0	0	0	2	0	0
F	7060-7065	2.63	0	2.56	---	.07	0	0	0	0	5	0	0
F	7065-7070	1.46	0	1.46	---	0	0	0	0	0	5	0	0
											Total void space		3.1944'
											(Intermediate voids)		.3832
											(Intergranular voids)		2.8112

A Fragmental lime with calcitic matrix and glauconite. — Frisco
B Fragmental lime with some calcitic matrix. — Bois d'Arc
C Fragmental ls. with finely crystalline lime matrix. — Bois d'Arc
D Finely crystalline lime, slightly dolomitic with scattered fragments of fossils — Bois d'Arc
E Oolitic lime, fragmental, with matrix of finely crystalline dolomitic lime or calcite. — Bois d'Arc
F Fragmental lime with matrix of finely crystalline, argillaceous, slightly dolomitic lime. — Haragan-Henry.
G Finely crystalline argillaceous lime, slightly dolomitic. — Haragan-Henry.

Porosity

	Intermediate	Intergranular	Total
32' Frisco	.0733%	.0282%	.1014%
77' Bois d'Arc	.4554	3.6290**	4.0834
2' Haragan-Henry.	.4	0	.4

**Approximately .75% is finely ramified solution-enlarged fractures which are of such degree as to be classified as intergranular rather than intermediate.

TABLE VI

Gulf #1 Flynn, Sec.21, T.13N., R.4W., West Edmond Pool, Oklahoma

SUMMARY DATA FROM CORE STUDIES OF THE PRODUCING SECTION OF THE HUNTON LIME

Lithologic Unit (See list below)	Depths	Core Laboratory Test Data: Porosity	Core Laboratory Test Data: Perm.	Estimated Data: Porosity: Intergranular: Primary	Estimated Data: Porosity: Intergranular: Solution	Estimated Data: Porosity: Intermediate: From Core	Estimated Data: Porosity: Intermediate: From Plug	Estimated Data: Permeability: Intergranular	Estimated Data: Permeability: Intermediate	Estimated Data: Permeability: Formation (Well-to-well)	Summary: Footage	Summary: Average Producing Porosity	Summary: Total Void Space
A	6913-6939'	1.8%	0 md	1.8%	---%	.01	---	0 md	0 md	0-10 md	26'	.01%	.002
B	6939-6944	1.6	0	1.27	.33	.01	---	0	0	0-10	5	.34	.017
B	6944-6960	2.69*	0	1.6	1.09	.798	---	0	0	0-1000	16	1.888	.302
B	6960-6969	5.72*	4.0*	.5	5.0	.9	---	4.0	0	0-1000	9	5.9	.531
B	6969-6982	7.28*	4.75*	0	7.28	1.14	---	4.37	.43	0-1000	13	8.42	1.094
B	6982-6987	1.83*	0	1.6	.23	.366	---	0	0	0-1000	5	.616	.018
B	6987-6990	11.15	20.0	0	11.15	1.5	---	20.0	0	0-1000	3	12.65	.379
B	6990-6993	2.75*	0	2.0	.75	.3	---	0	0	0-100	3	1.05	.031
C	6993-7000	3.36	0	3.36	0	.1	.55	0	0	0-100	7	.1	.007
D	7000-7002	9.7	0	9.2	0	.5	.5	0	0	0-100	2	.5	.010
E	7002-7005.5	13.0	0	0	13.0	.75	---	0	0	0-1000	3.5	13.75	.481
G	7005.5-7010.5	6.9	0	6.0	0	.05	.92	0	0	0-10	5	.05	.002
G	7010.5-7016	4.25	0	4.25	0	0	---	0	0	0	5.5	0	0
G	7016-7026	3.53	0	3.53	0	0	---	0	0	0	10	0	0
										Total void space			2.877
										(Intermediate voids)			.405
										(Intergranular voids)			2.472

*Includes estimates based on microscopic examination.

A Fragmental lime with calcitic matrix and glauconite. Frisco
B Fragmental lime with some calcitic matrix. Bois d'Arc
C Fragmental ls. with finely crystalline lime matrix. Bois d'Arc
D Finely crystalline lime, slightly dolomitic with scattered fragments of fossils. Bois d'Arc
E Oolitic lime, fragmental, with matrix of finely crystalline dolomitic lime or calcite. Bois d'Arc
G Finely crystalline argillaceous lime, slightly dolomitic. Haragan-Henry.

Porosity

	Intermediate	Intergranular	Total
26' Frisco	.01%	0 %	.01%
66.5 Bois d'Arc	.60	3.72 **	4.32
2 Haragan-Henry.	.05	0	.05

**Approximately .75% is finely ramified solution-enlarged fractures which are of such degree as to be classified as intergranular rather than intermediate.

TABLE VII

Gulf #2 Anna Paul, Sec.8, T.13N., R.4W., West Edmond Pool, Oklahoma
(Note: - Cores from 6941-6980' not examined.)

SUMMARY DATA FROM CORE STUDIES OF THE PRODUCING SECTION OF THE HUNTON LIME

Lithologic Unit (See list below)	Depths	Core Laboratory Test Data: Porosity	Core Laboratory Test Data: Perm.	Estimated Data: Porosity: Intergranular: Primary	Estimated Data: Porosity: Intergranular: Solution	Estimated Data: Porosity: Intermediate: From Core	Estimated Data: Porosity: Intermediate: From Plug	Estimated Data: Permeability: Intergranular	Estimated Data: Permeability: Intermediate	Estimated Data: Permeability: Formation (Well-to-Well)	Summary: Footage	Summary: Average Producing Porosity	Summary: Total Void Space
A	6886-6909'	2.88%	.2 md	2.49%	---%	.01%	.39%	0 md	.2 md	0-10	23'	.2%	.0460'
A	6909-6921	4.55	1.7	1.97	2.58	.15	---	1.7	0	0-100	12	2.73	.3276
B	6921-6939	8.16	12.3	.23	7.93	1.25	---	1.6	10.7	0-1000	18	9.18	1.6524
B?	6939-6959	3.71	8.7	2.49	1.00?	1.00?	.22	---	8.7	0-1000?	20	2.00?	.4000?
B?	6959-6977	11.77	8.8	---	11.77	.5?	---	8.8	---	0-1000?	18	12.27?	2.2086?
C?	6977-6980	3.05	1.0	2.85	---	---	.2	---	1.0	0-100	3	.2	.0060
D	6980-6988	4.88	.1	4.35	.53	.1	---	.1	0	0-10	8	.63	.0504
H	6988-6994.5	14.92	3.4	5.00	9.92	.15	---	3.4	0	0-100	6.5	10.07	.6546
E	6994.5-6999.5	14.98	4.2	---	14.98	.2	---	4.2	---	0-100	5	15.18	.7590
H'	6999.5-7004	11.75	.5	5.00	6.75	0	0	.5	---	0-10	4.5	6.75	.3038
H'	7004-7013	9.69	0	9.69	---	0	0	0	---	0	9	0	0
G	7013-7027	3.00*	0*	3.00	---	0	0	0	---	0	14	0	0

* Estimated from microscopic examination.

Total void space		6.4084'
(Intermediate voids)		.6128
(Intergranular voids)		5.7956

A Fragmental lime with calcitic matrix and glauconite. — Frisco
B Fragmental lime with some calcitic matrix. — Bois d'Arc
C Fragmental ls. with finely crystalline lime matrix. — Bois d'Arc
D Finely crystalline lime, slightly dolomitic with scattered fragments of fossils. — Bois d'Arc
H Finely crystalline dolomitic lime, in part secondary dolomite. Some solution. — Bois d'Arc
E Oolitic lime, fragmental, with matrix of finely crystalline dolomitic lime or calcite. — Bois d'Arc
H' Same as "H". — Haragan-Henry.
G Finely crystalline argillaceous lime, slightly dolomitic. — Haragan-Henry.

Porosity

		Intermediate	Intergranular	Total
35'	Frisco	.18%	.88%	1.06%
78.5'	Bois d'Arc	.70?	6.73 **	7.43
4.5	Haragan-Henry.	0	6.75	6.75

**Between .75%-1.5% is finely ramified solution-enlarged fractures which are of such degree as to be classified as intergranular rather than intermediate.

TABLE VIII

Gulf #2 Messenbaugh, Sec.20, T.14N., R.4W., West Edmond Pool, Oklahoma

SUMMARY DATA FROM CORE STUDIES OF THE PRODUCING SECTION OF THE HUNTON LIME

Lithologic Unit (See list below)	Depths	Core Laboratory Test Data: Porosity	Core Laboratory Test Data: Perm.	Estimated Data: Porosity: Intergranular: Primary	Estimated Data: Porosity: Intergranular: Solution	Estimated Data: Porosity: Intermediate: From Core	Estimated Data: Porosity: Intermediate: From Plug	Estimated Data: Permeability: Intergranular	Estimated Data: Permeability: Intermediate	Estimated Data: Formation (Well-to-well)	Summary: Footage	Summary: Average Producing Porosity	Summary: Total Void Space
B	6798-6810'	9.47%	84.6 md	---%	9.07%	1.87%	.4%	10.0 md	76.4 md	0-1000 md	12'	10.94%	1.312
C	6810-6813	3.25	0	3.25	---	1.00	---	0	0	0-100	3	1.00	.030
D	6813-6824	3.42	0	3.42	---	.66	---	0	0	0-100	11	.66	.072
D	6824-6828	1.75	0	1.75	---	0	---	0	0	0-10	4	0	0
H	6828-6835.5	7.18	0	5.00	2.18	.08	---	0	0	0-10	7.5	2.26	.169
C	6835.5-6836.5	1.7	0	1.7	---	---	---	0	0	0-10	1	0	0
E	6836.5-6844.5	6.03*	0	---	6.03	1.00	---	0	0	0-100	8	7.03	.562
G	6844.5-6855	5.42	0	5.00	.42	.06	---	0	0	0-10	10.5	.48	.054
G	6855-6860	10.77	0	10.77	---	0	---	0	0	0	5	---	----
F	6860-6865	2.85	0	2.85	---	0	---	0	0	0	5	---	----

* Estimated from microscopic examination.

Total void space	2.201
(Intermediate voids)	.419
(Intergranular voids)	1.782

B Fragmental lime with some calcitic matrix. — Bois d'Arc
C Fragmental ls. with finely crystalline lime matrix. — Bois d'Arc
D Finely crystalline lime, slightly dolomitic with scattered fragments of fossils. — Bois d'Arc
H Finely crystalline dolomitic lime, in part secondary dolomite. Some solution. — Bois d'Arc
E Oolitic lime, fragmental, with matrix of finely crystalline dolomitic lime or calcite. — Bois d'Arc
G Finely crystalline argillaceous lime, slightly dolomitic. — Haragan-Henry.
F Fragmental lime with matrix of finely crystalline, argillaceous, slightly dolomitic lime. — Haragan-Henry.

		Porosity: Intermediate	Porosity: Intergranular	Porosity: Total
45.5'	Bois d'Arc	.90%	3.81% **	4.71%
10.5	Haragan-Henry.	.06	.42	.48

** Approximately .75% is finely ramified solution-enlarged fractures which are of such degree as to be classified as intergranular rather than intermediate.

TABLE IX

Gulf #1 Wright, Sec.17, T.14N., R.4W., West Edmond Pool, Oklahoma

SUMMARY DATA FROM CORE STUDIES OF THE PRODUCING SECTION OF THE HUNTON LIME

Lithologic Unit (See list below)	Depths	Core Laboratory Test Data: Porosity	Core Laboratory Test Data: Perm.	Estimated Data: Porosity: Intergranular: Primary	Estimated Data: Porosity: Intergranular: Solution	Estimated Data: Porosity: Intermediate: From Core	Estimated Data: Porosity: Intermediate: From Plug	Estimated Data: Permeability: Intergranular	Estimated Data: Permeability: Intermediate	Estimated Data: Permeability: Formation (Well-to-well)	Summary: Footage	Summary: Average Producing Porosity	Summary: Total Void Space
B	6813-6829'	7.79%	22.8 md	.78%	7.01%	.78%	----%	22.8 md	--- md	0-1000md	16'	7.79%	1.2464'
C'	6829-6836	6.80	2.6	2.73	4.07	1.25	----	2.6	---	0-1000	7	5.32	.3724
H	6836-6843.5	17.00	21.7	5.00	12.00	---	----	21.7	---	0-100	7.5	12.00	.9000
C	6843.5-6850	6.25	0	6.25	---	---	----	0	---	0-10	6.5	0	0
E	6850-6855	10.00*	2.0*	---	10.00	1.00	----	2.0*	---	0-1000	5	11.00	.5500
H'	6855-6860	12.22	1.0	5.00	7.22	.5	----	1.0	---	0-100	5	7.72	.3860
G	6860-6865	9.36	0	9.00	.36	.15	----	0	---	0-10	5	.51	.0255
G	6865-6870	6.50*	0	6.50	---	.5	----	0	---	0-100	5	.50	.0250
H'	6870-6875	21.60	1.0	5.00	16.6	---	----	1.0	---	0-10	5	16.60	.8300
F	6875-6881.5	6.00*	0*	5.00	---	---	----	0	---	0	6.5	0	0
										Total void space			4.3353'
										(Intermediate voids)			.3798
										(Intergranular voids)			3.9555

* Estimated from microscopic examination.

B Fragmental lime with some calcitic matrix. Bois d'Arc
C' Fragmental ls. with finely crystalline lime matrix. Slight degree of secondary dolomitization in some layers. Bois d'Arc
H Finely crystalline dolomitic lime, in part secondary dolomite. Some solution. Bois d'Arc
C Fragmental ls. with finely crystalline lime matrix. Bois d'Arc
E Colitic lime, fragmental, with matrix of finely crystalline dolomitic lime or calcite. Bois d'Arc
H' Finely crystalline dolomitic lime, in part secondary dolomite. Some solution. Haragan-Henry.
G Finely crystalline argillaceous lime, slightly dolomitic. Haragan-Henry.
F Fragmental lime with matrix of finely crystalline, argillaceous, slightly dolomitic lime. Haragan-Henry.

Porosity

		Intermediate	Intergranular	Total
42'	Bois d'Arc	.77%	6.54%**	7.31%
20	Haragan-Henry.	.29%	6.16 **	6.45

** Approximately .75% is finely ramified solution-enlarged fractures which are of such degree as to be classified as intergranular rather than intermediate.

TABLE X

Gulf #3 Wright, Sec.17, T.14N., R.4W., West Edmond Pool, Oklahoma
(No core from 6759-6774'. Data taken from Wright #1)

SUMMARY DATA FROM CORE STUDIES OF THE PRODUCING SECTION OF THE HUNTON LIME

Lithologic Unit (See list below)	Depths	Core Laboratory Test Data: Porosity	Core Laboratory Test Data: Perm.	Estimated Data: Porosity: Intergranular: Primary	Estimated Data: Porosity: Intergranular: Solution	Estimated Data: Porosity: Intermediate: From Core	Estimated Data: Porosity: Intermediate: From Plug	Estimated Data: Permeability: Intergranular	Estimated Data: Permeability: Intermediate	Estimated Data: Permeability: Formation (Well-to-well)	Summary: Footage	Summary: Average Producing Porosity	Summary: Total Void Space
B?	6759-6771'	7.79%	22.8 md	.78%	7.01%	.78%	---	22.8 md	--- md	0-1000? md	12'	7.79%	.9348'?
C'?	6771-6779	3.65	0	3.65	---	.005	---	0	---	0-10?	8	.005	.0004?
H	6779-6787	13.69	1.1	5.00	8.69	.25	---	1.1	---	0-100	8	8.94	.7152
E	6787-6797.5	14.33	2.8	---	14.33	.93	---	2.8	---	0-1000	10.5	15.26	1.6023
H'	6797.5-6802.5	10.16	.2	5.00	5.16	.1	---	.2	---	0-100	5.	5.26	.2630
H'	6802.5-6807.5	12.23	0	10.00	2.23	0	---	0	---	0	5	2.23	.1115
G	6807.5-6812	7.68	0	7.68	---	0	---	0	---	0	4.5	0	0.
H'	6812-6815.5	21.24	.25	10.00	11.24	0	---	.25	---	0	3.5	11.24	.3934
G	6815.5-6820.5	5.36	0	5.36	---	0	---	0	---	0	5.0	0	0
G	6820.5-6825.5	4.42	0	4.42	---	0	---	0	---	0	5.0	0	0
F	6825.5-6840	3.17	0	3.17	---	0	---	0	---	0	14.5	0	0
											Total void space		4.0206'
											(Intermediate voids)		.2165
											(Intergranular voids)		3.8041

B Fragmental lime with some calcitic matrix. — Bois d'Arc
C' Fragmental ls. with finely crystalline lime matrix. Slight degree of secondary dolomitization insome layers. — Bois d'Arc
H Finely crystalline dolomitic lime, in part secondary dolomite. Some solution — Bois d'Arc
E Oolitic lime, fragmental, with matrix of finely crystalline dolomitic lime or calcite. — Bois d'Arc
H' Finely crystalline dolomitic lime, in part secondary dolomite. Some solution. — Haragan-Henry.
G Finely crystalline argillaceous lime, slightly dolomitic. — Haragan-Henry.
F Fragmental lime with matrix of finely crystalline, argillaceous, slightly dolomitic lime. — Haragan-Henry.

		Porosity: Intermediate	Porosity: Intergranular	Porosity: Total
38.5'	Bois d'Arc	.55%	7.90% **	8.45%
16.0	Haragan-Henry.	.03	4.24	4.27

**Approximately .75% is finely ramified solution-enlarged fractures which are of such degree as to be classified as intergranular rather than intermediate.

TABLE XI

Gulf #1 Christner, Sec.7, T.14N., R.4W., West Edmond Pool, Oklahoma
(Top Hunton is questionable. No core 6879-6894'. Data taken from #1 Wright.)

SUMMARY DATA FROM CORE STUDIES OF THE PRODUCING SECTION OF THE HUNTON LIME

Lithologic Unit (See list below)	Depths	Core Laboratory Test Data: Porosity	Core Laboratory Test Data: Perm	Estimated Data: Porosity: Intergranular: Primary	Estimated Data: Porosity: Intergranular: Solution	Estimated Data: Porosity: Intermediate: From Core	Estimated Data: Porosity: Intermediate: From Plug	Estimated Data: Permeability: Intergranular	Estimated Data: Permeability: Intermediate	Formation (Well-to-well)	Summary: Footage	Summary: Average Producing Porosity	Summary: Total Void Space
B?	6879?-6882'	7.79%	22.8 md	.78%	7.01%	.78%	---%	22.8 md	---md	0-1000?md	3'	7.79%	.2337
C'?	6882-6894	3.63	0	3.63	---	.005	---	0	---	0-1000?	12	.005	.0006
H	6894-6902	10.93	1.3	5.00	5.93	.5	---	---	---	0-100	8	6.43	.5144
E	6902-6913	13.65*	.33*	---	13.65	.5	---	---	---	0-100	11	14.15	1.5565
H'	6913-6918	9.60	.45	5.00	4.60	0	---	---	---	0	5	4.60	.2300
H'	6918-6923	12.90	1.6	5.00	7.90	0	---	---	---	0	5	7.90	.3950
H'	6923-6933	18.56	.33	5.00	13.56	0	---	---	---	0	10	13.56	1.3560
F	6933-6940	2.8	0	2.8	---	.5	---	---	---	0-100	7	---	----

* Includes estimates from microscopic examination.

Total void space	4.2862
(Intermediate voids)	.1190
(Intergranular voids)	4.1672

B Fragmental lime with some calcitic matrix. Bois d'Arc
C' Fragmental ls. with finely crystalline lime matrix. Slight degree of secondary dolomitization in some layers. Bois d'Arc
H Finely crystalline dolomitic lime, in part secondary dolomite. Some solution. Bois d'Arc
E Oolitic lime, fragmental, with matrix of finely crystalline dolomitic lime or calcite. Bois d'Arc
H' Finely crystalline dolomitic lime, in part secondary dolomite. Some solution. Haragan-Henry.
F Fragmental lime with matrix of finely crystalline, argillaceous, slightly dolomitic lime. Haragan-Henry.

		Porosity: Intermediate	Porosity: Intergranular	Porosity: Total
34'?	Bois d'Arc	.35%	6.43%**	6.78%
20	Haragan-Henry.	0	9.91 **	9.91

** Approximately .75% is finely ramified solution-enlarged fractures which are of such degree as to be classified as intergranular rather than intermediate.

TABLE XII

Sohio #4 Lynch, Sec. 18-14N-4W, West Edmond Pool, Oklahoma

SUMMARY DATA FROM CORE STUDIES OF THE PRODUCING SECTION OF THE HUNTON LIME

Lithologic Unit (See list below)	Depths	Core Laboratory Test Data: Porosity	Core Laboratory Test Data: Perm.	Estimated Data: Porosity: Intergranular: Primary	Estimated Data: Porosity: Intergranular: Solution	Estimated Data: Porosity: Intermediate: From Core	Estimated Data: Porosity: Intermediate: From Plug	Estimated Data: Permeability: Intergranular	Estimated Data: Permeability: Intermediate	Estimated Data: Permeability: Formation (Well to well)	Summary: Footage	Summary: Average Producing Porosity	Summary: Total Void Space
B	6874 -6879	Drilled-Data Estimated			3.60%	.15%					5 '	3.65%	.1825'
B	6879 -6880.75	3.80%	.06 md	.43%	3.33%	.15%		0	.06	0-1000 md	1.75'	3.46%	.0609
	6880.75-6884	Core loss-Data estimated			3.26	.20		---	---	------	3.25	3.46	.1125
B	6884- -6887	3.45	.27	.25	3.20	.25		.10	.17	0-1000	3	3.45	.1035
	6887 -6889	Core loss-Data estimated			3.05	.18		---	---	------	2	3.23	.0646
B	6889 -6892.25	3.25	.37	.34	2.91	.12		.22	.15	0-1000	3.25	3.03	.0985
D	6892.25-6892.75	8.75	0	5.0	3.75	.01		0	0	0	.50	3.75	.0188
C	6892.75-6895.75	1.28	.04	1.28	0	.04		0	.04	0-10	3	.04	.0012
D	6895.75-6898	4.63	.66	3.93	.70	.02		.06	.60	0-10	2.25	.72	.0162
	6898 -6899	Core loss-Data estimated			.55	.01		---	---	------	1	.56	.0056
D	6899 -6901.75	9.72	.39	5.00	4.72	0		.39	0	0-10	2.75	4.72	.1298
C	6901.75-6903.25	2.11	.05	1.91	.20	.05		.05	0	0-10	1.50	.25	.0038
E	6903.25-6911.50	8.41	.66	.0	8.41	.30		.66	0	0-1000	8.25	8.71	.7186
E	6911.50-6911.75	2.70	.77	2.70	0	.10		.77	0	0-10	.25	.10	.0003
E	6911.75-6914	Core loss-Data estimated			.55	.10		---	---	-------	2.25	.65	.0146
G	6914 -6916.50	6.60	.22	4.38	2.22	.10		.22	0	0-10	2.50	2.32	.0580
G	6916.50-6922	8.34	.39	4.96	3.38	0		.39	0	0	6.50	3.38	.1859
F	6922 -6924.50	2.34	0	2.34	.00	0		00	0	0	2.50	0	.0000
G	6924.50-6929	16.06	.68	6.00	10.06	0		.68	0	0	4.50	10.06	.4527
G	6929 -6935.25	.56	0	.56	0	0		0	0	0	6.25	0	.0000
													2.2280'
										(Intermediate voids)			.0839
										(Intergranular voids)			2.1341

			Intermediate		Intergranular	Total
40'	Bois d'Arc	.16%	.0614'	3.76%	.4700'	4.1314'
15'	Haragan	.02%	.0025'	4.63%	.6941'	.6966'

B Fragmental lime with some calcitic matrix.
C Fragmental ls. with finely crystalline lime matrix.
D Finely crystalline lime, slightly dolomitic with scattered fragments of fossils.
E Oolitic lime, fragmental, with matrix of finely crystalline dolomitic lime or calcite.
F Fragmental lime with matrix of finely crystalline, argillaceous, slightly dolomitic lime.
G Finely crystalline argillaceous lime, slightly dolomitic.

TABLE XIII

AVERAGE PERCENTAGE OF POROSITY BY FORMATIONS

	Frisco			Bois d'Arc			Hartman-Henryhouse			FOOTAGE OF TOTAL VOID SPACE		
		Intermediate Porosity	Intergranular Porosity		Intermediate Porosity	Intergranular Porosity		Intermediate Porosity	Intergranular Porosity	Intermediate Void Space	Intergranular Void Space	Total Void Space
Streeter #1 20-13N-4W	32'	.07%	.03%	77'	.46%	3.63%	2'	.4%	0%	.3832'	2.8112'	3.1944'
Flynn #1 21-13N-4W	26'	.01%	0%	66½'	.60%	3.72%	2'	.05%	0%	.4051'	2.4723'	2.8774'
Anna Paul #2 8-13N-4W	35'	.18%	.88%	78½'	.70%	6.73%	4½'	.0%	6.75%	.6128'	5.7956'	6.4084'
Messenbaugh #2 20-14N-4W				45½'	.90%	3.81%	10½'	.06%	.42%	.4193'	1.7820'	2.2013'
Wright #1 17-14N-4W				42'	.77%	6.54%	20'	.29%	6.16%	.3798'	3.9555'	4.3353'
Wright #3 17-14N-4W				38½'	.55%	7.90%	18'	.03%	4.24%	.2165'	3.8041'	4.0206'
Christner #1 7-14N-4W				34'?	.35%	6.43%	20'	0	9.91%	.1190'	4.1672'	4.2862'
		Average per foot			.62%	5.27%				Average per well .3622'	3.5411'	3.9033'
		Average per well			.62%	5.54%						

TABLE XIV

INTERGRANULAR POROSITY AND PERMEABILITY OF LITHOLOGIC TYPES

			Footage of core	Number of test plugs	Average lab test porosity	Estimated primary porosity	Estimated solution porosity	Estimated intergranular permeability based on lab. tests
Fragmental lime, with calcite cement	Little solution		41.7 '	62	1.93%	1.42%	.36%	.06 md
Fragmental lime with partial cement either crystalline or granular calcite	Little solution		49.7 '	59	2.54%	1.73%	.62%	0 md
	Considerable solution		81.25'	114	7.84%	.09%	7.62%	6.74 md
Mixtures of fragments of fossils and granular calcite and dolomite	Predominantly fragmental	matrix mainly calcite	21.45'	37	2.42%	2.42%	0%	0 md
		matrix mainly dolomite	8.2 '	10	7.35%	5.00%	2.35%	.98 md
	Predominantly granular	groundmass mainly calcite	22.0 '	29	4.03%	3.81%	.22%	.03 md
		groundmass mainly dolomite	21.55'	33	14.16%	5.00%	9.16%	8.20 md
Oolitic fragmental lime	Considerable solution		34.05'	57	11.05%	0%	11.05%	1.38 md
Groundmass of granular calcite and dolomite with scattered fragments of fossils	Groundmass mainly calcite. Little oilstain.		36.6 '	46	6.77%	6.77%	0%	0 md
	Groundmass calcite & dolomite. Diss. oilstain.		34.2 '	60	8.62%	5.00%	3.62%	.14 md
	Groundmass mainly dolomite. Strong oilstain.		28.7 '	38	16.67%	5.00%	11.67%	.75 md

TABLE XV

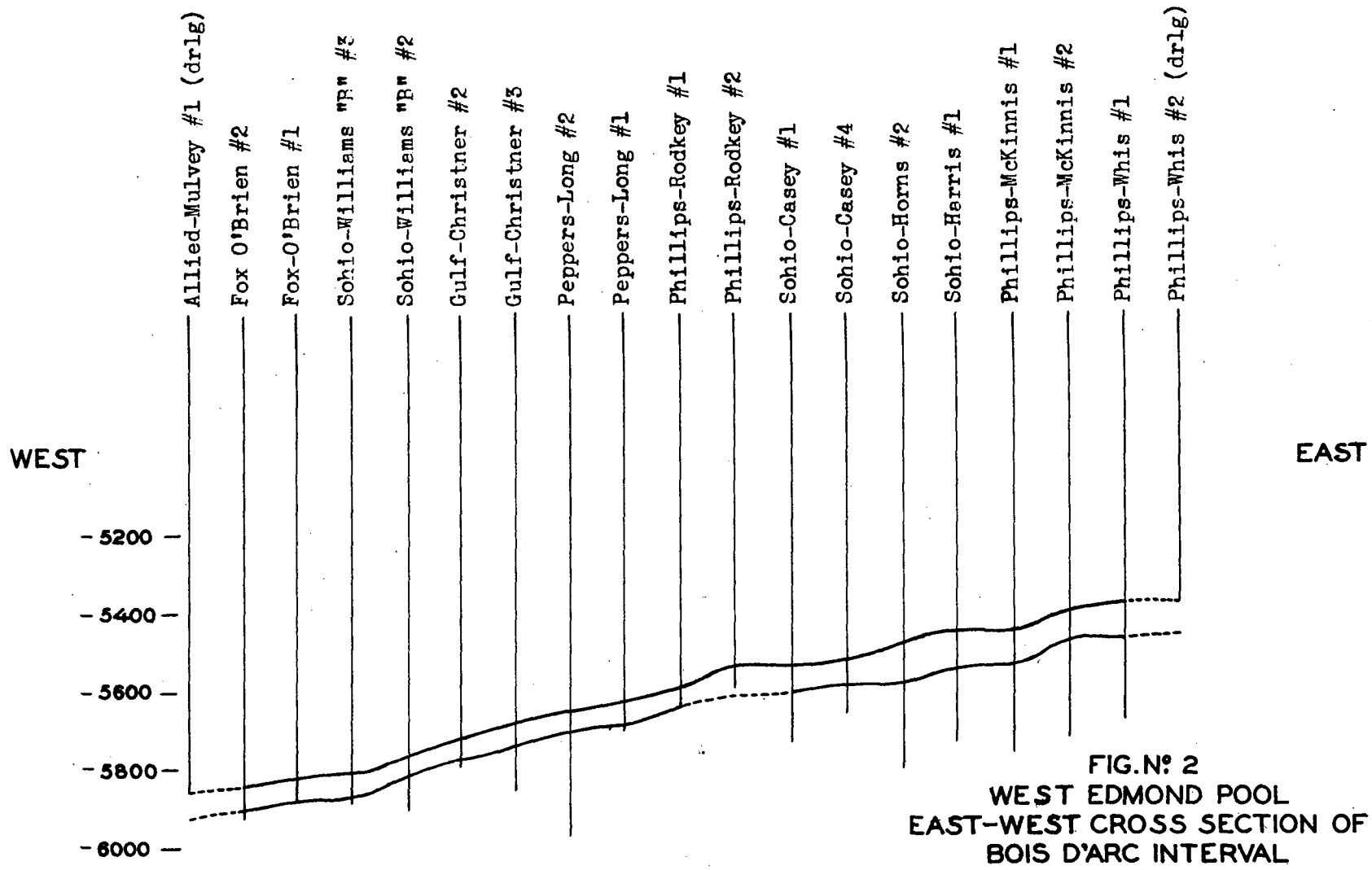


FIG. Nº 2
WEST EDMOND POOL
EAST-WEST CROSS SECTION OF
BOIS D'ARC INTERVAL
IN THE NORTHERN PART.
SCALE: V. = 400'
H. = 3720'

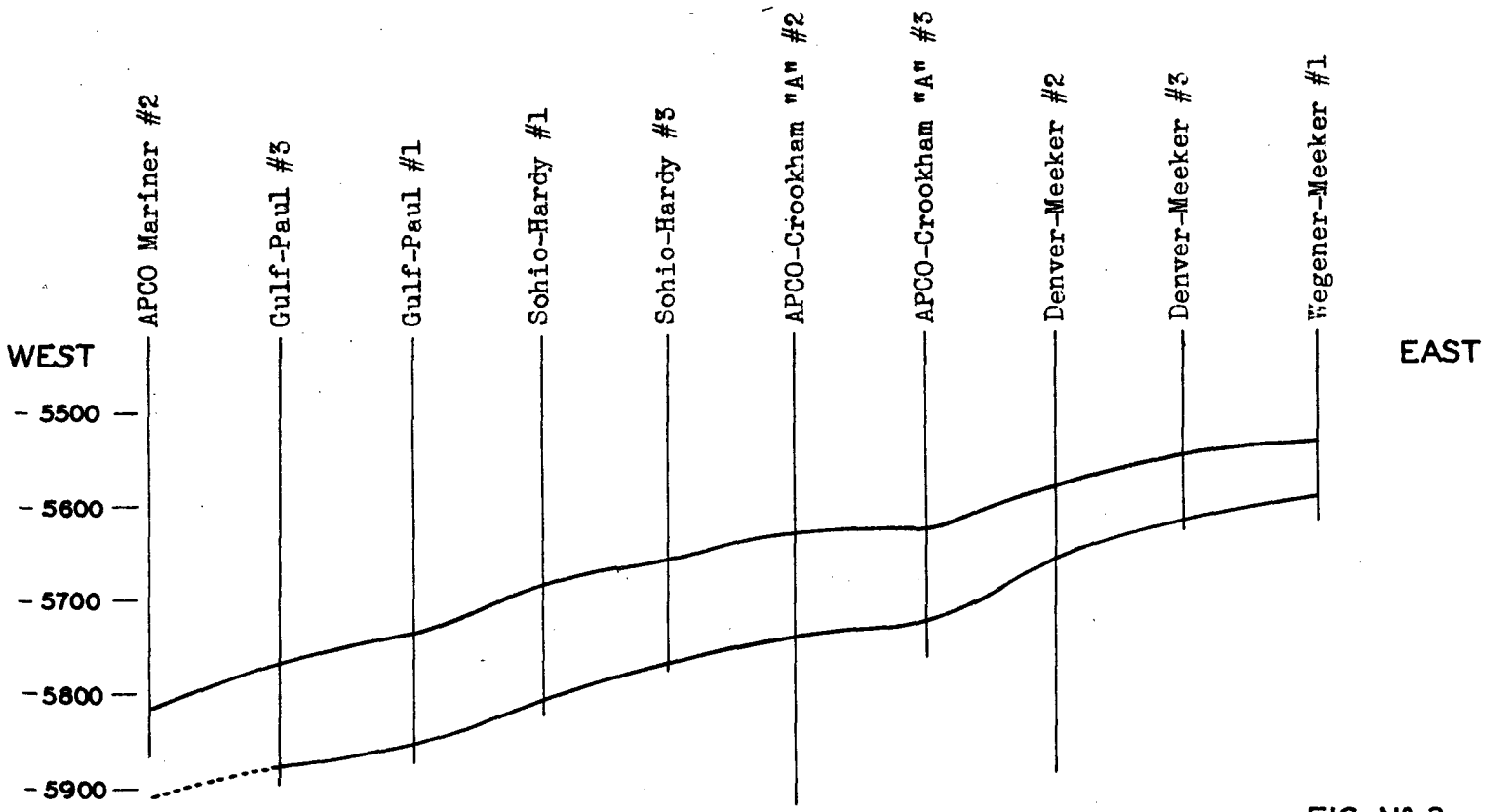


FIG. Nº 3
WEST EDMOND POOL
EAST-WEST CROSS SECTION OF
BOIS D'ARC INTERVAL
IN THE SOUTHERN PART.

SCALE: V. 1"=200'
H. 1"=1860'

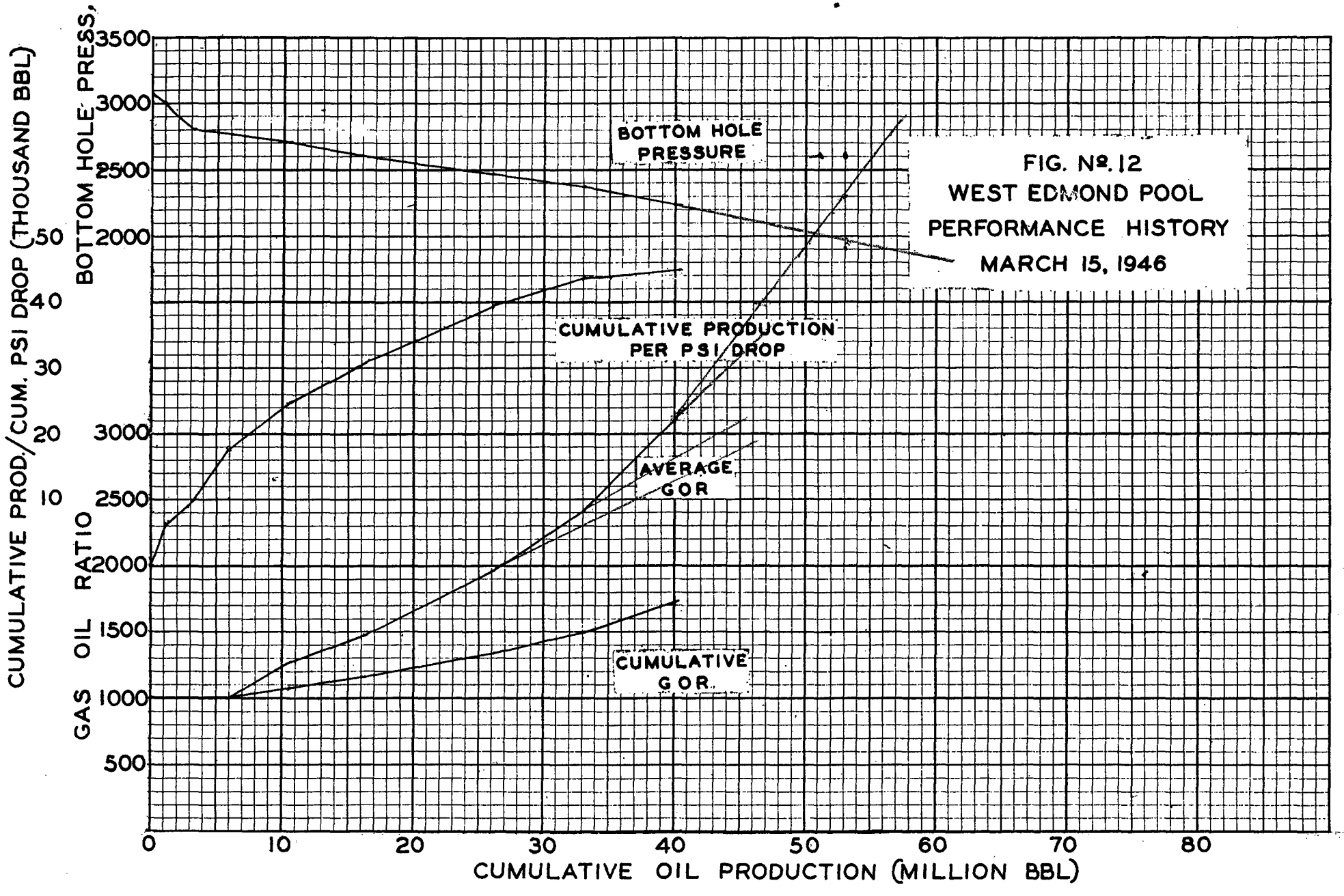


FIG. Nº. 12
WEST EDMOND POOL
PERFORMANCE HISTORY
MARCH 15, 1946
BOTTOM HOLE PRESSURE
CUMULATIVE PRODUCTION PER PSI DROP
AVERAGE GOR
CUMULATIVE GOR
CUMULATIVE PROD./CUM. PSI DROP (THOUSAND BBL)
BOTTOM HOLE PRESS.
GAS OIL RATIO
CUMULATIVE OIL PRODUCTION (MILLION BBL)
0
10
20
30
40
50
60
70
80
3500
3000
2500
2000
50
40
30
20
10
3000
2500
2000
1500
1000
500

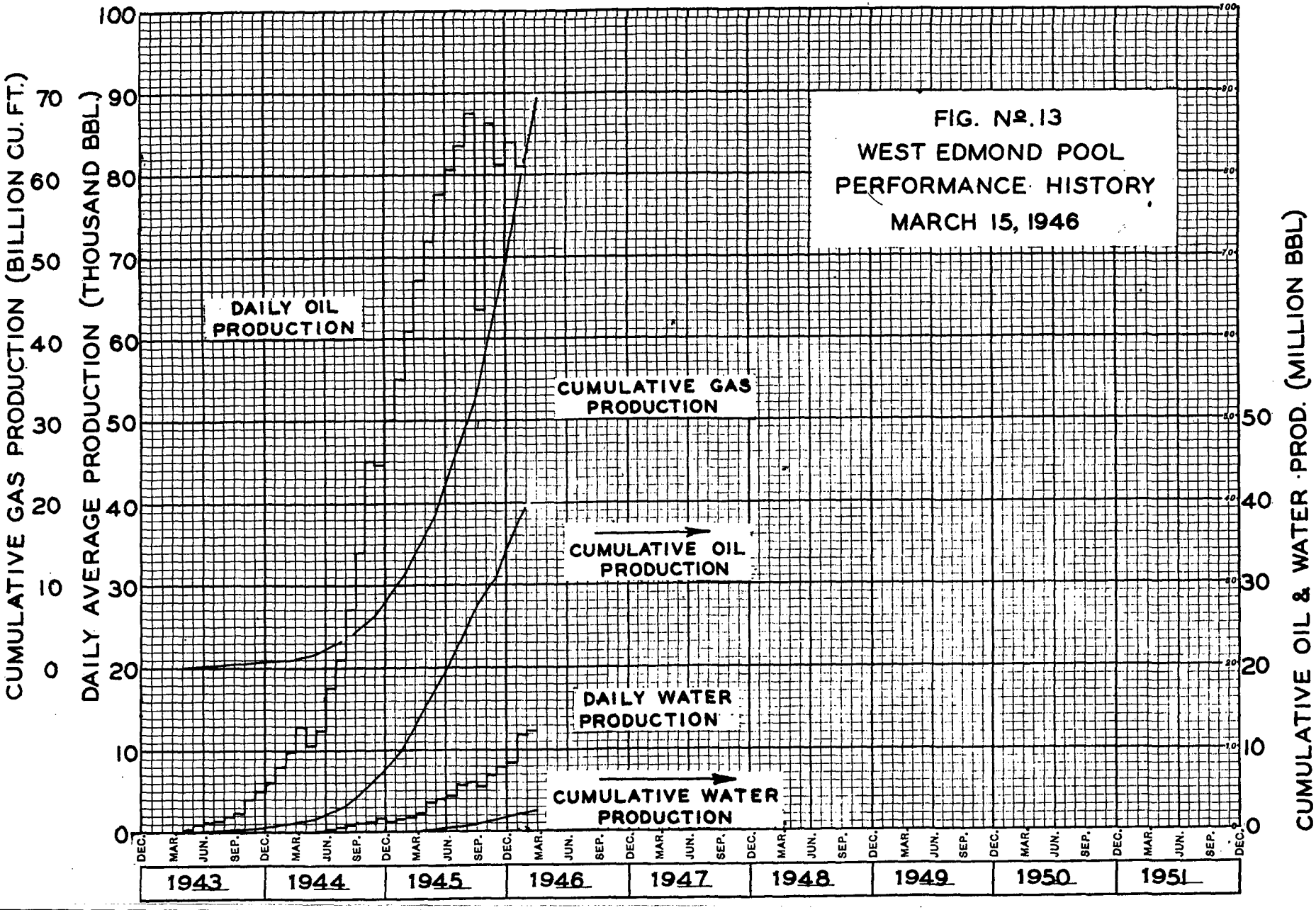


FIG. Nº. 13
WEST EDMOND POOL
PERFORMANCE HISTORY
MARCH 15, 1946
DAILY OIL PRODUCTION
CUMULATIVE GAS PRODUCTION
CUMULATIVE OIL PRODUCTION
DAILY WATER PRODUCTION
CUMULATIVE WATER PRODUCTION
CUMULATIVE GAS PRODUCTION (BILLION CU. FT.)
DAILY AVERAGE PRODUCTION (THOUSAND BBL.)
CUMULATIVE OIL & WATER PROD. (MILLION BBL)
1943
1944
1945
1946
1947
1948
1949
1950
1951

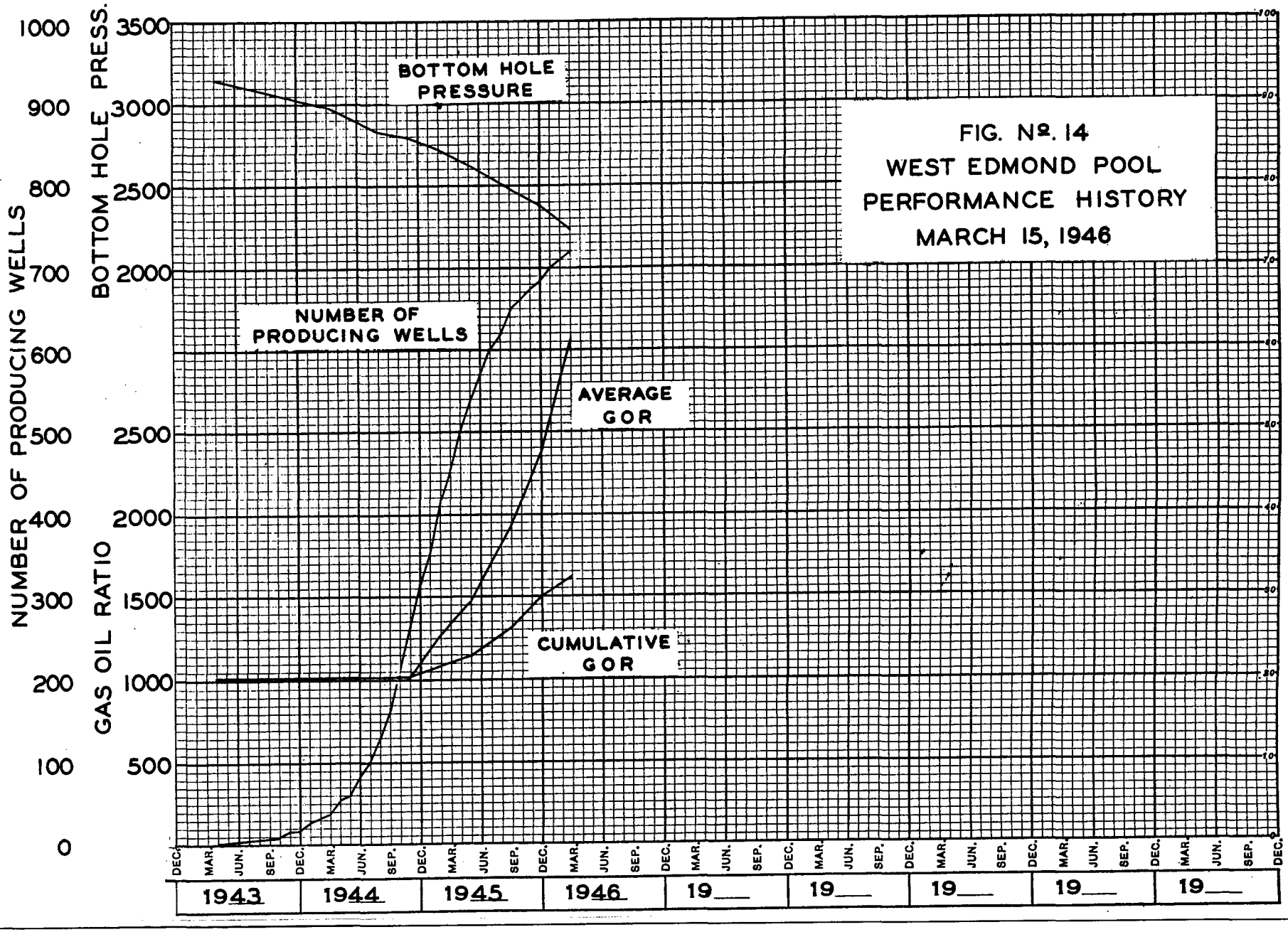


FIG. Nº. 14
WEST EDMOND POOL
PERFORMANCE HISTORY
MARCH 15, 1946
BOTTOM HOLE PRESSURE
NUMBER OF PRODUCING WELLS
AVERAGE GOR
CUMULATIVE GOR
NUMBER OF PRODUCING WELLS
BOTTOM HOLE PRESS.
GAS OIL RATIO
1000
900
800
700
600
500
400
300
200
100
0
3500
3000
2500
2000
2500
2000
1500
1000
500
DEC.
MAR.
JUN.
SEP.
1943
1944
1945
1946
19___

PROOF OF PUBLICATION

THE EL RENO TRIBUNE
El Reno, Oklahoma

Case No._____

STLYE OF CASE

_____

_____

_____ Plaintiff

vs.

_____ Defendant

In _____ Court

County of _____

Date filed _____, 19____

_____ (Court Clerk)

_____, 19____

Sections Nineteen (19) and Twenty-nine (29) to Thirty-four (34), inclusive, Township Fifteen (15) North, Range Four (4) West.

Sections Thirteen (13), Twenty-four (24), Twenty-five (25) and Thirty-six (36), Township Fifteen (15) North, Range Five (5) West.

Sections Three (3) to Ten (10), inclusive, Fourteen (14) to Twenty-three (23), inclusive, and Twenty-seven (27) to Thirty-four (34), inclusive, Township Fourteen (14) North, Range Four (4) West.

Sections One (1), Twelve (12), Thirteen (13), Twenty-four (24) and Twenty-five (25) Township Fourteen (14) North, Range Five (5) West.

Sections Three (3) to Six (6), inclusive; Eight (8) to Eleven (11), inclusive; Fifteen (15) to Seventeen (17), inclusive; Twenty-two (22), inclusive; Twenty-seven (27) to Twenty-nine (29), inclusive, and Thirty-four (34), inclusive, Township Thirteen (13) North, Range Four (4) West.

Sections Four (4), Five (5) and Eight (8) to Ten (10), inclusive, Township Twelve (12) North, Range Four (4) West.

That said petition has been set for hearing before the Corporation Commission at its court room in the State Capitol office building at Oklahoma City, Oklahoma, at 10 o'clock A. M. on the 18th day of March, 1947.

That all those to whom this notice is addressed and any and all other persons who claim that they will be affected either by the granting or denial of said petition shall have the right to be present and participate at said hearing, and shall be granted the opportunity at said time and place to offer evidence and be heard, (a) in support of or in opposition to the petition so filed; (b) in regard to the exclusion of land from or inclusion of other lands within the Unit Area of the proposed Unit; (c) in regard to the Plan of Unitization in whole or in part to be applicable to such Unit and Unit Area; and (d) in regard to any other matter or thing pertaining to the creation of such Unit, the unitized management, operation and further development of the aforesaid common source of supply.

GEO. HAYES, Secretary
OKLA. CORPORATION COMMISSION

Date: March 11, 1947

CORPORATION COMMISSION
OF THE STATE OF OKLAHOMA
Tom McCall, Chairman
E. Rex Lee
Ray C. Wood, Commissioners

9-15-46—2,000

(Attach Copy of Notice to Space Below)

(Published in The El Reno Daily Tribune, El Reno, Okla., February 27, March 6, 13, 1947.)

BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

In the Matter of the Petition For The Creation of the West Edmond Hunton Lime Unit Having for Its Purpose the Unitized Management, Operation and Further Development Of a Portion of the West Edmond Hunton Lime Common Source Of Supply of Oil and Gas Located In Oklahoma, Logan, Kingfisher And Canadian Counties, Oklahoma; The Defining of the Unit Area Thereof And the Prescribing of the Plan Of Unitization Applicable To Such Unit And Unit Area.

C. D. No. 1355

NOTICE

THE STATE OF OKLAHOMA to all persons, firms, corporations, partnerships, trusts, trustees, guardians, executors, administrators, fiduciaries of every kind, the State of Oklahoma and all agencies and subdivisions thereof and all other beings or entities owning oil and gas rights or otherwise interested in the common source of supply of oil and gas known as the West Edmond Hunton Lime Pool underlying the hereinafter described lands located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, or in the production, handling or marketing of the oil and gas that may be located therein or produced therefrom, or having the right to share and participate, either directly or indirectly, in the benefits of such production:

Notice is hereby given that Sohio Petroleum Company et al., Lessees of record of more than 51% of the area of the aforesaid common source of supply of oil and gas, did on the 29th day of January, 1947, file a petition with the Corporation Commission of the State of Oklahoma for an order creating the West Edmond Hunton Lime Unit, having for its purpose the unitized management, operation and further development of said common source of supply, defining the Unit Area of said Unit and prescribing the Plan of Unitization applicable thereto, all as is authorized and provided for by House Bill 339 of the 1945 Legislature of the State of Oklahoma, being 52 O. S. Supp. 1945, Sections 286.1 to 286.17.

That the lands sought to be included within the Unit Area of said Unit lie wholly within the following described sections of land located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, to

THE EL RENO TRIBUNE PROOF OF PUBLICATION

In the Office Corporation Commission ~~Court~~ of _____ ~~County,~~

STATE OF OKLAHOMA

_____
~~Plaintiff or Party Interested~~

_____
~~Defendant, Applicant or Administrator~~

AFFIDAVIT OF PUBLICATION

No. C.D. #1355

Roy J. Dyer, of lawful age, being duly sworn upon oath, deposes and says that he is the publisher (~~or foreman, principal clerk, etc.~~) of THE EL RENO TRIBUNE, a daily newspaper printed in El Reno, Canadian County, Oklahoma, and a bonafide paid general circulation therein, printed in the English language, and that the notice by publication, a copy of which is hereto attached, was published in said newspaper for Three (3) consecutive weeks, the first publication being on the 27 day of Feb., 1947, and the last day of publication being on the 13 day of March, 1947, and that said newspaper has been continuously and uninterruptedly published in said county during the period of One Hundred and Four (104) Weeks consecutively, prior to the first publication of said notice or advertisement, as required by House Bill 99, (an Act amending Section 45, Oklahoma Statutes 1931), passed by The Fifteenth Legislature and effective July 23, 1935, and thereafter.

The advertisement above referred to, a true and printed copy of which is hereto attached, was published in said EL RENO TRIBUNE on the following dates, to-wit:

1st insertion	Feb 27, 1947	6th insertion	_____, 19____
2nd insertion	Mar 6, 1947	7th insertion	_____, 19____
3rd insertion	Mar. 13, 1947	8th insertion	_____, 19____
4th insertion	_____, 19____	9th insertion	_____, 19____
5th insertion	_____, 19____	Last insertion	March 13, 1947

Said notice was published in the regular edition of said newspaper and not in a supplement thereof. Affiant further states that said newspaper meets all the requirements of the laws of the State of Oklahoma with reference to legal publications.

Publishing fee $ 25.00

Roy J. Dyer
(Signature)

Subscribed and sworn to before me this 14 day of March A. D., 1947.

My commission expires _____

Mary F. Schrader
Notary Public.

My Commission Expires Mar. 29, 1950

AFFIDAVIT OF PUBLICATION

STATE OF OKLAHOMA, }ss.
OKLAHOMA COUNTY }

ARTA SIMPSON

of lawful age, being duly sworn on oath, deposes and says: That S he is the

PRINCIPAL CLERK of THE DAILY LAW JOURNAL-RECORD, a newspaper of general circulation in the State of Oklahoma and printed at Oklahoma City, Oklahoma. That the attached notice was published in all regular editions of said newspaper on the following dates:

MARCH 7, 1947

Arta Simpson

Subscribed and sworn to before me this

7th day of MARCH, 1947

Kathryn A. Miller
Notary Public

My Commission expires JANUARY 18, 1950

PUBLISHER'S FEE $12.10

(32953)
NOTICE
Cause CD No. 1855
Before the Corporation Commission of the State of Oklahoma.
In the Matter of the Petition for the Creation of the West Edmond Hunton Lime Unit, having for its purpose the unitized management, operation and further development of a portion of the West Edmond Hunton Lime common source of supply of oil and gas, located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma; the defining of the unit area thereof and the prescribing of the plan of unitization applicable to such unit and unit area.
THE STATE OF OKLAHOMA TO: All persons, firms, corporations, partnerships, trusts, trustees, guardians, executors, administrators, fiduciaries of every kind, the State of Oklahoma and all agencies and subdivisions thereof and all other beings or entities owning oil and gas rights or otherwise interested in the common source of supply of oil and gas known as the West Edmond Hunton Lime Pool underlying the hereinafter described lands located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, or in the production, handling or marketing of the oil and gas that may be located therein or produced therefrom, or having the right to share and participate, either directly or indirectly, in the benefits of such production:
Notice is hereby given that Sohio Petroleum Company, et al, lessees of record of more than 51% of the area of the aforesaid common source of supply of oil and gas, did on the 5th day of March, 1947, file an amended petition with the Corporation Commission of the State of Oklahoma for an order creating the West Edmond Hunton Lime Unit, having for its purpose the unitized management, operation and further development of said common source of supply, defining the Unit Area of said Unit and prescribing the Plan of Unitization applicable thereto, all as is authorized and provided for by House Bill 339 of the 1945 Legislature of the State of Oklahoma, being 52 O. S. Supp. 1945, Sections 286.1 to 286.17.
That the lands sought to be included within the Unit Area of said Unit lie wholly within the following described sections of land located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, to-wit:
Sections 19 and 29 to 34, inclusive, Township 15 North, Range 4 West.
Sections 13, 24, 25 and 36, Township 15 North, Range 5 West.
Sections 3 to 10, inclusive; 14 to 23, inclusive; and 27 to 34 inclusive, Township 14 North, Range 4 West.
Sections 1, 12, 13, 24 and 25, Township 14 North, Range 5 West.
Sections 3 to 6, inclusive; 8 to 11, inclusive; 15 to 17, inclusive; Block Twenty-Five (25) in Putnam Heights Addition to Oklahoma City, as shown by the recorded plat thereof;
and that you must answer the petition of plaintiff filed in this cause on or before the 4th day of April, 1947, or said petition will be taken as true and judgment rendered accordingly, cancelling and releasing of record the above described mortgage and quieting the title of plaintiff in and to the above described real property, and forever barring you, and each of you, from ever setting up or asserting any right, title, equity or interest therein or thereto adverse to the right and title of the plaintiff, her heirs and assigns.
Witness my hand this 19th day of February, 1947.
CLIFF MYERS,
(SEAL) Court Clerk.

Sections Nineteen (19) and Twenty-nine (29) to Thirty-four (34), inclusive, Township Fifteen (15) North, Range Four (4) West.

Sections Thirteen (13), Twenty-four (24), Twenty-five (25) and Thirty-six (36), Township Fifteen (15) North, Range Five (5) West.

Sections Three (3) to Ten (10), inclusive, Fourteen (14) to Twenty-three (23), inclusive, and Twenty-seven (27) to Thirty-four (34), inclusive, Township Fourteen (14) North, Range Four (4) West.

Section One (1), Twelve (12), Thirteen (13), Twenty-four (24) and Twenty-five (25), Township Fourteen (14) North, Range Five (5) West.

Sections Three (3) to Six (6), inclusive; Eight (8) to Eleven (11), inclusive; Fifteen (15) to Seventeen (17), inclusive; Twenty (20) to Twenty-two (22), inclusive; Twenty-seven (27) to Twenty-nine (29), inclusive, and Thirty-two (32) to Thirty-four (34), inclusive, Township Thirteen (13) North, Range Four (4) West.

Sections Four (4), Five (5) and Eight (8) to Ten (10), inclusive, Township Twelve (12) North, Range Four (4) West.

That said petition has been set for hearing before the Corporation Commission at its court room in the State Capitol office building at Oklahoma City, Oklahoma, at 10 o'clock A.M., on the 18th day of March, 1947.

That all those to whom this notice is addressed and any and all other persons who claim that they will be affected either by the granting or denial of said petition shall have the right to be present and participate at said hearing and shall be granted the opportunity at said time and place to offer evidence and be heard; (a) in support of or in opposition to the petition so filed; (b) in regard to the exclusion of land from or inclusion of other lands within the Unit Area of the proposed Unit; (c) in regard to the Plan of Unitization, in whole or in part, to be applicable to such Unit and Unit Area; and (d) in regard to any other matter or thing pertaining to the creation of such Unit or the unitized management, operation and further development of the aforesaid common source of supply of oil and gas.

Dated this 24th day of February, 1947.

CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

By RUFORD BOND
Chairman

RAY O. WILLMS
Commissioner

ROY C. JONES
Commissioner

TOM McMURRAY
Secretary

No. .....

PROOF OF PUBLICATION

.....

In The Matter of

.....

.....

.....

.....

.....

Attorney for .....

Filed this ..... day of

....., 194 ....

By .....

IN THE .....COURT OF ..... COUNTY, OKLAHOMA

CASE NO. .....

PROOF OF PUBLICATION **COPY**

STATE OF OKLAHOMA,)
)
COUNTY OF LOGAN.....)

.....G. D. Guilkey..... , of lawful age, being duly sworn upon oath, deposes and says: That he is the . Bus. Mgr. ..... of The Guthrie Daily Leader, a daily newspaper printed and published in the city of Guthrie, County of Logan, State of Oklahoma, and has personal knowledge of the facts hereinafter stated.

That a printed notice, copy of which is hereto attached, was published in the regular and entire issue of said newspaper, and not in any supplement thereof, for .....3..... consecutive ....issues..... the first publication thereof being made on ....Wednesday.. the .26th..... day of .Feb..... 19 . 47.... and the last publication on the .12th. day of .....March..... 19 47.....

That said newspaper had been continuously and uninterruptedly published in said county during a period of more than one hundred and four (104) weeks consecutively and immediately prior to the first publication of the attached notice or advertisement; that it has entrance into the United States mails as second-class mail matter, and is delivered to the United States mails in the city and county where published; that said newspaper comes within all of the prescriptions and requirements of Title 25 Oklahoma Statues of 1941, Section 102, and meets all other requirements of the laws of the State of Oklahoma with reference to legal publications.

.....

Subscribed and sworn to before me this ..13th..... day of .March..., 19 .47.....

.....Kathleen Pope.....
Notary Public

My commission expires: Oct. 1-1950

Publication fee $..44.00.....

LEGAL NOTICES

Published in the Guthrie Daily Leader February 26, March 5, and 12, 1947.

BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

C. D. No. 1355

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER AND CANADIAN COUNTIES, OKLAHOMA; THE DEFINING OF THE UNIT AREA THEREOF AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA.

NOTICE

THE STATE OF OKLAHOMA to all persons, firms, corporations, partnerships, trusts, trustees, guardians, executors, administrators, fiduciaries of every kind, the State of Oklahoma and all agencies and subdivisions thereof and all other beings or entities owning oil and gas rights or otherwise interested in the common source of supply of oil and gas known as the West Edmond Hunton Lime Pool underlying the hereinafter described lands located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, or in the production, handling or marketing of the oil and gas that may be located therein or produced therefrom, or having the right to share and participate, either directly or indirectly, in the benefits of such production:

Notice is hereby given that Sohio Petroleum Company et al., Lessees of record of more than 51% of the area of the aforesaid common source of supply of oil and gas, did on the 29th day of January 1947, file a petition with the Corporation Commission of the State of Oklahoma, for an order creating the West Edmond Hunton Lime Unit, having for its purpose the unitized management, operation and further development of said common source of supply, defining the Unit Area of said Unit and prescribing the Plan of Unitization applicable thereto, all as is authorized and provided for by House Bill 339 of the 1946 Legislature of the State of Oklahoma, being 52 O. S. Supp. 1945, Sections 286.1 to 286.17.

That the lands sought to be included within the Unit Area of said Unit lie wholly within the following described sections of land located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, to wit:

EP:LC 7-12-47

BEFORE THE CORPORATION COMMISSION OF THE
STATE OF OKLAHOMA

In the Matter of the Application and Petition for the creation of the West Edmond Unit for the Purpose of Unitized Management, Operation and further development of the West Edmond Hunton Lime common source of supply of oil and gas in Oklahoma, Canadian, Kingfisher and Logan Counties, Oklahoma; the defining of the Unit Area thereof, and the prescribing of the Plan of Unitization applicable to such Unit and Unit Areas.	Cause CD No. 1355

JOURNAL ENTRY ALLOWING APPEAL

Now on this ____ day of _____, 1947, it appears to the Corporation Commission of the State of Oklahoma, that The British-American Oil Producing Company, a corporation, protestant in the above styled and numbered cause, has filed herein written notice of its intention to appeal to the Supreme Court of the State of Oklahoma from the order of this Commission rendered herein on the ____ day of _____, 1947, granting the application and petition for unitization herein, and that The British-American Oil Producing Company, a corporation, has requested this Commission to certify the entire record in this cause to the Supreme Court of the State of Oklahoma, as prescribed by law.

NOW, THEREFORE, it is ordered by the Commission that said appeal be granted and that the Secretary of the Corporation Commission of the State of Oklahoma cause the entire record in this case to be transcribed and submitted to the Chairman of the Commission for certification at the earliest possible date.

DONE at the office of the Corporation Commission

Capitol Office Building, Oklahoma City, Oklahoma, this

_____ day of _____, 1947.

CORPORATION COMMISSION OF THE STATE
OF OKLAHOMA

By_____
Chairman

_____
Vice-Chairman

_____
Commissioner

ATTEST:

_____
Secretary

Office of the Clerk of the Supreme Court

OKLAHOMA CITY, OKLAHOMA

In Re: Petition for the Creation of the West Edmond Huntton Lime unit et al

Plaintiff ___ in Error,

vs.

Defendant ___ in Error.

Corporation Commission

No. 1355

Order Number 2

CERTIFICATE OF APPEAL

I hereby certify that on the 25 day of September, 1947, there was filed in my office a petition in error and case-made from transcript of the record of the Corporation Commission Court of State of Okla ~~County~~, and cash deposit of $ 25.00 in the above entitled cause; that said case was duly entered on the docket, numbered 33290 and is pending in the Supreme Court.

Witness my hand and the seal of said Court at Oklahoma City, this 25 day of Sept, 1947.

ANDY PAYNE, Clerk.

By Ethel C. Hammett, Deputy

AFFIDAVIT OF PUBLICATION

STATE OF OKLAHOMA, }
OKLAHOMA COUNTY } ss.

ARTA SIMPSON

of lawful age, being duly sworn on oath,

deposes and says: That She is the

PRINCIPAL CLERK of THE DAILY LAW JOURNAL-RECORD, a newspaper of general circulation in the State of Oklahoma and printed at Oklahoma City, Oklahoma. That the attached notice was published in all regular editions of said newspaper on the following dates:

FEBRUARY 26,1947 and MARCH 5, 12,1947

Arta Simpson

Subscribed and sworn to before me this

12th day of MARCH,1947

Kathryn Ottmiller
Notary Public

My Commission expires JANUARY 18,1950

PUBLISHER'S FEE.....$34.00

(32850)
NOTICE
C. D. No. 1855

Before the Corporation Commission of the State of Oklahoma.

In the Matter of the Petition for the Creation of the West Edmond Hunton Lime Unit having for its purpose the unitized management, operation and further development of a portion of the West Edmond Hunton Lime common source of supply of oil and gas located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma; the defining of the unit area thereof and the prescribing of the plan of unitization applicable to such unit and unit area.

THE STATE OF OKLAHOMA to all persons, firms, corporations, partnerships, trusts, trustees, guardians, executors, administrators, fiduciaries of every kind, the State of Oklahoma and all agencies and subdivisions thereof and all other beings or entities owning oil and gas rights or otherwise interested in the common source of supply of oil and gas known as the West Edmond Hunton Lime Pool underlying the hereinafter described lands located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, or in the production, handling or marketing of the oil and gas that may be located therein or produced therefrom, or having the right to share and participate, either directly or indirectly, in the benefits of such production:

Notice is hereby given that Sohio Petroleum Company et al., Lessees of record of more than 51% of the area of the aforesaid common source of supply of oil and gas, did on the 29th day of January, 1947, file a petition with the Corporation Commission of the State of Oklahoma for an order creating the West Edmond Hunton Lime Unit, having for its purpose the unitized management, operation and further development of said common source of supply, defining the Unit Area of said Unit and prescribing the Plan of Unitization applicable thereto, all as is authorized and provided for by House Bill 339 of the 1945 Legislature of the State of Oklahoma, being 52 O. S. Supp. 1945, Sections 286.1 to 286.17.

That the lands sought to be included within the Unit Area of said Unit lie wholly within the following described sections of land located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, to-wit:

Sections Nineteen (19) and Twenty-nine (29) to Thirty-four (34), inclusive, Township Fifteen (15) North, Range Four (4) West.

Sections Thirteen (13), Twenty-four (24), Twenty-five (25) and Thirty-six (36), Township Fifteen (15) North, Range Five (5) West.

Sections Three (3) to Ten (10), inclusive, Fourteen (14) to Twenty-two (22) inclusive, and Twenty-seven (27) to Thirty-four (34) inclusive, Township Fourteen (14) North, Range Four (4) West.

Sections One (1), Twelve (12), Thirteen (13), Twenty-four (24) and Twenty-five (25), Township Fourteen (14) North, Range Five (5) West.

Sections Three (3) to Six (6) inclusive; Eight (8) to Eleven (11) inclusive, Fifteen (15) to Seventeen (17) inclusive, Twenty (20) to Twenty-two (22) inclusive, Twenty-seven (27) to Twenty-nine (29) inclusive, and Thirty-two (32) to Thirty-four (34) inclusive, Township Thirteen (13) North, Range Four (4) West.

Sections Four (4), Five (5), Eight (8) and Nine (9), Township Twelve (12) North, Range Four (4) West.

That said petition has been set for hearing before the Corporation Commission at its court room in the State Capitol office building at Oklahoma City, Oklahoma, at 10 o'clock A. M. on the 18th day of March, 1947.

That all those to whom this notice is addressed and any and all other persons who claim that they will be affected either by the granting or denial of said petition shall have the right to be present and participate at said hearing and shall be granted the opportunity at said time and place to offer evidence and be heard, (a) in support of or in opposition to the petition so filed, (b) in regard to the exclusion of lands from or inclusion of other lands within the Unit Area of the proposed unit, (c) in regard to the Plan of Unitization in whole or in part to be applicable to such unit and Unit Area, and (d) in regard to any other matter or thing pertaining to the creation of such unit or the unitized management, operation and further development of the aforesaid common source of supply of oil and gas.

Dated this 24th day of January, 1947.

CORPORATION COMMISSION OF THE STATE OF OKLAHOMA
BY RUTHERFORD BOND, Chairman
BAY C. WEEMS, Commissioner
RAY C. JONES, Commissioner
(SEAL)
Don McMurray, Secretary.
2-28-47 1-24-47

This is squarely in accord with Section 4 of H. B. 339 (Title 52 O.S. 1945, Sec. 286.4), which provides, in brief, the following:

(1) The filing of a petition by 50 per cent, or more, of the interested lessees, to which there shall be attached "a recommended plan of unitization applicable to such proposed unit area and which the petitioners consider to be fair, reasonable, and equitable".

(2) After hearing the evidence, if the Commission shall find;

(a) that the unitized operation of the common source of supply is necessary to carry on repressuring or other joint effort calculated to increase the ultimate recovery of oil and gas;

(b) that one or more of such unitized methods of operation will prevent waste and substantially increase the ultimate recovery;

(c) that the cost of operation will not exceed the value of the additional recovery; and,

(d) that such unitization is for the common good and general advantage of the parties;

" it shall make a finding to that effect and enter an order approving the creation of a unit*--, all upon such terms and conditions, as may be shown by the evidence, to be fair, reasonable, equitable, and which are necessary or proper to protect, safeguard, and adjust the respective rights and obligations of the several persons affected, including royalty owners, owners of overriding royalties, oil and gas payments, carried interests, mortgagees, lien claimants, and others, as well as the lessees."

*- It should be noted that the statute does not in any wise say that if the Commission finds the matters set forth in sub-paragraphs (a), (b), (c), and (d) to exist, the order made shall approve the recommended plan, it rather says the order shall approve the creation of a unit.

The first paragraph of Section 5 of the law (Title 52 O.S. 1945, Sec. 286.5) further requires that "The order of the Commission shall * * * prescribe with reasonable detail the plan of unitization".

In order for the Commission to enter an order of unitization for the West Edmond Field, it must first find the facts set forth in sub-paragraphs (a), (b), (c), and (d) above. If it enters an affirmative finding in respect of each of these four points, then under the statute the Commission is required to enter an order prescribing with reasonable detail the plan of unitization (all, however, as expressly stated in the statute) upon such terms and conditions as are shown by the evidence to be fair, reasonable, equitable, and necessary or proper to protect, safeguard, and adjust the rights of the parties.

The minor modifications in the phraseology of the law which were suggested by Messrs. Heard and Robinson to have been effected by amendments during the course of the legislative consideration do not strip this Commission of the jurisdiction which rightfully belongs to it, and which is expressly conferred upon it by the statute as finaly enacted.

If the Commission should see fit to enter an order for the unitization of this field, we here merely ask that the Commission protect and adjust the rights of the several parties who will be affected by such order, and in view of the explicit language of the statute there can be no doubt of the Commission's jurisdiction to do so.

II.
Selective Production and
the Gas Injection Experiment.

(This point is mentioned briefly, since according to one of the witnesses, the amount of the additional ultimate recovery plays some part in determining the fairness of such allocation formula).

The plan of unitization recommended by Proponents guarantees to this Commission, royalty owners, and lessee Protestants only the so-called "Selective Production" of wells (i.e. the process whereby oil is produced from the good wells until they are depleted to the same extent as the poor wells are now depleted, with further production from all the wells until their economical limit is reached), and a Pilot Plant Experimental Gas Injection Project.

The following references are to the recommended plan of unitization:

Section IV, on page 20, deals with the plan of operation. Sub-paragraph (a) provides for the gas injection experiment, as outlined in Exhibit "E", which appears at page 23, such exhibit being entitled "Pilot Gas Injection Projects". Sub-paragraph (c), on page 21, dealing with conditions under which the unit may engage in gas injection, provides:

> "(c) To the extent and in the manner determined by the Operating Committee to be economically profitable on the basis of the information developed by the aforesaid pilot gas injection projects, and subject to the provisions of subsection 6 of Section VIII of this Plan of Unitization and Exhibit "E" hereto attached, pressure maintenance or repressuring operations through the return of gas to the reservoir may, in accordance with good engineering and production practices, be engaged in by the Unit."

Subsection 6 of Section VIII, referred to in the last quoted excerpt from the Plan, will be found at pages 9 and 10, and such subsection provides that the pilot plant experimental project shall not be extended in any event if 15 per cent or more of the operators are opposed thereto.

Subsections (d) and (e) provide for the "Selective Production" of wells, and confirm our above quoted definition of these terms. It is also of interest to note that such sub-paragraphs further confirm Mr. Pruet's classical definition as "that process by which the oil is produced only from the good wells, and then shared with the owners of the poor wells".

III.
Allocation of Unit Production

It has been and is the position of H. H. Wegener that the allocation formula adopted by the proponents, and which is based on the January allowables, is unfair and inequitable, in that it does not accord his wells their fair share of the unit production. It was pointed out during the first hearing in March that the tendered formula which gave 50 per cent credit to the January allowables was arbitrary and unfair to the better wells for the following reasons:

(1) A well which on the August-September tests indicated an ability to produce 65 bbls at a G.O.R. of 7000 to 1 was given just as much credit as a well which on the same tests indicated an ability to produce 120 bbls, or more, at a G.O.R. of 4000 to 1, or less.

(2) Many of the wells failed for several months before and after January to produce a quantity of oil as great as was permitted under the allowables applicable to such wells.

(3) It was admitted by all of Proponents' Petroleum Engineers that the G.O.R. of a well was a measure of its depletion, and that a well with 7000 to 1 G.O.R. was much more depleted than a well with a 4000 to 1 G.O.R.

We, therefore, at the first hearing urged that the Wegener wells, which always had easily made their allowables, and had producing ratios much less than 7000 to 1, were not treated fairly under the formula which used the January allowables. We further indicated that we were confident that a later test would demonstrate such to be the case.

The Commission made further tests of the wells in February and March, and in April, after the conclusion of the first hearing, raised the top allowable for wells in the West Edmond Field to 81 bbls., and reduced the penalty G.O.R. to 4000 to 1. This was the basis for the May allowables. Using such allowables to determine whether the Wegner wells were better (as we had claimed), it was found such wells would be accorded an increase in the allocation of unit production if the May allowables were used in the formula. This confirmed our claim of one of the basic inequities of the formula as applied to our wells, and all the other better wells in the field. The use of the May allowables in the formula would effectively eliminate this inequity, and we accordingly (and in an effort to avoid a radical departure from the basic formula) have suggested the use of the May allowables in preference to the January allowables.

The sole question to be determined by the Commission in this respect is whether the use of the May allowables in the allowable half of the allocation formula would be more equitable than the use of the January data.

All of the evidence shows that the greatest weakness in the tendered allocation formula arises out of the circumstance that it gives the poor wells a larger share of the unit production than they are entitled to receive, while at the same time giving the better wells too small a share thereof.

This arises out of the circumstance (as the evidence shows, without contradiction) that a well's G.O.R. is a measure of its depletion, and that a well with G.O.R. of 7000 to 1 is not as good a well as one identical in other respects, but with a ratio of 6000 to 1. In the same way, a well with a 5000 to 1 ratio is better than the well last mentioned, and one with a 4000 to 1 is even better than the last. The January formula in no way differentiates between the wells falling within the last mentioned category. A well with a producing ratio of 7000 to 1 is given just as much credit as a well with a ratio of 4000 to 1. The same is true of the top allowable, an 81 bbl. well being a better well than one that can make only 65 bbls. The only changes effected by the use of the May allowables are:

(1) The gas oil ratio is reduced from 7000 to 1 to 4000 to 1; and,

(2) The top allowable is raised from 65 to 81 bbls. per day.

Both changes permit of a more equitable adjustment of a well's participation in the unit production, and the only change in a well's allocation occasioned by the use of the May allowables is that which results when the lower gas oil ratio and greater top allowable are taken into account. The use of the May allowables, therefore, in the very nature of things, could not help but be more equitable. The principle supporting this statement is best illustrated by the following situation:

Under the formula using the January data, a well which made 81 bbls. or more, at a ratio of 4000 to 1, or less, on both the August-September and February-March tests is given no more credit in the allowable half of the formula than a well which made but 65 bbls. at a ratio of 7000 to 1 on the August-September tests, and but 50 bbls. at a ratio of 9000 to 1 on the February-March tests. All of the evidence in the record shows that the first well mentioned above is a much better, much more valuable well than the second. The use of the May allowables gives the first well a greater participation than the second. This is in accord with the true relative values of the wells. The use of the January allowables in the formula gives both wells the same participation, and this is contrary to the actual reality of the situation. It is, therefore, obvious that the use of the January allowables is not equitable. It is not fair. A correction is demanded. Mr. Crowe, in his concluding argument, specifically requested Mr. Williams to deal specifically with this point. He did not do so, for the reason there is no answer.

It was for this same reason that Messrs. Tarner and Bennett, both, witnesses for Proponents, admitted that the use of the May allowables would be more equitable. Mr. Tarner's admission takes on particular significance in the light of his testimony as to the months he had spent in studying the formula, and the fact that he, out of all the engineers who worked on the matter, was the one chosen by Proponents to

defend the formula. Messrs. Gray, Moore, and Keplinger also testified that it would be more equitable to use the May allowables, each stressing the fact that the use of such data would more equitably divide the unit production, since it took into account the realities of the situation, and did not lump off in a single group a large number of wells which were greatly dissimilar. They pointed out that the use of the May allowables gave the maximum participation to the wells that would make 81 bbls. at a ratio of 4000 to 1, or less, and that such wells were better wells than those that would only make 65 bbls., or less, at ratios of 7000 to 1, or more. Mr. Keplinger's study of the reserves of the 100, or more, wells which had consistently failed to make their allowables, with the result that the reserves could be estimated by the production decline method (a method recognized by Proponent's witnesses as a sound engineering method which could be applied to these wells) showed in each and every instance that the use of the January allowables grossly overvalued the poorer wells, and that the use of the May allowables tended more nearly to give them a proper valuation. It, therefore, is no accident or coincidence that we, representing an operator whose wells are better than the average in the field, so strongly urge upon this Commission the use of the May allowables in the formula. We do so because it would be more equitable, and there is no reason why it should not be done.

The only witness who at first impression seemed to take a contrary view was Mr. Knowlton. However, he said his view was based on an assumption that the unit would extensively inject gas into the reservoir, and would also engage in a water flooding project, in consequence of which there would be recovered some 70 million barrels of oil more than the 80 million barrels which would be recovered by primary methods. This opinion is entitled to no weight in this record, since it is too speculative and conjectural, and is contrary to the actual facts in evidence, the recommended plan only providing for selective production and no gas injection, unless the pilot plant experiment should prove economically successful, and even then, unless 85 per cent or more of the operators favor such project. His opinion, which is based on an assumed recovery from gas injection, assumes a state of facts not in evidence, and, therefore, is not competent evidence. Further, there is no evidence that the operators have ever considered a water flooding program as feasible, and there is no evidence of any kind or character of the cost of such project, or the recoveries which might be obtained thereby. In all fairness, we perhaps should suggest that Mr. Knowlton's statement in regard to recoveries from water flooding was that he felt that the unit might conduct certain experiments in this direction which could show water flooding to be practical, and, if such were the case, an additional 30 million barrels of oil might be recovered. Of course, this is the rankest kind of speculation, and an opinion based thereon is of no value to

this Commission in determining the fairness of the allocation formula.

From the above, it will be seen that the evidence introduced at the hearing shows, without contradiction, that the use of the May allowables would be more equitable. Such being the case, the statute, which confers jurisdiction on this Commission, requires that the May allowables be used in the formula, and this for the reason that the evidence shows this is necessary if the order is to be entered on such terms and conditions as are fair, reasonable, equitable, and which are necessary or proper to protect, safeguard, and adjust the rights of the several persons affected.

Respectfully submitted,

EMERY, JOHNSON, CROWE, TOLBERT & SHELTON,

V. P. Crowe

J. C. Love

Attorneys for Respondent, H. H. Wegener.

BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER, AND CANADIAN COUNTIES, OKLAHOMA; THE DEFINING OF THE UNIT AREA THEREOF AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA.

C. D. No. 1355

NOTICE

THE STATE OF OKLAHOMA to all persons, firms, corporations, partnerships, trusts, trustees, guardians, executors, administrators, fiduciaries of every kind, the State of Oklahoma and all agencies and subdivisions thereof and all other beings or entities owning oil and gas rights or otherwise interested in the common source of supply of oil and gas known as the West Edmond Hunton Lime Pool underlying the hereinafter described lands located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, or in the production, handling or marketing of the oil and gas that may be located therein or produced therefrom, or having the right to share and participate, either directly or indirectly, in the benefits of such production:

Notice is hereby given that Sohio Petroleum Company et al., Lessees of record of more than 51% of the area of the aforesaid common source of supply of oil and gas, did on the 29th day of January, 1947, file a petition with the Corporation Commission of the State of Oklahoma for an order creating the West Edmond Hunton Lime Unit, having for its purpose the unitized management, operation and further development of said common source of supply, defining the Unit Area of said Unit and prescribing the Plan of Unitization applicable thereto, all as is authorized and provided for by House Bill 339 of the 1945 Legislature of the State of Oklahoma, being 52 O. S. Supp. 1945, Sections 286.1 to 286.17.

That the lands sought to be included within the Unit Area of said Unit lie wholly within the following described sections of land located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, to-wit:

Sections Nineteen (19) and Twenty-nine (29) to Thirty-four (34), inclusive, Township Fifteen (15) North, Range Four (4) West.

Sections Thirteen (13), Twenty-four (24), Twenty-five (25) and Thirty-six (36), Township Fifteen (15) North, Range Five (5) West.

Sections Three (3) to Ten (10), inclusive, Fourteen (14) to Twenty-three (23), inclusive, and Twenty-seven (27) to Thirty-four (34), inclusive, Township Fourteen (14) North, Range Four (4) West.

Sections One (1), Twelve (12), Thirteen (13), Twenty-four (24) and Twenty-five (25), Township Fourteen (14) North, Range Five (5) West.

Sections Three (3) to Six (6), inclusive; Eight (8) to Eleven (11), inclusive; Fifteen (15) to Seventeen (17), inclusive; Twenty (20) to Twenty-two (22), inclusive; Twenty-seven (27) to Twenty-nine (29), inclusive, and Thirty-two (32) to Thirty-four (34), inclusive, Township Thirteen (13) North, Range Four (4) West.

Sections Four (4), Five (5) and Eight (8) to Ten (10), inclusive, Township Twelve (12) North, Range Four (4) West.

That said petition has been set for hearing before the Corporation Commission at its court room in the State Capitol office building at Oklahoma City, Oklahoma, at 10 o'clock A. M. on the 18th day of March, 1947.

That all those to whom this notice is addressed and any and all other persons who claim that they will be affected either by the granting or denial of said petition shall have the right to be present, and participate at said hearing and shall be granted the opportunity at said time and place to offer evidence and be heard; (a) in support of or in opposition to the petition so filed; (b) in regard to the exclusion of land from or inclusion of other lands within the Unit Area of the proposed Unit; (c) in regard to the Plan of Unitization, in whole or in part, to be applicable to such Unit and Unit Area; and (d) in regard to any other matter or thing pertaining to the creation of such Unit or the unitized management, operation and further development of the aforesaid common source of supply of oil and gas.

Dated this 24th day of February, 1947.

CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

By REFORD BOND, Chairman.
RAY O. WEEMS, Commissioner.
RAY C. JONES, Commissioner.
TOM McMURRAY, Secretary.

(First published in Times 2-27-47. 3t)

In the ..... Court of
Kingfisher County, Oklahoma

Case No. 1355

West Edmond Unitization

Affidavit of Publication

State of Oklahoma, County of Kingfisher, ss:—

H. E. Hubbard, of lawful age, being duly sworn, upon oath deposes and says: That he is the publisher of THE KINGFISHER TIMES, a weekly newspaper printed and published in the City of Kingfisher, County of Kingfisher, and State of Oklahoma, and has personal knowledge of the facts hereinafter stated.

That a printed notice, copy of which is hereto attached, was published in the regular and entire issue of said newspaper, and not in any supplement thereof, for three consecutive weeks, the first publication thereof being made on Thursday, the 27 day of February, 1947, and the last publication on the 13 day of March, 1947; and that said notice was published in each successive weekly issue of said newspaper of the same day of the week between the dates of the first and last publication of said notice.

That said newspaper had been continuously and uninterruptedly published in said county during a period of more than one hundred and four (104) weeks consecutively and immediately prior to the first publication of the attached notice or advertisement; that the same is published in the English language, and has a paid general circulation within the county aforesaid; that it has entrance into the United States mails as second-class mail matter, and is delivered to the United States mails in the city and county where published; that said newspaper comes within all of the prescriptions and requirements of Senate Bill No. 47, passed by the Nineteenth Legislature, effective April 13, 1943, and thereafter, and meets all other requirements of the laws of the State of Oklahoma with reference to legal publications.

Publication Fee $ 35.00

H. E. Hubbard
Publisher.

State of Oklahoma, County of Kingfisher, ss:

Subscribed and sworn to before me this 14 day of March, 1947

V. Beswood
Notary Public

My commission expires 9-28, 1948

(e) That said proposed Plan of Unitization is inequitable, unfair, and unjust, insofar as it applies to the legal and equitable rights, titles, and interests of this Respondent and Protestant.

(f) That the Application and Petition for the creation of the proposed Unit and the proposed Plan of Unitization are not based upon or supported by facts sufficient to justify or permit of the approval of such Plan of Unitization, as proposed by Petitioners.

2. Respondent and Protestant specifically reserves all other objections to the aforesaid Act and the proposed Plan of Unitization which may be available to him, at law or in equity, and by the enumeration of the foregoing specific objections does not waive any other such rights or remedies.

WHEREFORE, Respondent and Protestant respectfully prays that this Honorable Commission deny the Application and Petition filed herein, and that he have such other and further relief as may be proper.

ROBERT A. PARMAN,

By Buck Mass
His Attorney.

(1) That they, and each of them, are in violation of the due process of law clauses of both the Fourteenth Amendment to the Constitution of the United States and Section 7, Article II, of the Constitution of the State of Okla.

(2) That they, and each of them, deny to this Respondent and Protestant the equal protection of the laws guaranteed by the Fourteenth Amendment to the Constitution of the United States;

(3) That they, and each of them, constitute and will effect a taking of the property of this Respondent and Protestant, in violation of Section 23, Article II, of the Constitution of the State of Oklahoma, and in violation of and contrary to Section 24, Article II, of the Constitution of the State of Oklahoma;

(4) That they, and each of them, impair the obligation of the contracts of this Respondent and Protestant, in violation of Section 10, Article I, of the Constitution of the United States, and Section 15, Article II, of the Constitution of the State of Oklahoma;

(5) That they, and each of them, constitute an unlawful delegation of power in violation of Section 1, Article IV and Article V, of the Constitution of the State of Oklahoma.

(b) That the area proposed for unitization under said Plan is not a single common source of supply.

(c) That the proposed Plan of Unitization does not equitably apportion to this Respondent and Protestant that portion of the total oil and gas which may be produced from the proposed Unitized Area which may be reasonably expected to be produced from and accrue to the oil and gas leasehold rights of this Respondent and Protestant asa contribution to the Unit total oil and gas production.

(d) That the division of interest of Unit Production, as proposed in the Petition filed herein, is not such as will reasonably permit persons otherwise entitled to share in, or benefit by, the production from each separately owned tract within the Unit Area, to produce or receive, in lieu thereof, their fair, equitable, and reasonable share of the Unit Production, or other benefits thereof, and that such division of interest is not based upon and does not take into consideration, in respect of each separately owned tract, and particularly the separately owned tracts of this Respondent and Protestant, the quantity of oil and gas recoverable therefrom, the location on structure, the probable productivity of oil and gas in the absence of Unit operations, the burden of operation to which each separate tract will or is likely to be subjected, or the value of each such tract to the Unit.

BEFORE THE CORPORATION COMMISSION OF THE

STATE OF OKLAHOMA.

FILED

MAR 18 1947

SECRETARY
CORPORATION COMMISSION
OF OKLAHOMA

In the Matter of the Application and the petition for the creation of the West Edmond Unit for the purpose of unitized management, operation, and further development of the West Edmond Hunton Lime common source of supply of oil and gas in Oklahoma, Canadian, Kingfisher and Logan Counties, Oklahoma; the defining of the Unit Area thereof, and the prescribing of the Plan of Unitization applicable to such Unit and Unit Areas.	CAUSE C.D. No. 1355

RESPONSE AND PROTEST OF ROBERT A. PARMAN

Comes now Robert A. Parman, and for his response and protest to the Application and Petition filed in this cause, denies each and every allegation therein contained, and alleges and states that:

1. He is the owner of the SW¼ of the SE¼, Section 21, Township 13 North, Range 4 West; the NW¼ of the SE¼ of Section 21, Township 13 North, Range 4 West; and the NW¼ of the NE¼, Section 28, Township 13 North, Range 4 West, Oklahoma County, State of Oklahoma, and that upon the SW¼ of the SE¼ of Section 21, Township 13 North, Range 4 West is a producing oil well known as Parman "A" #1; and upon the NW¼ of the SE¼, Section 21, Township 13 North, Range 4 West is a producing oil well known as Parman "A" #2; and that upon the NW¼ of the NE¼, Section 28, Township 13 North, [illegible] 4 West is a producing oil well known as Parman [illegible]

such wells were [illegible]

year of 1945

[illegible]

BEFORE THE CORPORATION COMMISSION OF THE

STATE OF OKLAHOMA.

In the Matter of the Application and the Petition for the creation of the West Edmond Unit for the purpose of unitized management, operation, and further development of the West Edmond Hunton Lime common source of supply of oil and gas in Oklahoma, Canadian, Kingfisher, and Logan Counties, Oklahoma; the defining of the Unit Area thereof, and the prescribing of the Plan of Unitization applicable to such Unit and Unit Areas.	Cause C.D. No. 1355.

MEMORANDUM

Summation of points developed at argument by H. H. Wegener re- Allocation Formula.

I
The Commission's Jurisdiction

The Commission, in its order approving the creation of the unit, has full and complete jurisdiction to place such terms and conditions therein as may be shown by the evidence to be fair, reasonable, equitable, and which are necessary or proper to protect, safeguard, and adjust the rights of the several persons affected.

reservoir before alleged unit operation was put into effect, plus our interest in the additional number of barrels of oil calculated to be recovered from the reservoir under alleged unit operation, and to include any damages resulting from alleged unit operation.

Very truly yours,

S. O. Roach

S. O. Roach

Mr Howell

1627 N. W. 5th,
Oklahoma City, Oklahoma.
December 10, 1947.

Judge Reford Bond, Chairman,
Corporation Commission,
Capitol Building,
Oklahoma City, Oklahoma.

Dear Sir:

Enclosed find a copy of a letter to Standard Oil Company and one to Phillips Petroleum Company, which are self-explanatory.

Very truly yours,

S. O. Roach

S. O. Roach

OKLAHOMA

Corporation Commission

OKLAHOMA CITY - - - - - OKLAHOMA

OIL AND GAS CONSERVATION DEPARTMENT

June 10th, 1947.

Mr. R. M. Williams
Phillips Petroleum Co
Bartlesville, Oklahoma

Mr. W. W. Heard
Stanolind Oil & Gas Co
Tulsa, Oklahoma

Mr. R. O. Wilson
Continental Oil Company
Ponca City, Oklahoma

Richardson, Shartel, Cochran & Pruet
First National Building
Oklahoma City, Oklahoma

W. H. Brown,
Anderson-Prichard Oil Company
Apco Tower
Oklahoma City, Oklahoma

Chas. C. Peppers
Peppers Refining Co -
First Nat'l Bldg.-Okla.City

Coleman Hayes
First Nat'l Bldg.
Oklahoma City, Okla

W. R. Wallace,
Magnolia Petroleum Co - Box 1828
Oklahoma City, Oklahoma

John Barry
Hales Building
Oklahoma City, Oklahoma

F.C.Love and V.P.Crowe
First National Building
Oklahoma City, Oklahoma

Russell G. Lowe
Gulf Oil Corporation
First National Bldg. - Tulsa, Okla

Frank H. Willibrand
Sohio Petroleum Company
First National Bldg. - Oklahoma City

A. J. Holland
Fox & Fox
First Nat'l Bldg - Oklahoma City

Lynn Adams
Apco Tower
Oklahoma City, Okla.

Re: CD No. 1355
West Edmond Unitization

The above styled cause is set for further hearing beginning at 1:30 o'clock, p.m. on June 24th, and then to be heard on June 25th and 26th, 1947.

Inadvertently, the Commission this morning set a case on June 24th at 1:30 o'clock, p.m. on agreement of the parties;and on instructions from the Commission, I was asked to request you to agree that the West Edmond case go over until Wednesday, June 25th, and begin at 10 o'clock, a.m. As you know, it is hard to find a place on the docket to hear important cases and the case that is to be heard at 1:30 o'clock, p.m. is an important case.

I trust that this delay will not inconvenience any of you and I am sorry that this case was overlooked on the 24th.

Yours truly,

Floyd Green,
Conservation Attorney.

GULF OIL CORPORATION

LAW DEPARTMENT

WILLIAM C. LIEDTKE
DIVISIONAL ATTORNEY
RUSSELL G. LOWE
ASSOCIATE DIVISIONAL ATTORNEY
REDMOND S. COLE
CYRUS L. BILLINGS
JAMES B. DIGGS, JR.
ASSISTANTS

TULSA 2, OKLAHOMA
June 12, 1947

ADDRESS ALL CORRESPONDENCE TO
P. O. BOX 661, LAW DEPARTMENT

Mr. Floyd Green, Conservation Attorney
Corporation Commission
Oklahoma City 5, Oklahoma.

Dear Mr. Green:

Re: CD No. 1355 - West Edmond Unitization

I have yours of the 10th advising the above case has been stricken from the docket of June 24th at 1:30 P.M. and will be heard June 25th and 26th beginning at Ten A.M. on June 25th.

The above arrangement is entirely agreeable with me.

Yours very truly,

Russell G. Lowe

RGL.W

CC-Mr. Sanderson
Mr. L.L. Gray

Mr Bond

COMMISSIONERS OF THE LAND OFFICE
STATE OF OKLAHOMA

Oklahoma City, Oklahoma

July 20, 1948.

DIRECT REPLY TO
COMMISSIONERS OF THE LAND OFFICE
"ATTENTION OIL & GAS DIVISION"

Resolution of Commissioners of the Land Office.

Honorable Reford Bond,
Chairman Corporation Commission,
Capitol Office Bldg.,
Oklahoma City, Oklahoma.

Dear Judge Bond:

It may be interesting to you to read the enclosed Resolution, showing how the Commissioners of the Land Office have handled the controversy arising out the the handling of gas in the West Edmond Hunton Lime Unit, at page 56 et seq., of the Memorandum for the Oklahoma Tax Commission.

The provisions which were finally embodied in that Plan were so inequitable that the Land Department will not become a part of the Unit Plan.

The passage of this Resolution was the only remedy to save to the School Land Department its 12½ per cent of "the total output of oil and gas" as provided in the Statutes.

Regards and best wishes.

Yours very truly,

W. D. McBee

W.D.McBee,
Oil and Gas Attorney.

R E S O L U T I O N

WHEREAS, the interpretation of the law as set forth in sections 92, 281 and 285 of Title 64, O. S. 1941, has caused some controversy in the past, and we think, requires some clarification and interpretation by the Commissioners of the Land Office. We are of the opinion that the intent of the Legislature which enacted each of the above mentioned Acts was to secure and to provide that not less than 12½ per cent of the total output of oil and gas produced from State lands, in addition to any bonus offered for such oil and gas mining leases, was to be paid to the State as royalty, and

WHEREAS, numerous cases of discrepancies and failures to properly and accurately account to this Department for such 12½ per cent of total output of oil and gas production on State lands have been called to our attention by the State Examiner and Inspector, therefore,

BE IT RESOLVED by the Commissioners of the Land Office, sitting in regular session, that it is our conclusion, and we hereby so declare, that the provisions in said legislative Acts above mentioned meant that the royalty to be paid the State shall be not less than 12½ per cent of the value of the total output of all oil, distillate, drip gasoline, natural gas, and all of the gaseous or liquid hydrocarbon substances produced or procured from any well drilled on any lands under the jurisdiction and management of the Commissioners of the Land Office, without any deductions whatsoever, and which shall be paid into this Department; that same shall be so paid or delivered free into the pipelines, tanks or cars, or in lieu of such delivery, shall be paid for in cash at the market value, at the election of the Commissioners of the Land Office; that wherever processing is necessary to put the different liquid or gaseous hydrocarbon substances (other than oil) into a marketable condition, that this Department shall be held harmless from any charges for such processing, and that the value of the full one-eighth of the total production shall be paid into this Department.

BE IT FURTHER RESOLVED that all oil and gas lessees of State lands shall make and furnish to this Department, on State forms, a full and complete monthly, verified report of all production of oil, distillate, drip gasoline, natural gas and all of the liquid and gaseous fractionations thereof, such information to be sworn to by some officer or person who knows the facts; and provided further that a failure to so furnish such complete monthly reports and to pay the amount of royalty due on such production will subject such oil and gas mining lease to forfeiture and cancellation as a violation of a material and substantial provision of same, as outlined in paragraph 13 of such lease.

BE IT FURTHER RESOLVED that any specific reference to allowing any part of the one-eighth royalty interest or the value thereof for a processing cost, heretofore adopted by the Commissioners, and as set out under the sub-head "Allowance for Processing," (a), on page 9 of the RULES AND REGULATIONS GOVERNING OPERATIONS AND MEASUREMENT OF OIL AND GAS, which was ordered published November 12, 1946, and all of said paragraph and all rules in conflict herewith are hereby repealed.

The provisions of this Resolution shall become effective upon final passage. Passed by the Board of the Commissioners of the Land Office, June 22nd, 1948.

STATE OF OKLAHOMA
SUPREME COURT } SS.

MANDATE

CORPORATION COMMISSION NO.
Cause No. 1355
Order No. 202112

IN RE: PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT.,

Plaintiff in Error,

vs. } No. 33,290

Defendant in Error.

THE SUPREME COURT OF OKLAHOMA:

To the Honorable Judge of the CORPORATION COMMISSION OF OKLAHOMA ~~County~~, in said State of Oklahoma.

Whereas, the Supreme Court of the State of Oklahoma, did on the 21st day of APRIL 1950 render an ~~opinion~~ order in the above entitled cause, appealed from the CORPR COMM. Court of OKLAHOMA ~~County~~.

SEE ORDER ATTACHED

Now, Therefore, you are hereby commanded to cause such

ORDER

to show of record in your court and to issue such process and take such other and further action as may be in accord with right and justice and said ~~opinion~~ order.

Witness, the Honorable DENVER N. DAVISON, Chief Justice of the Supreme Court of the State of Oklahoma, at the City of Oklahoma City, this 21st day of APRIL 1950.

ANDY PAYNE, Clerk

By Ina Chesnut Deputy.

Ina Chesnut

IN THE SUPREME COURT OF THE STATE OF OKLAHOMA

In re: Petition for the Creation of the West Edmond Hunton Lime Unit	)))	No. 33,290

ORDER

It is hereby ordered that the above styled and numbered cause be and the same is hereby dismissed, for failure to prosecute.

DONE BY ORDER OF COURT IN CONFERENCE this 21st day of April, 1950.

Denver N. Davison
Chief Justice

I, Andy Payne, Clerk of the Supreme Court of the State of Oklahoma do hereby certify that the above and foregoing is a full, true and complete copy of the order of said Court in the above matter, as the same remains on file in my office.

In Witness Whereof I hereunto set my hand and affix the Seal of said Court, at Oklahoma City, this the 21 day of April 1950

ANDY PAYNE, Clerk
By Ina Chesnut
DEPUTY

BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER AND CANADIAN COUNTIES, OKLAHOMA; THE DEFINING OF THE UNIT AREA THEREOF AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA	)	CAUSE CD No. 1355

FILED
MAR - 6 1947
SECRETARY
CORPORATION COMMISSION
OF OKLAHOMA

N O T I C E

THE STATE OF OKLAHOMA to all persons, firms, corporations, partnerships, trusts, trustees, guardians, executors, administrators, fiduciaries of every kind, the State of Oklahoma and all agencies and subdivisions thereof and all other beings or entities owning oil and gas rights or otherwise interested in the common source of supply of oil and gas known as the West Edmond Hunton Lime Pool underlying the hereinafter described lands located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, or in the production, handling or marketing of the oil and gas that may be located therein or produced therefrom, or having the right to share and participate, either directly or indirectly, in the benefits of such production:

Notice is hereby given that Sohio Petroleum Company et al., Lessees of record of more than 51% of the area of the aforesaid common source of supply of oil and gas, did on the 5th day of March, 1947, file an amended petition with the Corporation Commission of the State of Oklahoma for an order creating the West Edmond Hunton Lime Unit, having for its purpose the unitized management, operation and further development of said common source of supply, defining the Unit Area of said Unit and prescribing the Plan of Unitization applicable thereto, all as is authorized and provided for by House Bill 339 of the 1945 Legislature of the State of Oklahoma, being 52 O.S. Supp. 1945, Sections 286.1 to 286.17.

That the lands sought to be included within the

of said Unit lie wholly within the following described sections of land located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, to wit:

Sections 19 and 29 to 34, inclusive, Township 15 North, Range 4 West.

Sections 13, 24, 25, and 36, Township 15 North, Range 5 West.

Sections 3 to 10, inclusive; 14 to 23, inclusive; and 27 to 34 inclusive, Township 14 North, Range 4 West.

Sections 1, 12, 13, 24, and 25, Township 14 North, Range 5 West.

Sections 3 to 6,inclusive; 8 to 11,inclusive; 15 to 17, inclusive; 20 to 22, inclusive; 27 to 29, inclusive; and 32 to 34, inclusive; Township 13 North, Range 4 West.

Sections 4, 5, and 8 to 10, inclusive; Township 12 North, Range 4 West.

That said petition has been set for hearing before the Corporation Commission at its court room in the State Capitol office building at Oklahoma City, Oklahoma, at 10 o'clock, A.M. on the 18th day of March, 1947.

That all those to whom this notice is addressed and any and all other persons who claim that they will be affected either by the granting or denial of said petition shall have the right to be present and participate at said hearing and shall be granted the opportunity at said time and place to offer evidence and be heard; (a) in support of or in opposition to the petition so filed; (b) in regard to the exclusion of land from or inclusion of other lands within the Unit Area of the proposed Unit; (c) in regard to the Plan of Unitization, in whole or in part, to be applicable to such Unit and Unit Area; and (d) in regard to any other matter or thing pertaining to the creation of such Unit or the unitized management, operation and further development of the aforesaid common source of supply of oil and gas.

Dated this 5th day of March, 1947.

CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

Clyde M. Bond
Chairman

Ray C. Leong
Vice-Chairman

Tom Jones
Commissioner

ATTEST:

Jon McCarney
Secretary

(S E A L)

COPY

March 5th,1947.

The Daily Law Journal,
17 W. Third Street,
Oklahoma City, Oklahoma.

Re: Cause CB No. 1355
Application- Petition for
Creation of West Edmond Hunton
Lime Unit

Enclosed herewith is copy of notice issued in the above styled cause, setting same for hearing on the 18th day of March, 1947, which you will please publish in one issue of your paper.

After publishing same, mail one copy of affidavit of publication, together with a statement of your charges to Mr. R. M. Williams, Attorney, Phillips Petroleum Company, Bartlesville, Oklahoma, and mail 4 copies of affidavit to the undersigned for our files.

Yours truly,

Floyd Green
Conservation Attorney.

FG/c
cc Mr. R. M. Williams.

BEFORE THE CORPORATION COMMISSION OF THE
STATE OF OKLAHOMA

IN THE MATTER OF THE AMENDED PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER AND CANADIAN COUNTIES, OKLAHOMA: THE DEFINING OF THE UNIT AREA THEREOF AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA.)	C. D. NO. 1355

FILED
MAR - 5 1947
SECRETARY
CORPORATION COMMISSION
OF OKLAHOMA

AMENDED PETITION

Come now the undersigned petitioners and respectfully petition the Corporation Commission of the State of Oklahoma for an order creating the West Edmond Hunton Lime Unit, having for its purpose the unitized management, operation and further development of a portion of the West Edmond Hunton Lime common source of supply of oil and gas located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, defining the Unit Area of said Unit and prescribing the Plan of Unitization applicable thereto, all as is authorized and provided for by House Bill 339 of the 1945 Legislature of the State of Oklahoma. In support of said petition, petitioners respectfully allege:

1. That the lands outlined by the hatched line on the map hereto attached and marked Exhibit "A", which for convenience are hereinafter referred to as the proposed Unit Area, are underlaid by a single common source of supply of oil and gas which is known and which has been designated by the Commission as the West Edmond Hunton Lime Pool; that said common source of supply of oil and gas consists of all the oil and gas-bearing portions of the Hunton Lime formation, the top of which is found at subsurface depths ranging from an approximate depth of 6600 feet on the East side of said pool to an approximate depth of 7100 feet on the West side of the pool; that said common source of supply of oil and gas was first discovered on or about April 12, 1943 by the drilling and completion of the Fox-Schmitz No. 1 Well located in the NW$\frac{1}{4}$ NW$\frac{1}{4}$ SW$\frac{1}{4}$ of

Section 32, Township 14 North, Range 4 West, Oklahoma County, Oklahoma; that since said time 737 wells have been drilled to and completed in said common source of supply of oil and gas.

2. That the proposed Unit Area consists of approximately thirty thousand (30,000) acres and embraces all of the presently developed and productive portions of said common source of supply of oil, the outer boundaries of which, as outlined on said map, have been reasonably defined by actual drilling operations both in connection with the drilling of wells within and the drilling of wells outside the said productive area of said common source of supply of oil and gas.

3. That the lands embraced within the proposed Unit Area are divided into a large number of smaller tracts of varying size and which are owned in severalty by a multitude of owners owning varying interests therein, including owners of oil and gas leases thereon, owners of royalty interests under such leases and owners of various and sundry other rights and interests.

4. That petitioners are lessees of record of more than fifty per cent (50%) of that portion of the area of the common source of supply embraced within the proposed Unit Area which is hereby sought to be unitized.

5. That at all times since its discovery and continuing at the present time said common source of supply of oil and gas, subject only to the orders of the Commission, has been developed and operated by and under ordinary competitive methods of development and operation. That under the orders of the Commission each of the Separately Owned Tracts as defined in and described in the Plan of Unitization hereto attached, is a separate unit of development and operation for oil and gas purposes; that by reason of the division of said proposed Unit Area into small tracts or units for operating purposes and because of said individual competitive methods of operation conducted on each such Separately Owned Tract, there has been and still continues a disproportionate, inequitable and wasteful utilization and dissipation of the gas energy in the reservoir by the operation of certain of said tracts in the common source of supply to the injury, detriment and disadvantage of the other tracts and of the common source of supply of oil and gas as a whole; that large volumes of gas are being wasted; and millions of barrels of oil will be left in the ground

unrecovered and unrecoverable except by means of unitized methods of operation.

6. That there is attached hereto a recommended Plan of Unitization applicable to the proposed Unit and the proposed Unit Area which petitioners consider to be fair, reasonable and equitable.

7. That through and by means of unitization of the proposed Unit Area and the unitized management, operation and further development thereof, all as set out in the recommended Plan of Unitization hereto attached, full use can be made of the gas energy in the reservoir to the mutual advantage of all the owners of the common source of supply of oil and gas; that the waste of large volumes of oil and gas can be prevented; water encroachment in the lower side of the pool can be properly controlled and utilized; a more equitable distribution of the recoverable oil and gas can be had as between the several owners in the pool; substantially more oil can be recovered from the common source of supply than can otherwise be recovered; and the correlative rights of the several owners can be better protected.

8. That unitization and the unitized management, operation and further development of said common source of supply as a unit is necessary to effectively carry on the operations described in said proposed Plan of Unitization.

9. That said unitized methods of operation as applied to the proposed Unit Area are feasible, will prevent waste and will, with reasonable probability, result in the increased recovery of substantially more oil and gas from the common source of supply than would otherwise be recovered; that the estimated additional cost, if any, of conducting such operations will not exceed the value of additional oil and gas so recovered; that such unitization and adoption of one or more of such unitized methods of operation is for the common good and will result in the general advantage to the owners of the oil and gas rights in and to the portion of the common source of supply thereby affected.

10. That the proposed Unit Area is of such size and shape as is reasonably required for the successful and efficient conduct of the unitized methods of operation herein proposed; that the conduct of such method or methods of operation will have no material adverse effect on the remainder of said common source of supply.

11. Said common source of supply was not being operated by or under pressure maintenance, repressuring or secondary recovery methods of operation as of the effective date of the aforesaid House Bill 339.

WHEREFORE, petitioners respectfully pray that upon the filing of this petition and after notice and proper hearing as by law provided, that the Commission make the necessary findings and enter an order creating the West Edmond Hunton Lime Unit, defining the Unit Area of said Unit to include all the lands outlined by the hatched line on Exhibit "A" and prescribing the Plan of Unitization applicable thereto, all upon such terms and conditions as may be shown by the evidence to be fair, reasonable and equitable and which are necessary to protect, safeguard and adjust the respective rights and obligations of the several persons affected, including royalty owners, owners of overriding royalty interests, oil and gas payments, carried interests, mortgages, lien claimants and others, as well as the Lessees.

DATE

ALLIED OIL COMPANY, INC.

By _____ _____

AMERADA PETROLEUM CORPORATION

By Charles S. Porter 2/28/47

ANDERSON-PRICHARD OIL CORPORATION

By W. H. Brown 2-28-47
atty

APEX DRILLING COMPANY

By _____ _____

WILLIAM H. ATKINSON

By _____ _____

ATLANTIC REFINING COMPANY

By J. H. Shurett Mar 5/47

BARNSDALL OIL COMPANY

By H. J. Bearmore 2-28-47

DATE

THE CARTER OIL COMPANY

By _____ _____

CITIES SERVICE OIL COMPANY

By Sam Harrison 2/27/47

CONTINENTAL OIL COMPANY

By R W French 2/27/47

DEEP ROCK OIL CORPORATION

By Richard K. Hurley 2-25-47

FOX & FOX

By _____ _____

ILCO OIL COMPANY

By _____ _____

MAGNOLIA PETROLEUM COMPANY

By R. McCann V.P. 2-26-47 Rmm

LEONARD A. CHUDACOFF

By Sam Miller 3-3-47

MID-CONTINENT PETROLEUM CORPORATION

By A E Pierce V.P. 2/25/47

PEPPERS REFINING COMPANY

By _____ _____

FRANK RUSSELL

By _____ _____

SKELLY OIL COMPANY

By [illegible] 2/28/47.

DATE

STANOLIND OIL AND GAS COMPANY

By W. W. Heard Atty 2/25/47

WESCOTT & CARGILL

By _____ _____

MID-STATES OIL CORPORATION

By _____ _____

PHILLIPS PETROLEUM COMPANY

By R. G. Hunter P. M. McDermott Harry O. Turner its attorneys 2/28/47

SINCLAIR PRAIRIE OIL COMPANY

By _____ _____

SOHIO PETROLEUM COMPANY

By J. Marshall Ryg 2/27/47

TIDE WATER ASSOCIATED OIL COMPANY

By J. E. Roth 2-28-47

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

RMW:jh
2-17-47
9

BEFORE THE CORPORATION COMMISSION OF THE
STATE OF OKLAHOMA

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER AND CANADIAN COUNTIES, OKLAHOMA; THE DEFINING OF THE UNIT AREA THEREOF AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA.	C. D. No. 1355

FILED
FEB 25 1947
SECRETARY
CORPORATION COMMISSION
OF OKLAHOMA

NOTICE

THE STATE OF OKLAHOMA to all persons, firms, corporations, partnerships, trusts, trustees, guardians, executors, administrators, fiduciaries of every kind, the State of Oklahoma and all agencies and subdivisions thereof and all other beings or entities owning oil and gas rights or otherwise interested in the common source of supply of oil and gas known as the West Edmond Hunton Lime Pool underlying the hereinafter described lands located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, or in the production, handling or marketing of the oil and gas that may be located therein or produced therefrom, or having the right to share and participate, either directly or indirectly, in the benefits of such production:

Notice is hereby given that Sohio Petroleum Company et al., Lessees of record of more than 51% of the area of the aforesaid common source of supply of oil and gas, did on the 29th day of January, 1947, file a petition with the Corporation Commission of the State of Oklahoma for an order creating the West Edmond Hunton Lime Unit, having for its purpose the unitized management, operation and further development of said common source of supply, defining the Unit Area of said Unit and prescribing the Plan of Unitization applicable thereto, all as is authorized and provided for by House Bill 339 of the 1945 Legislature of the State of Oklahoma, being 52 O. S. Supp. 1945, Sections 286.1 to 286.17.

That the lands sought to be included within the Unit Area of said Unit lie wholly within the following described sections of land located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, to wit:

Sections Nineteen (19) and Twenty-nine (29) to Thirty-four (34), inclusive, Township Fifteen (15) North, Range Four (4) West.

Sections Thirteen (13), Twenty-four (24), Twenty-five (25) and Thirty-six (36), Township Fifteen (15) North, Range Five (5) West.

Sections Three (3) to Ten (10), inclusive, Fourteen (14) to Twenty-three (23), inclusive, and Twenty-seven (27) to Thirty-four (34), inclusive, Township Fourteen (14) North, Range Four (4) West.

Sections One (1), Twelve (12), Thirteen (13), Twenty-four (24) and Twenty-five (25), Township Fourteen (14) North, Range Five (5) West.

Sections Three (3) to Six (6), inclusive; Eight (8) to Eleven (11), inclusive; Fifteen (15) to Seventeen (17), inclusive; Twenty (20) to Twenty-two (22), inclusive; Twenty-seven (27) to Twenty-nine (29), inclusive, and Thirty-two (32) to Thirty-four (34), inclusive, Township Thirteen (13) North, Range Four (4) West.

Sections Four (4), Five (5) and Eight (8) to Ten (10), inclusive, Township Twelve (12) North, Range Four (4) West.

That said petition has been set for hearing before the Corporation Commission at its court room in the State Capitol office building at Oklahoma City, Oklahoma, at 10 o'clock A. M. on the 18th day of March, 1947.

That all those to whom this notice is addressed and any and all other persons who claim that they will be affected either by the granting or denial of said petition shall have the right to be present and participate at said hearing and shall be granted the opportunity at said time and place to offer evidence and be heard; (a) in support of or in opposition to the petition so filed; (b) in regard to the exclusion of land from or inclusion of other lands within the Unit Area of the proposed Unit; (c) in regard to the Plan of Unitization, in whole or in part, to be applicable to such Unit and Unit Area; and (d) in regard to any other matter or thing pertaining

to the creation of such Unit or the unitized management, operation and further development of the aforesaid common source of supply of oil and gas.

Dated this 24 day of February, 1947.

CORPORATION COMMISSION
OF THE STATE OF OKLAHOMA

Tom McMurray
Secretary

By Chas. R. Brown
Chairman

Ray O. Keeney
Commissioner

Ray P. Jones
Commissioner

-18-47
9

BEFORE THE CORPORATION COMMISSION OF THE
STATE OF OKLAHOMA

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER AND CANADIAN COUNTIES, OKLAHOMA; THE DEFINING OF THE UNIT AREA THEREOF AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA.	C. D. No. 1355

FILED
FEB 25 1947
SECRETARY
CORPORATION COMMISSION
OF OKLAHOMA

ORDER SETTING CAUSE FOR HEARING

It appearing that the Sohio Petroleum Company et al. did, on the 29th day of January, 1947, file a petition before the Corporation Commission of the State of Oklahoma for an order creating the West Edmond Hunton Lime Unit, having for its purpose the unitised management, operation and further development of the common source of supply of oil and gas known as the West Edmond Hunton Lime Pool located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, defining the Unit Area of said unit and prescribing the Plan of Unitization applicable thereto, all as provided for by House Bill 339 of the 1945 Legislature of the State of Oklahoma.

NOW, THEREFORE, it is ordered that said petition be set for hearing before the Corporation Commission at its court room in the State Capitol Office Building at Oklahoma City, Oklahoma, at 10 o'clock A. M. on the 18th day of March, 1947, and that notice of said hearing be given by publication of the notice, this day signed and filed in this cause by the Commission, once a week for three consecutive weeks prior to the date set for said hearing in a newspaper of general circulation in each of

the four counties in which the aforesaid source of supply of oil and gas is located, namely, Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma.

Dated this 24 day of February, 1947.

CORPORATION COMMISSION
OF THE STATE OF OKLAHOMA

Tom McMurray
Secretary

By Oscar L. Bond
Chairman

Ray C. Meems
Commissioner

Ray C. Jones
Commissioner

BEFORE THE CORPORATION COMMISSION OF THE

STATE OF OKLAHOMA.

In the Matter of the Application and the Petition for the creation of the West Edmond Unit for the purpose of unitized management, operation, and further development of the West Edmond Hunton Lime common source of supply of oil and gas in Oklahoma, Canadian, Kingfisher, and Logan Counties, Oklahoma; the defining of the Unit Area thereof, and the prescribing of the Plan of Unitization applicable to such Unit and Unit Areas.)	Cause C.D. No. 1355.

M E M O R A N D U M

Summation of points developed at argument by H. H. Wegener - re- Allocation Formula.

Embry, Johnson, Crowe, Tolbert & Shelton,
640 First National Building,
Oklahoma City, Oklahoma,
Attorneys for Respondent, H. H. Wegener.

PHILLIPS PETROLEUM COMPANY

BARTLESVILLE, OKLAHOMA

LEGAL DEPARTMENT

DON EMERY
VICE PRESIDENT
AND GENERAL COUNSEL
RAYBURN L. FOSTER
ASSISTANT GENERAL COUNSEL
R. B. F. HUMMER
GENERAL ATTORNEY
R. H. HUDSON
COUNSEL
WALTER L. BARNES
H. K. HUDSON
ASSISTANT GENERAL ATTORNEYS

STAFF ATTORNEYS
DARLENE G. ANDERSON
R. E. BOGGESS
ROBT. B. BURGESS
ED. WAITE CLARK
JOHN H. HALEY
D. E. HODGES
CECIL L. HUNT
HILARY D. MAHIN
GEORGE L. SNEED
R. M. WILLIAMS
WM. J. ZEMAN

Denver Tribune 2-0678

February 19, 1947

Re: C. D. 1355 -
Application for Creation of
West Edmond Hunton Lime Unit

Guthrie - Guthrie Daily Leader, Guthrie Daily News, Guthrie News

Mr. Floyd Green
Conservation Attorney
Oklahoma Corporation Commission
State Capitol Office Building
Oklahoma City, Oklahoma

Dear Sir:

Enclosed is suggested form of order setting the above cause for hearing and of the notice of hearing. You will note that I provide that the notice should be published once a week for three consecutive weeks in a newspaper of general circulation in each of the four counties in which the West Edmond Pool is located. This is, of course, more than the law requires but is, I think, good policy in this instance. I presume that you have information in your office as to the names of the newspapers in Guthrie, Kingfisher and El Reno. You will no doubt use the Daily Record so far as Oklahoma County is concerned. Tell each of the newspapers to send their bill and a copy of the proof of publication to me here at Bartlesville.

Kingfisher - Kingfisher Times, Kingfisher Free Press

El Reno - El Reno Daily Tribune, El Reno American

We still intend to file an amended Plan of Unitization and application prior to March 5, and get out a new notice of the amended application, but nevertheless, want to get the initial notice published and running so that everyone concerned will have as much notice as is reasonably possible.

If you have any suggestions to offer with respect to the enclosed order and notice and the suggested procedure, please so advise. You can call Harry Turner and he can get me over the Company line.

With best regards, I am

Yours very truly,

R. M. Williams

RMW:jh
encl.

OKLAHOMA

Corporation Commission

OKLAHOMA CITY - - OKLAHOMA

OIL AND GAS
CONSERVATION
DEPARTMENT

February 24th,1947.

Daily Law Journal Record,
17 West Third Street,
Oklahoma City, Oklahoma.

Guthrie Daily Leader
Guthrie, Oklahoma.

Kingfisher Times,
Kingfisher, Oklahoma.

El Reno Daily Tribune,
El Reno, Oklahoma.

Re: CD No. 1355
West Edmond Unitization

Enclosed herewith is a copy of notice issued by the Corporation Commission, which you will please publish once each week, beginning this week, for three (3) consecutive weeks. You will then mail to the undersigned, four copies of the affidavit of publication for our files and mail to Phillips Petroleum Company Bartlesville, Oklahoma, two copies of affidavit of publication together with a statement of your charges.

Yours truly,

Floyd Green,
Conservation Attorney.

cc Mr. R.H.Williams, Attorney
Phillips Petroleum Company,
Bartlesville, Oklahoma.

FG/c

SOHIO

SOHIO PETROLEUM COMPANY

PRODUCTION DEPARTMENT

December 17, 1947

WEST EDMOND HUNTON LIME UNIT
H. N. PARDEE, MANAGER
MILLARD K. NEPTUNE, ASSISTANT MANAGER

REPLY TO
WEST EDMOND HUNTON LIME UNIT
800 PERRINE BUILDING
OKLAHOMA CITY 2, OKLAHOMA

Corporation Commission of Oklahoma
State Capitol Annex Building
Oklahoma City, Oklahoma

RE: CAUSE CD NO. 1355

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER AND CANADIAN COUNTIES, OKLAHOMA: THE DEFINING OF THE UNIT AREA THEREOF AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA.

Gentlemen:

Order No. 20212 issued on July 29 in the above Cause created the West Edmond Hunton Lime Unit and, among other things, required that credit be given to the former lease owners for any oil in storage as of the effective date of the Unit, if such oil had been produced within the allowable established by the Corporation Commission on the period preceding the effective date. Similarly, it was required that if any leases had sold more than their allowable, they were to receive no credit for Unit production until such time as Unit production allotted to the leases had offset the quantity of sales in excess of allowable. The Order also required that the Unit Operator shall each month file with the Corporation Commission a report by tracts of all overproduction so made up, together with a statement by tracts of the balance of overproduction not so made up.

We attach hereto copies of the schedules indicating our computations for the purpose of adjusting for legally produced oil in storage and for runs in excess of allowable. Schedule "A" lists all the leases, shows their net status as of the effective date, the amount of merchantable oil in storage as of such date, and the number of barrels which should be charged or credited to the respective leases. Schedule "B" lists those leases which were overrun as of the effective date and indicates the number of barrels allotted to the leases during October. Because of the price change which was effective as of 7:00 A. M. October 15, it was necessary to break the allocation periods. The oil allotted during the first 14 days was applied against the overage at a average price of slightly under $1.95. If there still remained some overage to be made up the oil allotted from October 15-31 was charged against the leases at a price slightly under $2.15.

There are five leases which still have overage even after applying the entire October allocation against the overage. These are as follows:

Champlin Conneway No. 1 - 4,489.45 barrels
Denver (Champlin) Collette B-1 - 1,032.10 barrels
Denver (Champlin) S. Sittlington - 2,727.10 barrels
Magnolia Kibby - 1,405.18 barrels
Wescott (Cargill) Cook - 3,509.24 barrels.

These quantities will be charged against the respective leases on the basis of the oil allotted to them for November and subsequent months until such overages are entirely liquidated.

Schedule "C" lists the leases which are to be credited with legally produced oil in stock as of the effective date. These credits were made to the leases on the basis of the price in effect when the oil was actually sold. All the legally produced storage oil was sold during October and has been credited to the proper parties. The 21.48 barrels shown on Schedule "C" as remaining for credit to the Allied Kelly Lease, was drawn off as bad oil and will not be credited to that lease.

We will continue to furnish you reports as to how the overproduction is being offset.

We are enclosing a copy of this letter for incorporation into the records of CD 1355.

Yours very truly,

SOHIO PETROLEUM COMPANY, OPERATOR
WEST EDMOND HUNTON LIME UNIT

H. N. Pardee

H. N. Pardee.

MKN:emr

Encl.

December 11, 1947

File
Wm. T. Green
Conservation

Mr. S. O. Roach
1627 NW 5th St.
Oklahoma City, Okla.

Dear Mr. Roach:

This is to acknowledge receipt of your communication transmitting copy of a letter to the Standard Oil Company and to the Phillips Petroleum Company. I thank you for same. I am this day transmitting your letters to Mr. Green, Conservation Attorney, in order that they may be placed in the legal files. When the agencies of the Commission can assist you do not hesitate to write.

Wishing you a Merry Christmas and a Prosperous New Year, I am

Sincerely,

Reford Bond
Chairman

RB:bc

1627 N. W. 5th,
Oklahoma City, Oklahoma.
December 10, 1947.

Phillips Petroleum Company,
Bartlesville, Oklahoma.

Re: Mee # 1 Well.

Gentlemen:

We have received your check in the amount of $328.44, and have cashed same. Please understand that the cashing of this check shall not in any manner be construed by yourselves nor others, either directly or indirectly, as our recognition of, or our participation or consent to the unitization of the West Edmond Field under the alleged unitization.

Therefore, we are charging your account with the difference between a full one-eighth and the amount we received under alleged unitization.

We hereby notify you that we are holding you responsible for the above amounts charged to your account, and that we will each month continue to do so.

We are legally advised and firmly convinced that the alleged unit operators and/or Operating Committee, and you as proponents and beneficiaries, are trustees for all interest holders in the West Edmond Field not only for the above amounts charged and those that will be charged, but also for the amount of oil in the reservoir before alleged unitization was imposed, and also for the added amount of seventy to eighty million barrels calculated to be recovered from the reservoir under alleged unitization.

We therefore insist that you are trustees and as such trustees for this huge amount and/or as operators and/or beneficiaries of the alleged unit, that you and your Operating Committee take immediate steps to set aside all moneys representing the difference between a full one-eighth royalty and the amounts received in lieu thereof.

And also we insist that you as proponents and/or operators and/or beneficiaries, post in the legal and proper manner

1627 N. W. 5th,
Oklahoma City, Oklahoma.
December 10, 1947.

Standard Oil Company,
Box 591,
Tulsa, Oklahoma.

Gentlemen: Re: Halbert # 1 Well.

We have received your check in the amount of $144.29, and have cashed same. Please understand that the cashing of this check shall not in any manner be construed by yourselves nor others, either directly or indirectly, as our recognition of, or our participation or consent to the unitization of the West Edmond Field under the alleged unitization.

Therefore, we are charging your account with the difference between a full one-eighth and the amount we received under alleged unitization.

We hereby notify you that we are holding you responsible for the above amounts charged to your account, and that we will each month continue to do so.

We are legally advised and firmly convinced that the alleged unit operators and/or Operating Committee, and you as proponents and beneficiaries, are trustees for all interest holders in the West Edmond Field not only for the above amounts charged and those that will be charged, but also for the amount of oil in the reservoir before alleged unitization was imposed, and also for the added amount of seventy to eighty million barrels calculated to be recovered from the reservoir under alleged unitization.

We therefore insist that you are trustees and as such trustees for this huge amount and/or asoperators and/or beneficiaries of the alleged unit, that you and your Operating Committee take immediate steps to set aside all moneys representing the difference between a full one-eighth royalty and the amounts received in lieu thereof.

And also we insist that you as proponents and/or operators and/or beneficiaries, post in the legal and proper manner a good and sufficient surety bond to protect our land and royalty interest and probable damages thereto. The amount of the bond to be arrived at by using the present price of oil in the West Edmond Field, times our interest in the number of barrels of oil in the

a good and sufficient surety bond to protect our land and royalty interest and probably damages thereto. The amount of the bond to be arrived at by using the present price of oil in the West Edmond Field, times our interest in the number of barrels of oil in the reservoir before alleged unit operation was put into effect, plus our interest in the additional number of barrels of oil calculated to be recovered from the reservoir under alleged unit operation, and to include any damages resulting from alleged unit operation.

Very tr ly yours,

S. O. Roach

S. O. Roach

BEFORE THE CORPORATION COMMISSION OF THE STATE

OF OKLAHOMA.

In the Matter of the application and the petition for the creation of the West Edmond Unit for the purpose of unitized management, operation, and further development of the West Edmond Hunton Lime common source of supply of oil and gas in Oklahoma, Canadian, Kingfisher, and Logan Counties, Oklahoma; the defining of the Unit Area thereof, and the prescribing of the Plan of Unitization applicable to such Unit and Unit Areas.	Cause C.D. No. 1355.

NOTICE OF APPEAL

Come now L. F. Genzer, and all of the other royalty owner protestants and respondents who joined with the said L. F. Genzer in the written protest heretofore filed in the above case, and each of them, and file this notice of their intention to appeal to the Supreme Court of Oklahoma from the order, judgment, and decree rendered herein on the 29th day of July, 1947, in favor of the Applicants and Petitioners, Phillips Petroleum Company, et al., and against these protestants and respondents. Said protestants request that this notice be duly entered upon the docket of the Corporation Commission as provided by law.

Dated this 29th day of July, 1947.

Coleman Hayes

Attorney for the said L. F. Genzer, et al.

COPY

July 30, 1947

R. O. Mason, Attorney
Cities Service Oil Company
Bartlesville, Oklahoma

W. W. Heard, Attorney
Stanolind Oil & Gas Company
Tulsa, Oklahoma

W. H. Brown, Attorney
Apco Tower
Oklahoma City, Oklahoma

W. R. Wallace, Attorney
Magnolia Building
Oklahoma City, Oklahoma

T. Murray Robinson, Attorney
Hightower Building
Oklahoma City, Oklahoma

R. M. Williams, Attorney
& Phillips Petroleum Company
Bartlesville, Oklahoma

Earl Fruet, Attorny
1st National Bank Building
Oklahoma City, Oklahoma

Russell G. Lowe, Attorney
& Gulf Oil Company
Tulsa, Oklahoma

F. C. Love, Attorney
1st National Bank Building
Oklahoma City, Oklahoma

Lynn Adams, Attorney
Apco Tower
Oklahoma City, Oklahoma

Coleman Hayes, Attorney
1st National Bank Building
Oklahoma City, Oklahoma

Gentlemen:

In Re: Cause CD No. 1355
West Edmond Unitization

Enclosed herewith is a copy of Order No. 20712 issued in the above styled cause which is self-explanatory.

Yours truly,

Floyd Green
Conservation Attorney

FG/s

FORM 471 A-43

STANOLIND OIL AND GAS COMPANY

STANOLIND BUILDING

TULSA, OKLAHOMA

July 31, 1947

RE: Cause CD No. 1355
West Edmond Unitization

Mr. Floyd Green
Conservation Attorney
Oklahoma Corporation Commission
Oklahoma City, Oklahoma

Dear Mr. Green:

Receipt is acknowledged of your letter of July 30, 1947, enclosing copy of Order No. 20212 issued in the above styped cause, for which I thank you very much.

With regards, I am

Very truly yours,

W. W. Heard

W. W. Heard

WWH:BE

MEMBER ASSOCIATED PRESS

THE GUTHRIE DAILY LEADER

"Oklahoma's Oldest Newspaper"

GUTHRIE, OKLAHOMA

« »

August 5, 1947

1355

State of Oklahoma
County of Logan

Personally appeared before me, Beulah Mae White, a notary public in and for Logan County, Oklahoma, G. D. Guilkey who states he is the publisher of the Guthrie Daily Leader, a daily newspaper published in and for said county. He further states a legal publication, C D #1355 did appear in said paper on February 26, March 5 and 12, 1947, but that all available copies of that date have been exhausted making it impossible to furnish a tear sheet on the above advertisement.

He further states that statement and proof of publication was furnished the corporation commission immediately after last issue appeared.

G D Guilkey

Subscribed and sworn to before me this 5th day of August, 1947.

Beulah Mae White
Notary Public

My commission expires: June 14, 1951

Publication Fee $44.00

PUBLISHED EVENINGS EXCEPT SATURDAY - - and SUNDAY MORNING

August 28th,1947.

Leader Publishing Company,
Guthrie, Oklahoma.

Gentlemen: Re: Cause CD No. 1355
Unitization of West Edmond Hunton
Lime Pool

We are in receipt of claim dated August 9th in the amount of $44.00 covering charges for three legal publications of "Notice of Hearing" in the above styled cause.

At the time these notices were sent to you for publication you were advised to charge the cost thereof to the Phillips Petroleum Company, Bartlesville Oklahoma, Attention: R.M.Williams, Attorney.

We are returning to you herewith your claim and ask that you prepare a claim for these costs and mail same to Mr. Williams for payment. In the event the claim is not paid, we would appreciate your advising me.

Yours truly,

Floyd Green,
Conservation Attorney.

FG/c

COPY

PHILLIPS PETROLEUM COMPANY

BARTLESVILLE, OKLAHOMA

September 12, 1947

Re: C. D. No. 1355
Unitization of West Edmond
Hunton Lime Pool

Leader Publising Company
Guthrie, Oklahoma

Gentlemen:

Enclosed herewith is Phillips Petroleum Company check No. 907,561 in the sum of $44.00 covering your charges for three legal publications of "Notice of Hearing" in the above styled cause.

Yours very truly,

R. B. F. Hummer

jh
encl. ck.

cc: Mr. Floyd Green
Conservation Attorney
Corporation C ommission
Capitol Office Building
Oklahoma City, Okla.

September 25th,1947.

Mr. R. M. Williams, Attorney
Phillips Petroleum Company
Bartlesville, Oklahoma

Dear Bob: Re: West Edmond Unitization

Enclosed herewith is a copy of Petition in Error and application for extension of time to transcribe record which was filed yesterday with the Supreme Court in the above styled cause.

In discussing this matter with our reporters, no transcript of the record has as yet been ordered by anyone however, they did prepare two volumes of transcribed testimony which were sold and I assume that these two volumes are the ones referred to in the application for extension of time.

I am enclosing also a Motion to Dismiss Appeal in another case for your use in the event you decide to move to dismiss the petition in error filed by the appealing parties in the West Edmond case.

I would like to be kept advised as to what you propose to do.

Yours truly,

Floyd Green,
Conservation Attorney.

FG/c

COPY

FCL-i-7-28-47.

BEFORE THE CORPORATION COMMISSION OF THE

STATE OF OKLAHOMA

In the Matter of the application and the petition for the creation of the West Edmond Unit for the purpose of unitized management, operation, and further development of the West Edmond Hunton Lime common source of supply of oil and gas in Oklahoma, Canadian, Kingfisher, and Logan Counties, Oklahoma; the defining of the Unit Area thereof, and the prescribing of the Plan of Unitization applicable to such Unit and Unit Areas.	Cause C. D. No. 1355.

ORDER ALLOWING APPEAL

The Corporation Commission of the State of Oklahoma having on this 29th day of July, 1947 entered its order, judgment, and decree in the above entitled cause, to which the Protestants, H. H. Wegener, Gulf Oil Corporation, The British-American Oil Producing Company, R. M. Whisler, L. F. Genzer, and all other Protestants, and each of them, in open Court except, and exceptions are by the Commission allowed, said Protestants, and each of them, in open Court, give notice of their intention to appeal to the Supreme Court of the State of Oklahoma, and request that such notice be noted on the trial docket of said Court, which is accordingly done.

Said Protestants, and each of them, pray for an appeal to the Supreme Court of the State of Oklahoma, and request the Commission to certify the entire record in this cause to the Supreme Court of Oklahoma, as required by law.

NOW, THEREFORE, it is ordered, adjudged, and decreed by the Commission that said appeals, and each of them, be granted, and that the Secretary of the Commission cause the entire record in this cause to be transmitted and submitted to the Chairman of the Commission for certification at the earliest possible date.

Dated, at the office of the Corporation Commission, State Capitol Office Building, Oklahoma City, Oklahoma, this 29th day of July, 1947.

CORPORATION COMMISSION OF THE STATE OF OKLAHOMA,

By _____
Chairman

_____
Vice-Chairman

_____
Member

Attest

_____
Secretary.

9-25-47

IN THE SUPREME COURT OF THE STATE OF OKLAHOMA

IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER, AND CANADIAN COUNTIES, OKLAHOMA; THE DEFINING OF THE UNIT AREA THEREOF, and THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA. CAUSE CD No. 1355 ORDER No. 20212 BEFORE THE CORPORATION COMMISSION OF OKLAHOMA	)	No. _____.

PETITION IN ERROR

Come now R. M. WHISLER, L. F. GENZER, M. M. RINGER, J. W. KING and LAWRENCE BROWN, each for himself and for and on behalf of all persons similarly situated, (hereinafter called "Plaintiffs in Error"), and show to the Court, as follows:

That on the 29th day of July, 1947, the Corporation Commission of the State of Oklahoma, Defendant in Error, entered its order No. 20212, in cause CD No. 1355, entitled: "IN THE MATTER OF THE PETITION FOR THE CREATION OF THE WEST EDMOND HUNTON LIME UNIT HAVING FOR ITS PURPOSE THE UNITIZED MANAGEMENT, OPERATION AND FURTHER DEVELOPMENT OF A PORTION OF THE WEST EDMOND HUNTON LIME COMMON SOURCE OF SUPPLY OF OIL AND GAS LOCATED IN OKLAHOMA, LOGAN, KINGFISHER AND CANADIAN COUNTIES, OKLAHOMA; THE DEFINING OF THE UNIT AREA THEREOF, AND THE PRESCRIBING OF THE PLAN OF UNITIZATION APPLICABLE TO SUCH UNIT AND UNIT AREA", under and by virtue of which order the Corporation Commission of the State of Oklahoma created the "West Edmond Hunton Lime Unit" for the purpose of unitized management, operation and further development of the West Edmond Hunton Lime common source of supply of oil and gas located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, defining the unit area thereof, and prescribing the plan of unitization applicable to such

unit and unit area, and the protest of these Plaintiffs in Error was denied.

Thereafter, and within the time allowed by law, these Plaintiffs in Error gave notice of appeal to this Court from said decision and order of the Corporation Commission, which appeal was allowed by the Corporation Commission of Oklahoma on said date of July 29, 1947.

That the entire record in said cause, duly certified to by the Corporation Commission of Oklahoma, and filed as prescribed by law, will be filed herein, and made a part of this Petition in Error.

Said Plaintiffs in Error allege there is error in said record, order, judgment and proceedings of the Corporation Commission of Oklahoma, in this, to-wit:

(1) The Oklahoma Legislation, pursuant to which such Plan was proposed and approved (H.B. 339 of the 1945 Legislature), is invalid, illegal and of no force and effect, for the following reasons:

(a) That said statutes are in violation of the due process of law clause contained in the Fourteenth Amendment to the Constitution of the United States, and Section 7, Article II of the Constitution of the State of Oklahoma;

(b) That said statutes deny to these Plaintiffs in Error equal protection of the laws guaranteed by the Fourteenth Amendment to the Constitution of the United States;

(c) That said statutes constitute a taking of the property of these plaintiffs in Error, in violation of and contrary to Sections 23 and 24 of Article II of the Constitution of the State of Oklahoma;

(d) Such statutes impair the obligation of the contracts between these Plaintiffs in Error and the Lessees of such oil and gas mining leases, in violation of Section 10, Article I of the Constitution of the United States, and Section 15, Article II of the Constitution of the State of Oklahoma, and constitute unlawful delegation of power in violation of Section 1, Article IV and Article V of the Constitution of the State of Oklahoma,

the protection of all of such constitutional provisions these Plaintiffs in Error assert and claim.

(2) That the area for unitization under such Plan and order of the Corporation Commission, is not a single common source of supply.

(3) That the Unit area and Plan of unitization does not equitably apportion to these Plaintiffs in Error that portion of the total oil and gas which may be produced from the proposed Unitized Area, and which may be reasonably expected to be produced from and accrue to the mineral rights of these Plaintiffs in Error as a contribution to the Unit total oil and gas production; and said order of July 29, 1947, creating the West Edmond Unitized Area, is inequitable, unfair, and exceeds the jurisdiction conferred upon the Corporation Commission of Oklahoma, in the following particulars, among others:

(a) The Corporation Commission of Oklahoma erred in not using the May allowable as fixed for said West Edmond Field, in lieu of the January allowable, in prescribing the Plan of Unitization applicable to such area;

(b) Selected production, as proposed in the Plan of Unitization, and as approved by the Corporation Commission of Oklahoma, is not the type of management and production for conservation as intended by the statutes pursuant to which said Plan was created and approved;

(c) The formula, as adopted, is unsound and inequitable, and fails to protect the correlative rights of the parties, because of the incorporation in said formula of an arbitrary allowable figure.

(d) The Corporation Commission of Oklahoma exceeded its jurisdiction as conferred upon it by the statutes, in approving the Unit Plan of operation, by including therein the contract for the acquisition and operation of a gasoline plant.

(4) That said Unit Area and Plan of Unitization is inequitable, unfair and unjust insofar as it applies to the legal and equitable rights, title, and interest of these Plaintiffs in Error.

(5) That the division of interest of Unit Production as provided for in said Unit Agreement and as ordered by the Corporation Commission of Oklahoma is not based upon, and does not take into consideration, in respect of each separately owned tract, and particularly the separately owned tracts under which these Plaintiffs in Error hold mineral rights, the quantity of oil and gas recoverable therefrom, the location on the structure, the probable productivity of oil and gas in the absence of Unit operations, or the value of each such tract to the Unit.

(6) That the Application and Petition for the creation of the proposed Unit and the proposed Plan of Unitization were not based upon, or supported by, facts sufficient to justify or to permit of the approval of such Plan of Unitization as proposed by the Petitioners before the Corporation Commission of Oklahoma.

WHEREFORE, Plaintiffs in Error pray this Court that said Order No. 20212 and judgment of the Corporation Commission

EP:VC 7-3-47

BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

In the Matter of the Application and the Petition for the creation of the West Edmond Unit for the purpose of unitized management, operation, and further development of the West Edmond Hunton Lime common source of supply of oil and gas in Oklahoma, Canadian, Kingfisher and Logan Counties, Oklahoma; the defining of the Unit Area thereof, and the prescribing of the Plan of Unitization applicable to such Unit and Unit Areas.	Cause C.D. No. 1355 ~~1354~~

RESPONSE AND PROTEST OF THE BRITISH-AMERICAN
OIL PRODUCING COMPANY, A CORPORATION

Comes now The British-American Oil Producing Company, a corporation, and for its response and protest to the Application and Petition filed in this cause, denies each and every allegation therein contained and alleges and states that:

1. It is the owner of and is now operating two (2) oil and gas mining leases in the proposed Unit Area, upon which are located four (4) wells now producing oil and gas, and has invested therein the sum of approximately Four Hundred Thousand ($400,000.00) Dollars.

2. It protests and objects to the Plan, Petition and Application filed herein for the following reasons, to-wit:

(a) The proposed Plan of Unitization is invalid and illegal, and of no force or effect for the following reasons:

(1) That it is in violation of the due process of law clauses of both the Fourteenth Amendment to the Constitution of the United States and Section 7, Article II, of the Constitution of the State of Oklahoma;

(2) That it denies to this Respondent and Protestant the equal protection of the laws guaranteed by the Fourteenth Amendment of the United States;

FILED
JUL 8 1947
SECRETARY
CORPORATION COMMISSION
OF OKLAHOMA

AFFIDAVIT OF SERVICE

STATE OF OKLAHOMA)
) SS
COUNTY OF OKLAHOMA)

LYNN ADAMS, of lawful age, being first duly sworn upon his oath, deposes and says:

That on the 25th day of September, 1947, he served a copy of the above and foregoing Petition in Error upon the Corporation Commission of the State of Oklahoma by mailing a true and correct copy thereof to Floyd Green, Attorney for said Commission, and by mailing a true and correct copy thereof to Tom McMurray, Secretary of said Commission; that on said date he served a copy thereof upon the Proponents of said Plan of Unitization, by mailing a true and correct copy thereof to Robert M. Williams, c/o Phillips Petroleum Company, Bartlesville, Oklahoma, attorney of record for said Proponents, and, by stipulation, the party upon whom service upon said Proponents could be made.

LYNN ADAMS

Subscribed and sworn to before me this the 25th day of September, 1947.

Dorothy Drew
Notary Public.

My commission expires
March 27, 1949.

of Oklahoma entered July 29, 1947, be reversed, set aside and held for naught, with direction to the Corporation Commission of Oklahoma to set aside and annul said order and judgment, and to enter an order and judgment denying the creation of the West Edmond Hunton Lime Unit as prayed for before said Corporation Commission, and that the Plaintiffs in Error have judgment in this Court for all costs laid out and expended by them, and for such other and further relief as to the Court may seem just and proper.

LYNN ADAMS

COLEMAN HAYES
Attorneys for Plaintiffs in Error

Of Counsel:

MONNET, HAYES & BROWN

BOHANON & ADAMS

BEFORE THE CORPORATION COMMISSION OF THE STATE OF OKLAHOMA

RE: UNITIZATION OF WEST EDMOND POOL, Oklahoma, Kingfisher and Canadian Counties, Oklahoma.	:	CD No. 1355

RESPONSE AND PROTEST
OF
GULF OIL CORPORATION

Comes now GULF OIL CORPORATION and gives the Commission to know and be informed that it is the owner and operator of oil and gas mining leases in the proposed West Edmond Unitization and for its response and objections to the Unitization says:

1.

That House Bill No. 339 Oklahoma Session Laws 1945, being Sections 286.1 to 286.17, Title 52 Oklahoma Statutes 1941, is unconstitutional in the following respects:

(a) That it violates Article 5, being the Fifth Amendment to the Constitution of the United States;

(b) That said Act violates Section 1 of Article 14, being the Fourteenth Amendment to the Constitution of the United States;

(c) Thatsaid Act violates Section 2 of Article 11 of the Constitution of the State of Oklahoma;

(d) That said Act violates Section 7 of Article 11 of the Constitution of the State of Oklahoma;

(e) That said Act violates Section 23 of Article 2 of the Constitution of the State of Oklahoma;

2.

This Protestant further says that said plan of unitization does not comply with the provisions of House Bill No. 339 above set out in that it does not specify the conditions provided in Section 4 of House Bill 339 and simply provides for the selective production of wells and that said plan of unitization does not comply with the specific provisions of House Bill No. 339 under which the proposed unitization is requested.

(3) That it constitutes and will effect a taking of the property of this Respondent and Protestant, in violation of Section 23, Article II of the Constitution of the State of Oklahoma, and in violation of and contrary to Section 24, Article II of the Constitution of the State of Oklahoma;

(4) That it impairs the obligation of the contracts of this Respondent and Protestant, in violation of Section 10, Article I of the Constitution of the United States and Section 15, Article II of the Constitution of the State of Oklahoma;

(5) That it constitutes an unlawful delegation of power in violation of Section 1, Article IV and Article V of the Constitution of the State of Oklahoma.

(b) That the area proposed for unitization under said Plan is not a single common source of supply.

(c) That the proposed Plan of Unitization does not equitably apportion to this Respondent and Protestant that portion of the total oil and gas which may be produced from the proposed Unitized Area which may be reasonably expected to be produced from and accrue to the oil and gas leasehold rights of this Respondent and Protestant as a contribution to the Unit total oil and gas production.

(d) That the division of interest of Unit Production, as proposed in the Petition filed herein, is not such as will reasonably permit persons otherwise entitled to share in, or benefit by, the production from each separately owned tract within the Unit Area, to produce or receive, in lieu thereof, and that such division of interest is not based upon and does not take

into consideration, in respect of each separately owned tract, and particularly the separately owned tracts of this Respondent and Protestant, the quantity of oil and gas recoverable therefrom, the location on structure, the probable productivity of oil and gas in the absence of unit operations, the burden of operation to which each separate tract will or is likely to be subjected, or the value of each such tract to the unit.

(e) The said proposed Plan of Unitization is inequitable, unfair and unjust insofar as it applies to the legal and equitable rights, titles and interests of this Respondent and Protestant.

(f) That the Application and Petition for the creation of the proposed unit and proposed Plan of Unitization are not based upon or supported by facts sufficient to justify or permit of the approval of such Plan of Unitization, as proposed by Petitioners.

3. Respondent and Protestant specifically reserves all other objections to the proposed Plan of Unitization which may be available to it, at law or in equity, and by the enumeration of the foregoing specific objections does not waive any other such rights or remedies.

WHEREFORE, Respondent and Protestant respectfully prays that this Honorable Commission deny the Application and Petition filed herein, and that it have such other and further relief as may be proper.

RICHARDSON SHARTEL COCHRAN & PRUET

By: _____
Earl Pruet

Attorneys for The British-American Oil Producing Company, a corporation

3.

This Protestant further says that the formula for the apportionment and allocation of the unit production among the severally owned tracts will not comply with subdivision (b) of Section 5 of House Bill No. 339, and that the formula submitted is arbitrary and bears no relation to the productivity of the wells.

4.

This Protestant further says the apportionment submitted by the Applicants is based upon data and information in connection with wells obtained at remote periods in the past; that since the application was filed, the Pool has been subjected to additional investigation and research and additional information has been supplied and it is the opinion of your Protestant that in arriving at the participation in the production from the unitized area, the latest available information should be used as a guide.

5.

That this Protestant has prepared and submitted to the Corporation Commission a proposed apportionment and allocation using the formula requested by the Applicants but based upon the latest available information, and while your Protestant does not agree in all respects with the formula submitted it is willing to accept the allocation and apportionment submitted by it and the formula proposed by the Applicants but based upon the latest available information.

GULF OIL CORPORATION

BY

Its Attorney

BEFORE THE CORPORATION COMMISSION OF THE
STATE OF OKLAHOMA

In the Matter of the Application and the Petition for the creation of the West Edmond Unit for the purpose of unitized management, operation, and further development of the West Edmond Hunton Lime common source of supply of oil and gas in Oklahoma, Canadian, Kingfisher, and Logan Counties, Oklahoma; the defining of the Unit Area thereof, and the prescribing of the Plan of Unitization applicable to such Unit and Unit Areas.	CAUSE C. D. No. 1355.

FILED
JUL - 2 1947
SECRETARY
CORPORATION COMMISSION
OF OKLAHOMA

PROTEST OF R. M. WHISLER

COMES NOW R. M. WHISLER, and for his protest to the Application filed in this cause, alleges and states:

(1) That he is the owner of oil and gas mineral rights lying in and under the following described oil and gas mining leases in the proposed Unit Area:

TRACT No.	NAME OF LESSEE	DESCRIPTION	NUMBER OF WELLS
#121-#140	THE CARTER OIL COMPANY	W/2 of NE/4 of Section 3;	Two Wells
#152, #153, #171, #172	SOHIO PETROLEUM COMPANY	SW/4 of Section 4;	Four Wells
#300, #301, #317, #318	PHILLIPS PETROLEUM COMPANY	SW/4 of Section 15,	Four Wells

all in Township 14 North, Range 4 West, Oklahoma County, Oklahoma.

(2) Said Protestant objects to the Plan, Petition and Application filed herein, for the following reasons, among others, to-wit:

(a) The Oklahoma Legislation, pursuant to which such Plan is proposed (H.B. 339 of the 1945 Legislature) is invalid, illegal and of no force and effect, for the following reasons:

1. That said statutes are in violation of the due process of law clause contained in the Fourteenth Amendment to the Constitution of the United States, and Section 7, Article II of the Constitution of the State of Oklahoma;

2. That they deny to this Protestant equal protection of the laws guaranteed by the Fourteenth Amendment to the Constitution of the United States;

3. That they constitute, and will effect, a taking of the property of this Protestant, in violation of and contrary to Sections 23 and 24 of Article II of the Constitution of the State of Oklahoma;

4. Such statutes impair the obligation of the contracts between this Protestant and the Lessees of such oil and gas mining leases, in violation of Section 10, Article I of the Constitution of the United States, and Section 15, Article II of the Constitution of the State of Oklahoma, and constitute unlawful delegation of power in violation of Section 1, Article IV and Article V of the Constitution of the State of Oklahoma,

the protection of all of such constitutional provisions this Protestant asserts and claims.

(b) That the area proposed for unitization under such Plan is not a single common source of supply.

(c) That the proposed Plan of Unitization does not equitably apportion to this Protestant that portion of the total oil and gas which may be produced from the proposed Unitized Area, and which may be reasonably expected to be produced from and accrue to the mineral rights of this Protestant as a contribution to the Unit total oil and gas production.

(d) That said proposed Plan of Unitization is inequitable, unfair and unjust insofar as it applies to the legal and equitable rights, title, and interest of this Protestant.

(e) That the division of interest of Unit Production as proposed by the Petition and Application filed herein, is not based upon, and does not take into consideration, in respect of each separately owned tract, and particularly the separately owned tracts under which this Protestant holds mineral rights, the quantity of oil and gas recoverable therefrom, the location on the structure, the probable productivity of oil and gas in the absence of Unit operations, or the value of each such tract to the Unit.

(f) That the Application and Petition for the creation of the proposed Unit and the proposed Plan of Unitization are not based upon, or supported by facts sufficient to justify, or to permit of the approval of such Plan of Unitization as Proposed by the Petitioners herein.

(3) Said Protestant denies each and every allegation contained in said Petition.

WHEREFORE, premises considered, your Protestant respectfully prays that this Honorable Commission deny the Application and Petition filed herein, and that he have such other and further relief as may be proper in the premises.

LYNN ADAMS

BOHANON & ADAMS
1405 Apco Tower
Oklahoma City, Oklahoma
Attorneys for Protestant, R. [illegible]

BEFORE THE CORPORATION COMMISSION OF THE

STATE OF OKLAHOMA.

In the Matter of the Application and the Petition for the creation of the East Edmond Unit for the purpose of unitized management, operation, and further development of the East Edmond Hunton Lime common source of supply of oil and gas in Oklahoma, Canadian, Kingfisher, and Logan Counties, Oklahoma; the defining of the Unit Area thereof, and the prescribing of the Plan of Unitization applicable to such Unit and Unit Area.	Cause C.D. No. 1355.

D E M U R R E R

COMES now Denver Producing & Refining Co., and demurs to the Petition filed in the above cause and the Plan of Unitization submitted for approval thereof, upon the ground and for the reason - -

(a) That said Petition and said Plan do not separately or collectively state facts sufficient to authorize or permit this Commission to enter or grant the order and relief sought therein, or any other relief; and,

(b) That said Petition, said Plan, and the Act of the Oklahoma Legislature, pursuant to which such Petition is filed and said Plan proposed, and each of them, are invalid, illegal, and of no force or effect, for the following reasons:

(1) That they, and each of them, are in violation of the due process of law clauses of both the Fourteenth Amendment to the Constitution of the United States and Section 7, Article II, of the Constitution of the State of Oklahoma.

(2) That they, and each of them, deny to this Respondent and Protestant the equal protection of the laws guaranteed by the Fourteenth Amendment to the Constitution of the United States.

(3) That they, and each of them, constitute and will effect a taking of the property of this Respondent and Protestant, in violation of Section 23, Article II, of the Constitution of the State of Oklahoma, and in violation of and contrary to Section 24, Article II, of the Constitution of the State of Oklahoma.

(4) That they, and each of them, impair the obligation of the contracts of this Respondent and Protestant, in violation of Section 10, Article I, of the Constitution of the United States, and Section 15, Article II, of the Constitution of the State of Oklahoma.

(5) That they, and each of them, constitute an unlawful delegation of power in violation of Section 1, Article IV and Article V, of the Constitution of the State of Oklahoma.

Denver Producing & Ref. Co.

By Stanley B. Pratt

Attorneys.

that until such tract has no over-production is made up such tract shall not receive any

The amount of over-production charged against any tract within the Unit Area as of the effective date of said Plan of Unitization shall be charged against and made up out of the unit production of oil allocated to such tract ~~to the extent and in the manner as follows, to wit:~~

~~Until~~ such time as the over-production charged against such over-produced tract is made up, the unit production of oil which would otherwise be allocated to such tract under the Plan of Unitization shall be withheld from such tract and shall be ~~allocated and~~ distributed as unit production to the tracts not charged with over-production in proportion to the respective interests of each such ~~last~~mentioned tract in and to the unit.

The amount of credit against overproduction to be given ~~each such~~ to over-produced tracts out of ~~for the over-production so made up~~ unit production shall be determined by multiplying for each ~~such~~ tract in its unit its percentage in the unit expressed as a ~~factor~~ fraction by an amount of unit production computed as: The actual unit production of oil divided by the percentage "100 minus the total percentage in the unit of all tracts remaining charged with over-production" expressed as a ~~factor.~~ fraction.

When the amount of the credit to an over-produced tract, arrived at as provided in the paragraph last above, equals the amount of over-production charged against such tract as of the effective date of the Plan of Unitization, said over-production shall be regarded as having been made up and such tract shall thereafter be afforded all the rights under the Plan of Unitization and this order to which it would have been entitled had it not been for such over-production.

The Unit Operator shall each month file with the Corporation Commission a report by tracts of all over-production so made up, together with a statement by tracts of the balance of the over-production not so made up.

13. That there is some over ~~and under~~ production charged ~~and credited~~ on the records of the Corporation Commission to the various ~~wells~~ tracts in the pool and that of necessity there will be some over ~~and under~~production on the date that the plan provided for herein becomes effective; that in order to protect the correlative rights of all lessees and royalty owners, the over ~~and under~~ production of the various ~~wells~~ tracts, ~~now shown in barrels should be reduced to dollars, based on the market price of oil at the time of the effective date of the plan,~~ should be ~~and~~ entered on the books of the unitized management as ~~either a credit or~~ charge to the ~~unit~~ tract having the over ~~or under~~ production, and ~~said~~ charge ~~or credit~~ should be taken into account in future settlements between the unitized management and the interested parties in the ~~40 acre unit~~ tract or tracts.

7. That in order to protect the correlative rights of all interested parties, all leases having ~~its~~ overages or underages of oil production should have such overages and underages reduced to dollars and entered as a charge or as a credit to the wells entitled thereto and such charge or credit should be made as of the effective date of the plan.

Present

(14)

14 That in the ordinary course of events there will be tracts within the Unit Area which as of the effective date of said Plan of Unitization will have produced oil from said Hunton Lime formation in excess of the amount such tracts were allowed to produce under the prior conservation orders of the Commission, which said excess oil is known and is referred to in this order as over-production; that it would be unfair and in violation of the correlative rights of the owners of other tracts in said Unit Area if such over-produced tracts are not required to make up such over-production; that the amount of the over-production charged against each such tract should be charged against and made up out of the Unit production of oil allocated to such tract under the Plan of Unitization, ~~in the manner and to the extent hereinafter provided in this order~~; that said basis and method of making up such over-production is fair, reasonable and equitable and adequately protect and safeguard the rights and equities of all persons affected thereby.

VII.

ADJUSTMENT OF INVESTMENT

For the purposes of this Plan, the following shall supersede and take the place of all the provisions of Section XII of the Original Plan:

(a) Upon the Effective Date hereof the Unit shall assume control and management of the further development and operation of the Unit Area, and, except as may be otherwise herein provided, each Lessee within the Unit Area shall deliver possession to the Unit Operator of (a) all wells within the Unit Area, (b) all lease and other operating equipment used in the operation of such wells, and (c) all production and well records and other pertinent data pertaining thereto. Upon the Effective Date of this Plan, there shall be delivered to the Unit Operator the well located on the separately owned tract designated as Tract No. 754 in Exhibit B hereto attached, all lease and other operating equipment used in the operation of said well, and all production and well records and other pertinent data relative to said well.

(b) Adjustment for the investment of Lessees in the Fourth Unit and the investment of the Lessee in said Tract No. 754 shall be made as follows:

(1) The investment of Lessees in the Fourth Unit shall be deemed to consist of all items carried as items of investment in the records of the Unit Operator of the Fourth Unit immediately prior to the Effective Date of this Plan, at the amounts at which said items are carried on the records of the Unit Operator of the Fourth Unit. Each separately owned tract in the Fourth Unit shall be credited with that portion of the investment so computed which equals its percentage participation in the Fourth Unit.

(2) The investment in said Tract No. 754 shall consist of the lease and operating equipment used in the operation of the well thereon, valued in the manner and on the basis set forth in Subdivision 2 of Section XII of the Original Plan, and by the use of the same prices and price list used in determining the value of lease and operating equipment taken over by the Original Unit, the investment so computed to be credited to said Tract No. 754.

(3) The investment of Lessees in the Fourth Unit, plus the investment in said Tract No. 754, determined in the manner above specified, shall constitute the initial investment in the Unit to which this Plan is applicable. Said initial investment shall be apportioned among and charged against all the separately owned tracts within the Unit Area in proportion to their respective percentage participations as set forth in Exhibit B hereto attached. If the amount so charged against a separately owned tract exceeds the amount credited to such tract, as above provided, the excess shall be treated and regarded in all respects as Unit Expense chargeable against such tract.

~~72~~

John Barry and } For West Edmond Royalty
James L Eaglston } Owners Association

John Barry and } For O. A. Cargill
James L. Eaglston } Interest -

Exhibits 1355

No 1 - Plan of Unitization of West Edmond Hunton Lime Unit
No 2 - Order setting cause for hearing on 3/18/57
No 3 - Notice of Hearing
No 4 - Affidavit of Publication - Daily Law Journal
No 5 - " " " El Reno Tribune
No 6 - " " " Guthrie Daily Leader
No 7 - " " " Kingfisher Times
No 8 - Amended Petition filed on March 5th
No 9 - " Plan of Unitization -
No 10 - Notice of Hearing Amended Petition
No 11 - Affidavit of Publication of new Notice.

OWNER GULF OIL CORPORATION GYPSY DIV. WELL STREETER NO. 1 POOL WEST EDMOND

LOCATION 660' West of East Line and 660' North of South Line SE SE 20-13N-4W, Oklahoma County, Oklahoma ELEV. 1189'

FORMATIONS HUNTON LIME RIG PARKER DRLG. CO. CORE BBL. DIAMOND BIT

DATE CORED 4-3 to 5-13-45 REC'V'D 5-45 REPORTED 5-45

CORING TIME FT. PER MIN. MIN. PER FT.

CHLORIDES PPM IN DRY SAND 1000 750 500 250

PERMEABILITY MILLIDARCYS 200 150 100 50

DEPTH | CORES | FIELD DESCRIPTION OF CORES

PER CENT POROSITY 0 2.5 5 7.5 10

BARRELS PER ACRE FOOT PORES WATER OIL 0 200 400 600 800

TOP HUNTON GEOL 6944' (-5755') SCHL. 6943' (-5754')

7" Casing set @ 6947'
Cemented with 1000 sacks

6947'

6948' Cl'Rl' Chert w/lm C 6" 3" Chert 1.1% TOP FRISCO 6948' (-5759')

6952' DRILLED

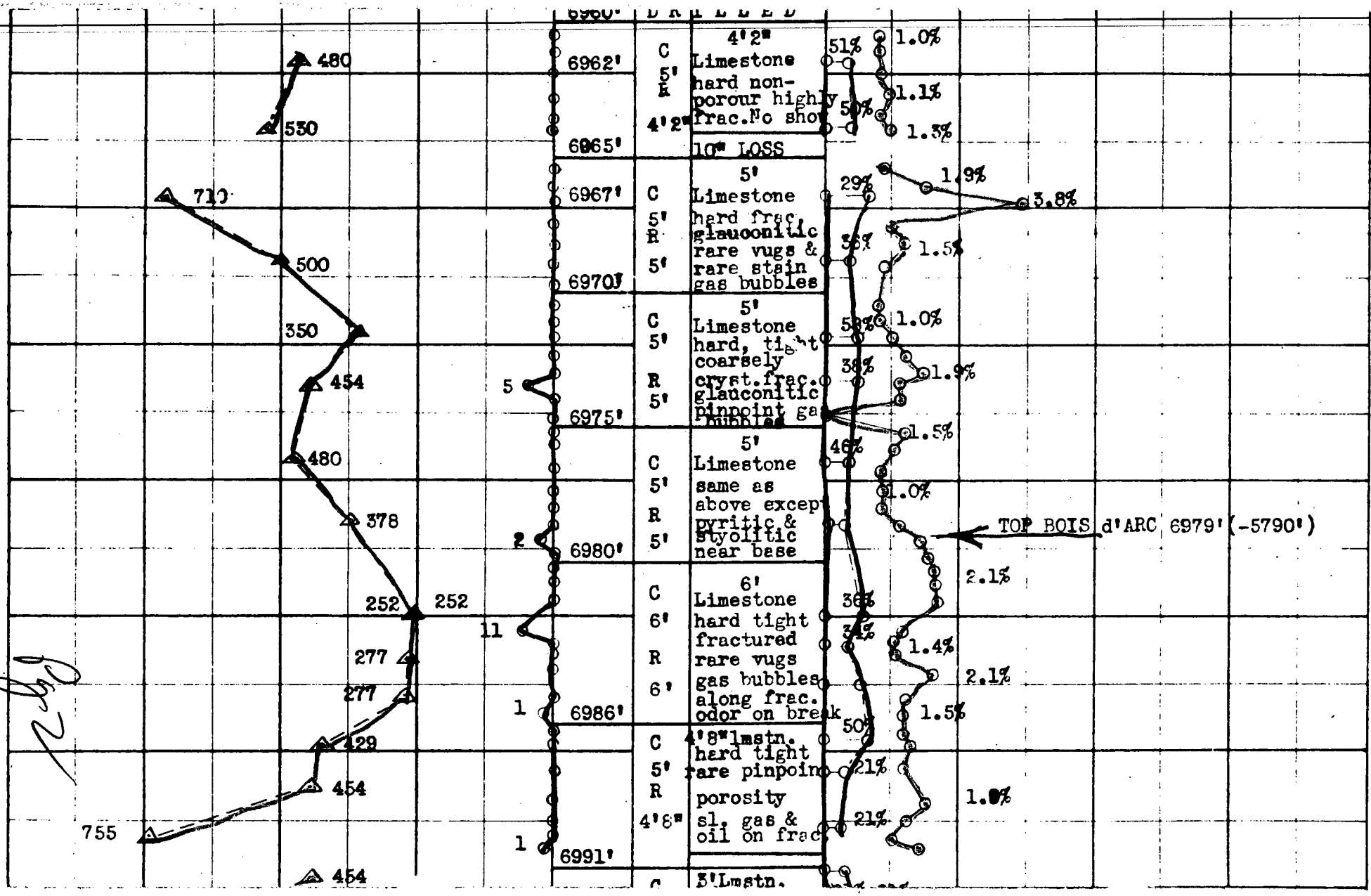
6954'

400 500

6957' 1

6959'

C 5' R 5' 5' Limestone glauconitic highly fractured Non-porous 24% 1.0% 11% 1.2%


DRILLED
6960'
6962'
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6986'
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4'2" Limestone hard non-porour highly frac. No sho
10" LOSS
C 5' R 5'
5' Limestone hard frac. glauconitic rare vugs & rare stain gas bubbles
C 5' R 5'
5' Limestone hard, tight coarsely cryst. frac. glauconitic pinpoint ga bubbles
C 5' R 5'
5' Limestone same as above excep pyritic & stylolitic near base
C 6' R 6'
6' Limestone hard tight fractured rare vugs gas bubbles along frac. odor on break
C 5' R 4'8"
4'8" lmstn. hard tight rare pinpoin porosity sl. gas & oil on frac.
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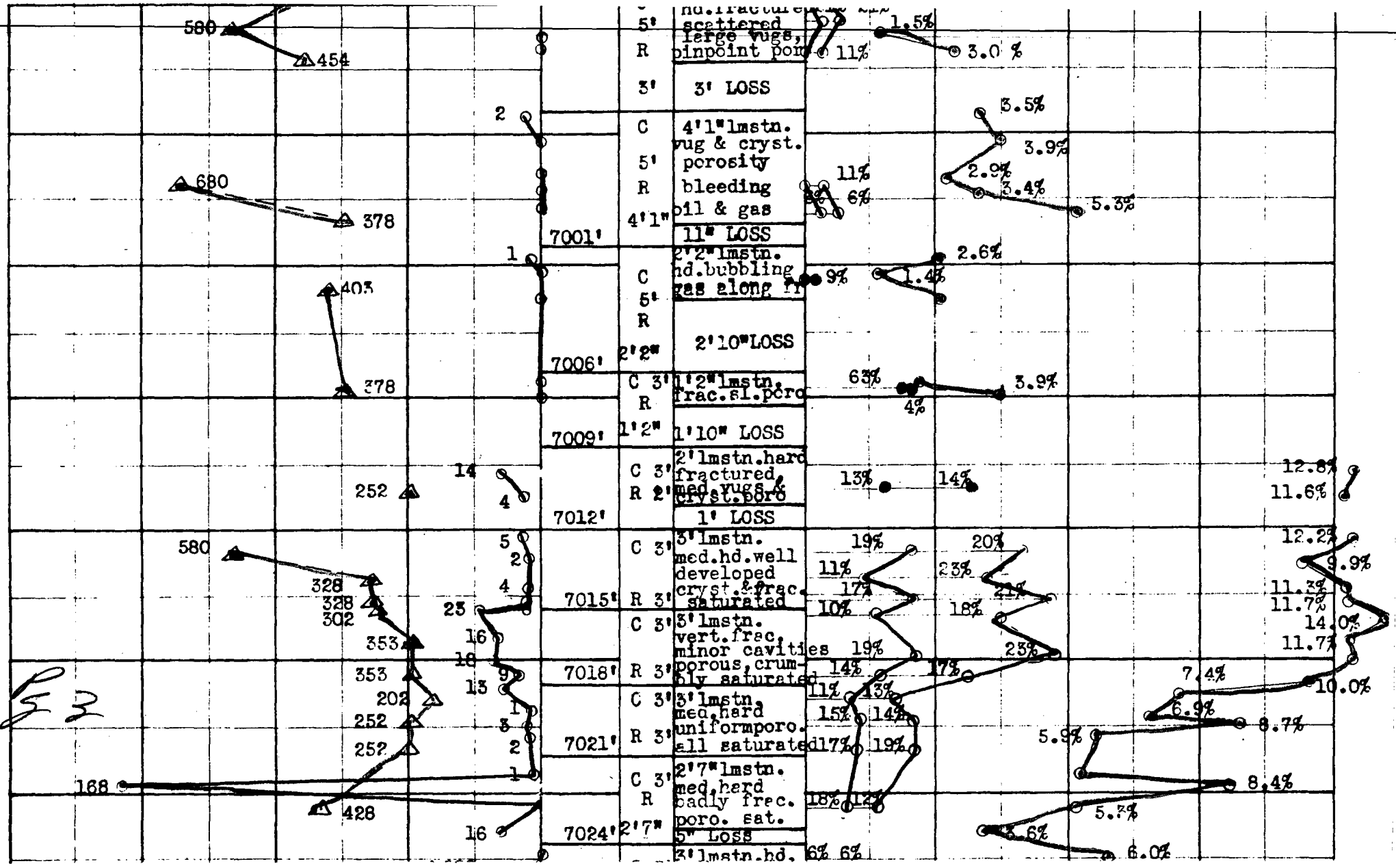
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11" LOSS
2'2" lmstn.
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1'2" lmstn.
frac.sl.poro
1'10" LOSS
2' lmstn.hard
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med.vugs &
cryst.poro
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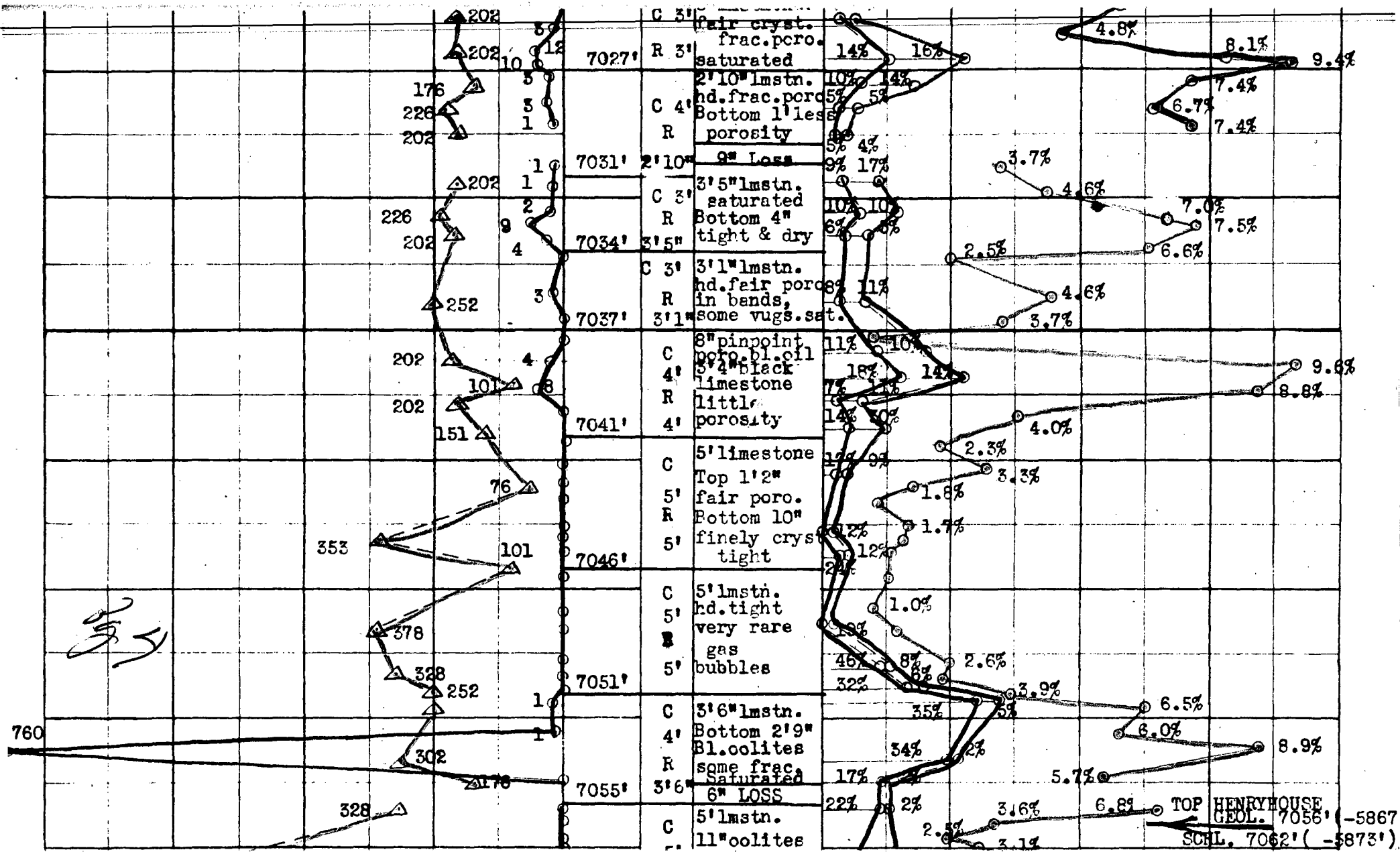
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3'5"lmstn.
saturated
Bottom 4"
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3'4"black
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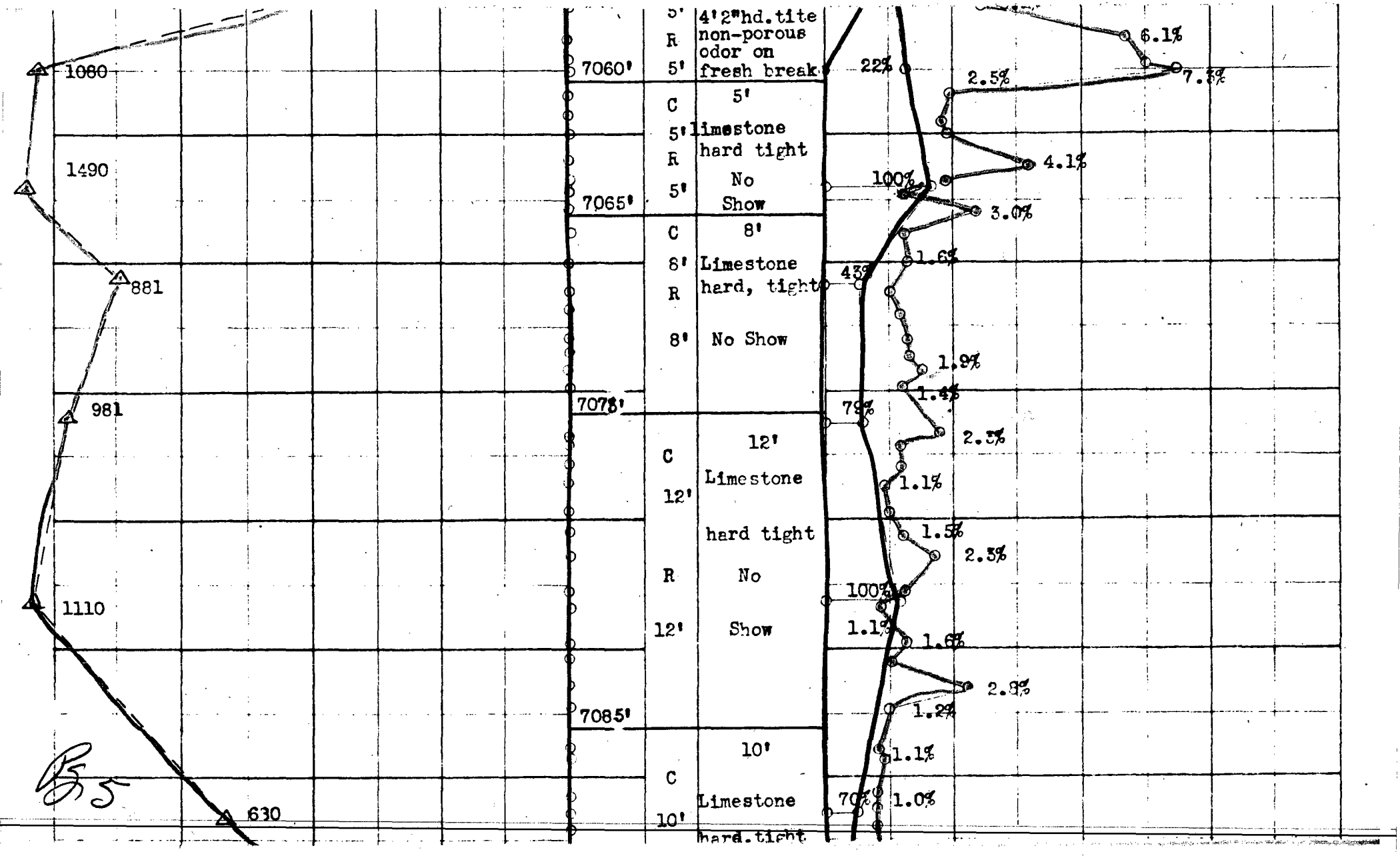
SCHL. 7062' (-5873')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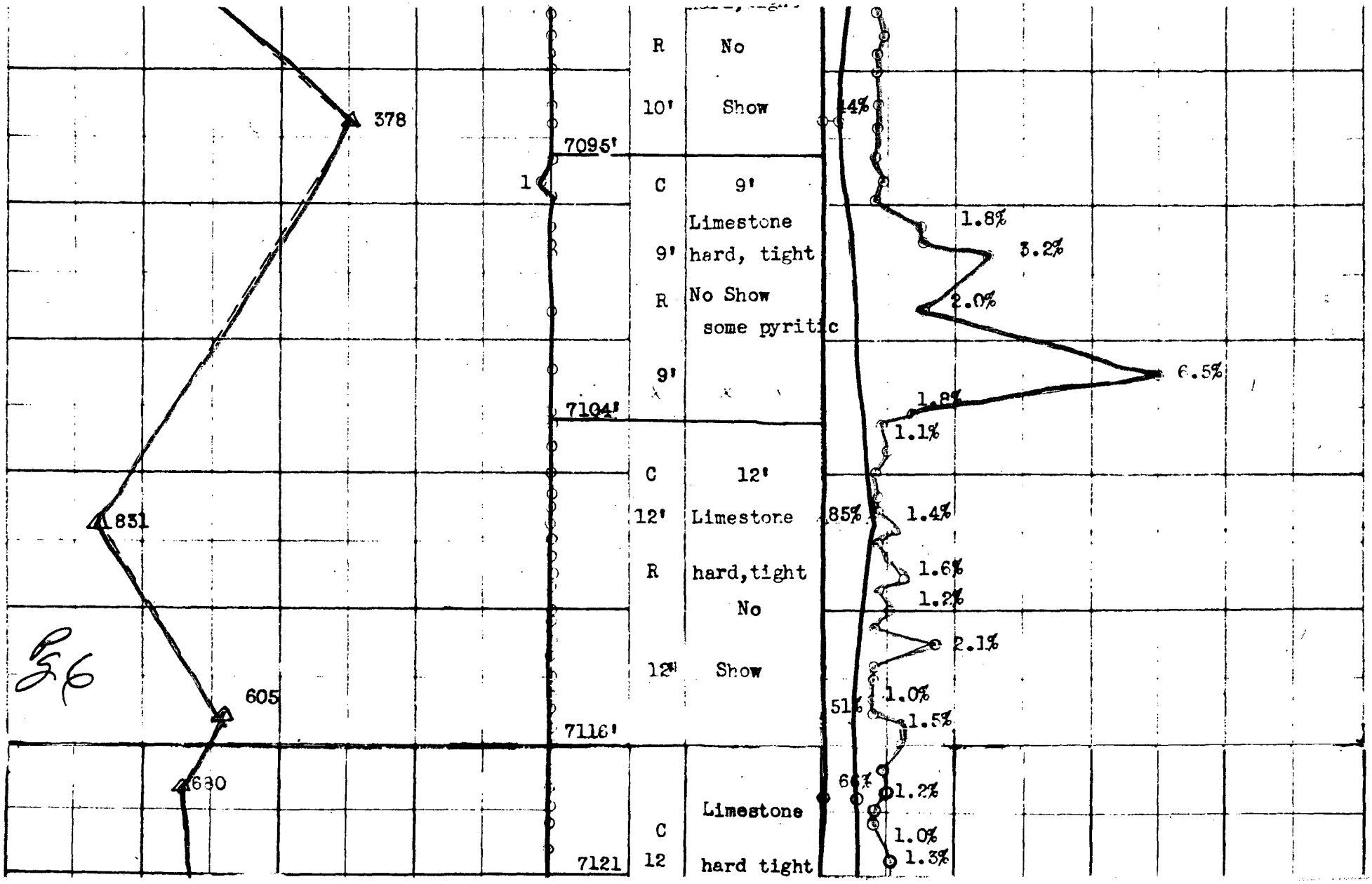
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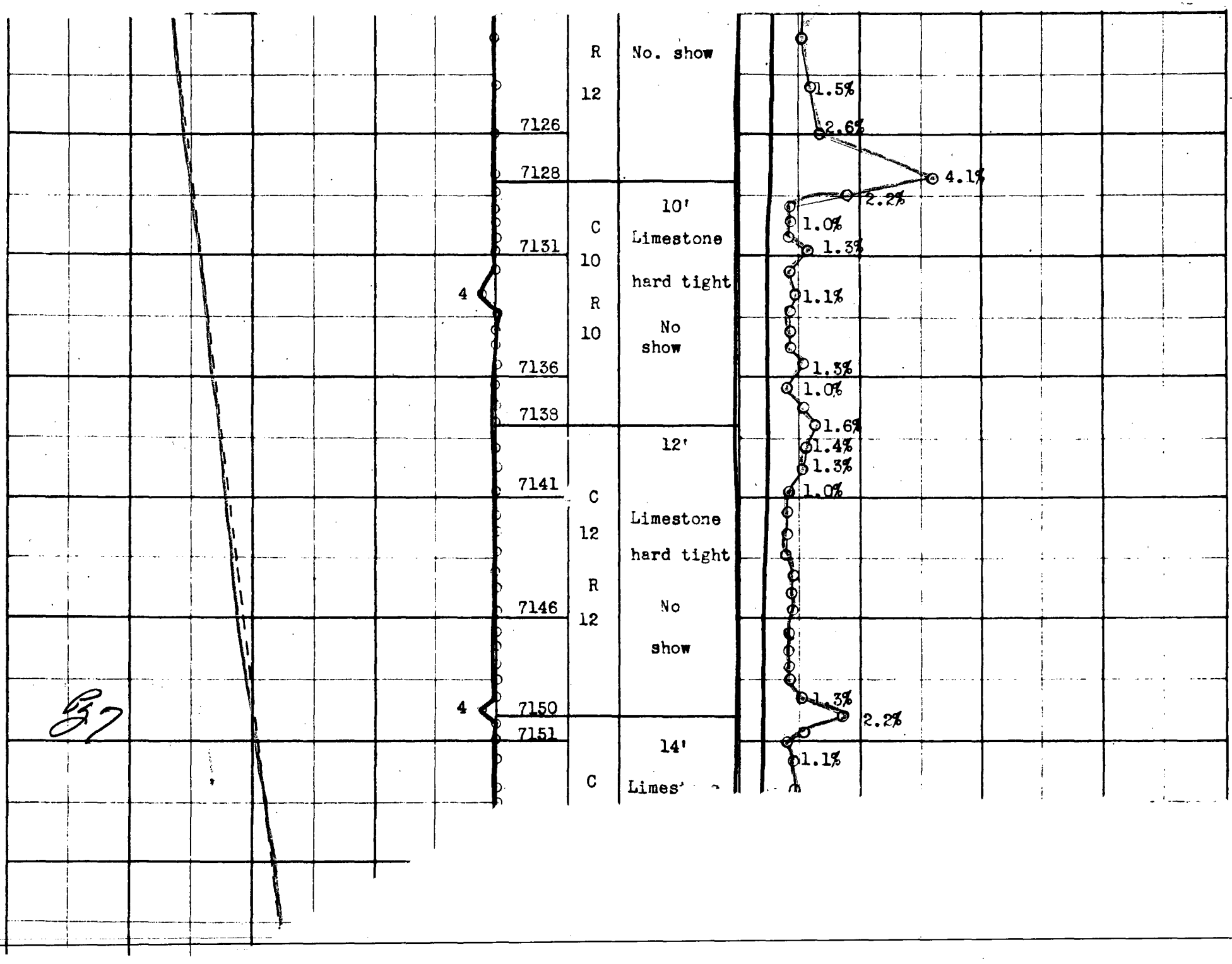
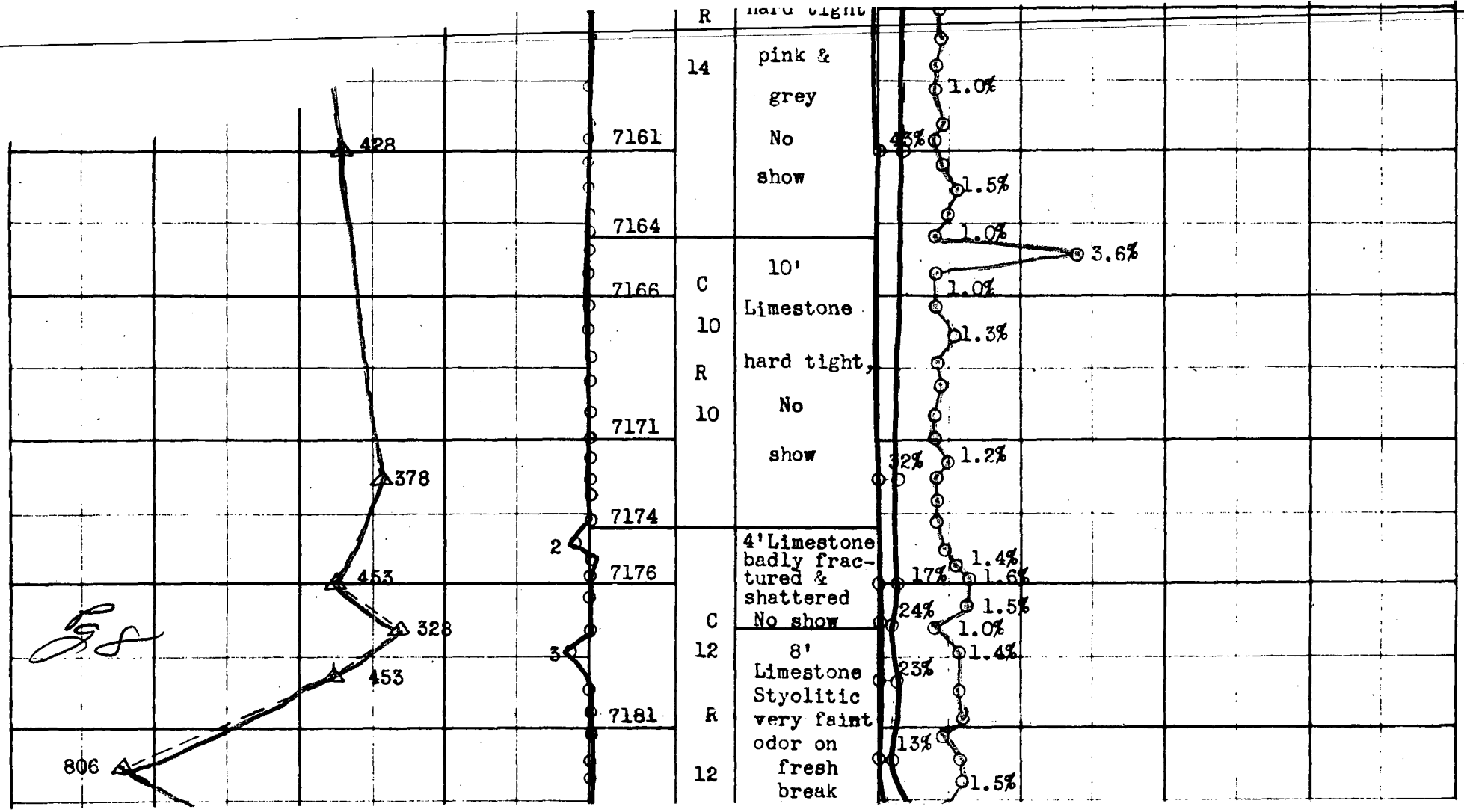
1.3%

56


R
12
No. show
7126
7128
C
10
10'
Limestone
hard tight
R
10
No
show
7131
7136
7138
12'
Limestone
hard tight
No
show
C
12
R
12
7141
7146
7150
7151
14'
C
Limes'
4
4
1.5%
2.6%
4.1%
2.2%
1.0%
1.3%
1.1%
1.3%
1.0%
1.6%
1.4%
1.3%
1.0%
1.3%
2.2%
1.1%

57


R
hard tight
14
pink &
grey
No
show
7161
7164
C
10
R
10
10'
Limestone
hard tight,
No
show
7166
7171
7174
4'Limestone
badly frac-
tured &
shattered
No show
7176
C
12
8'
Limestone
Styolitic
very faint
odor on
fresh
break
7181
R
12
428
378
453
328
453
806
2
3
1.0%
43%
1.5%
1.0%
3.6%
1.0%
1.3%
32%
1.2%
1.4%
17%
1.6%
24%
1.5%
1.0%
1.4%
23%
13%
1.5%

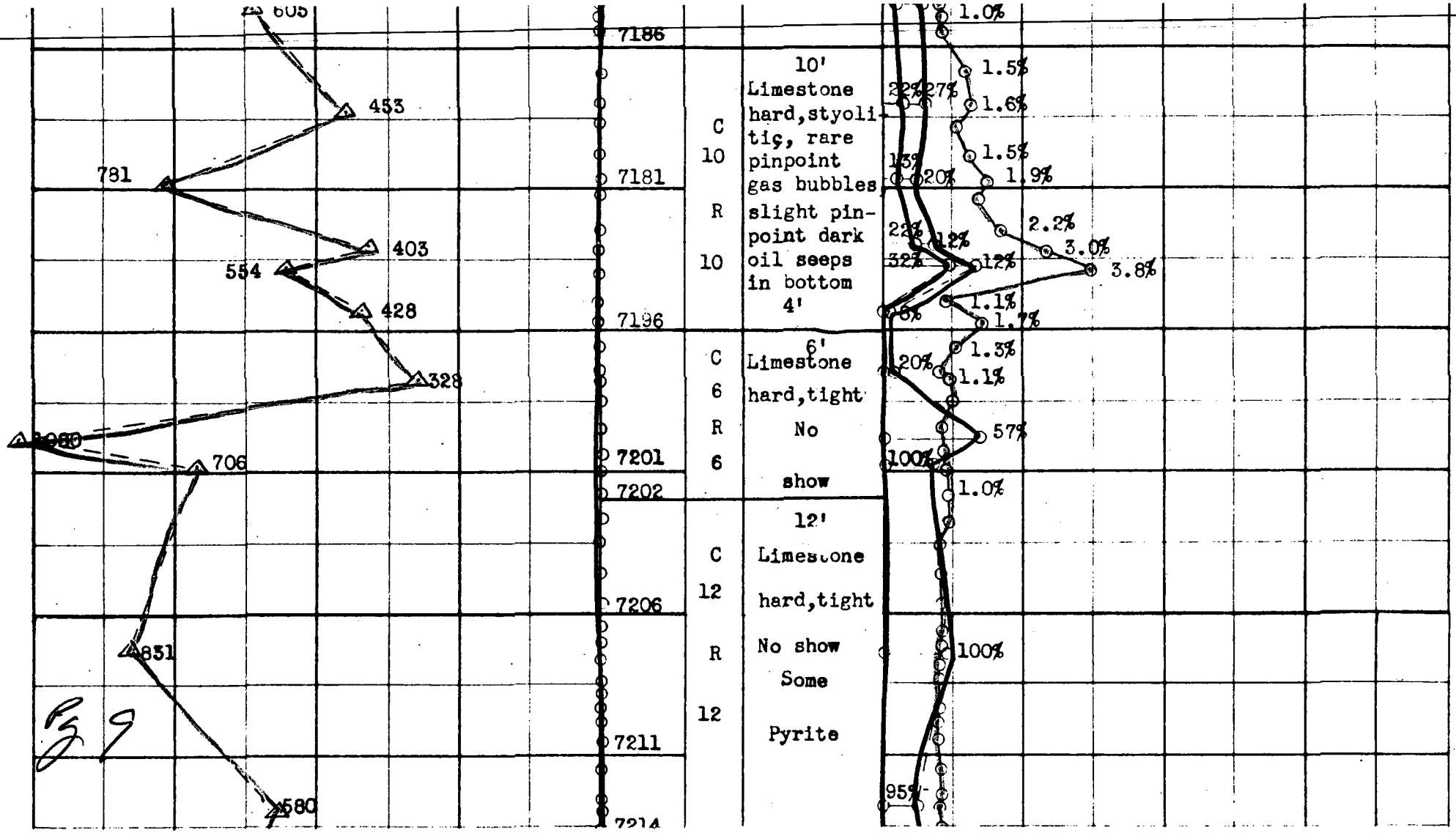
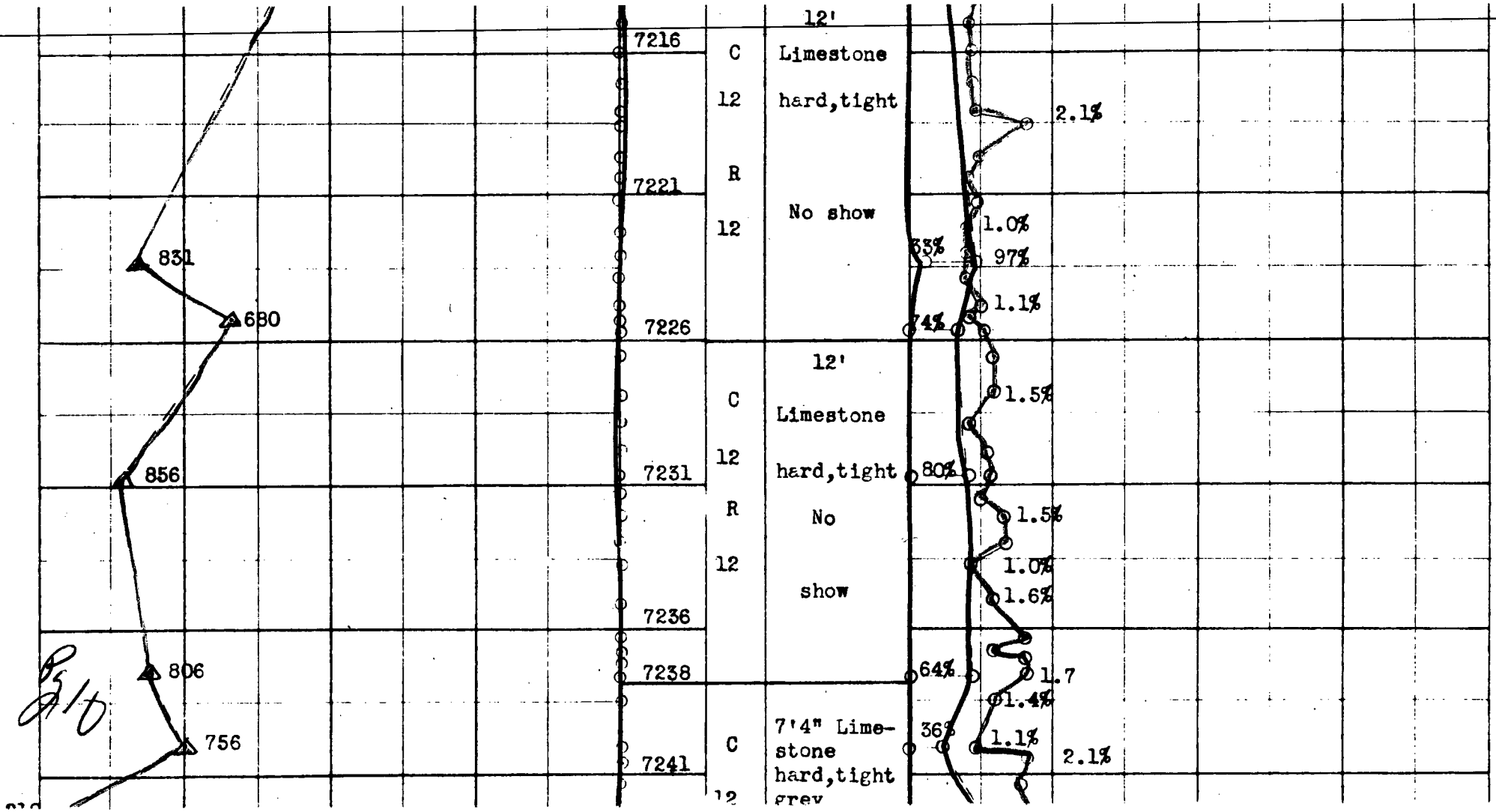
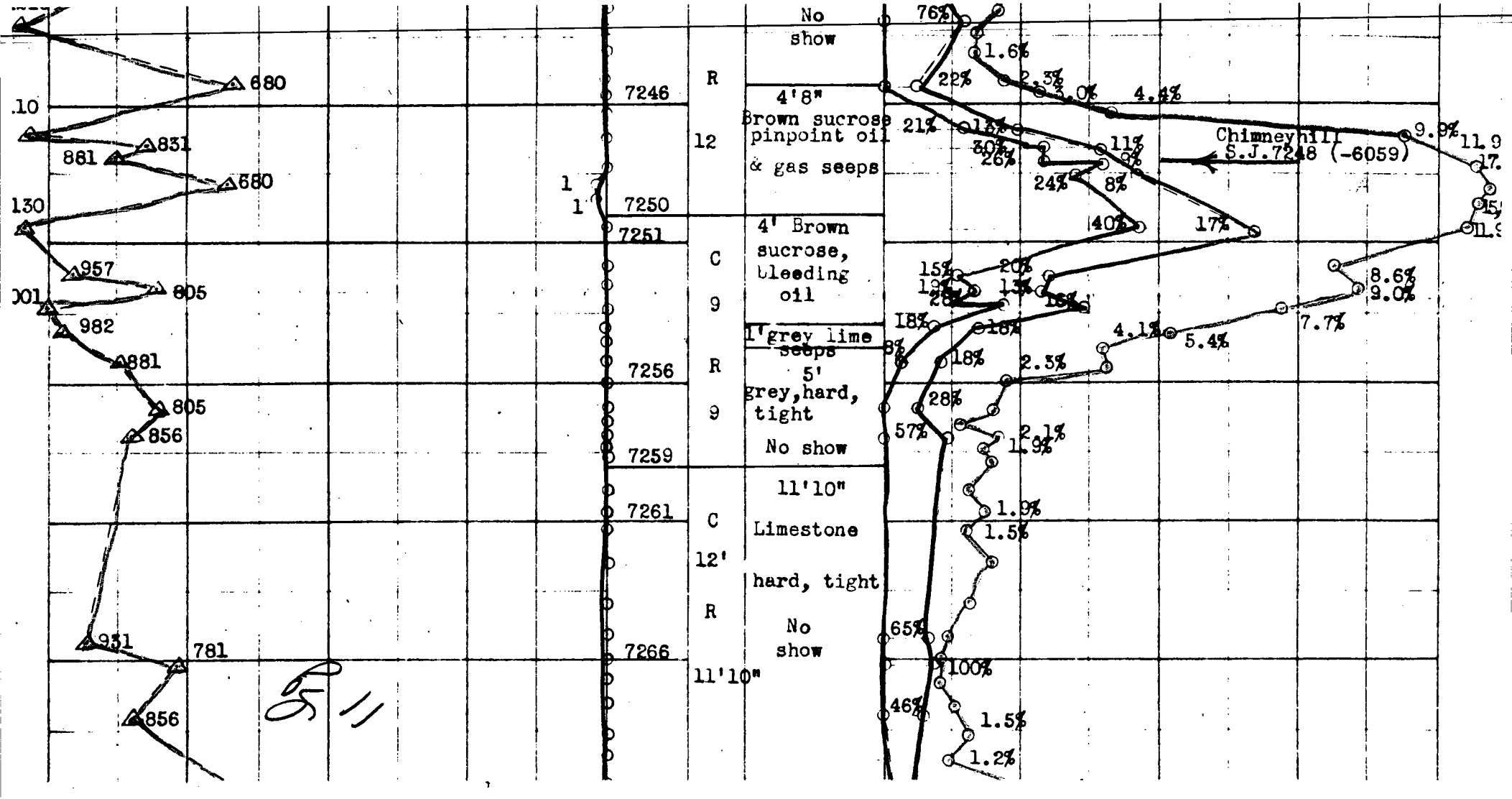

605
453
781
403
554
428
328
3980
706
851
580
7186
7181
7196
7201
7202
7206
7211
7214
C
10
R
10
C
6
R
6
C
12
R
12
10'
Limestone
hard,styoli-
tic, rare
pinpoint
gas bubbles
slight pin-
point dark
oil seeps
in bottom
4'
6'
Limestone
hard,tight
No
show
12'
Limestone
hard,tight
No show
Some
Pyrite
1.0%
1.5%
22%
27%
1.6%
1.5%
15%
20%
1.9%
2.2%
22%
12%
3.0%
32%
12%
3.8%
1.1%
8%
1.7%
1.3%
20%
1.1%
57%
100%
1.0%
100%
95%

Fig 9


7216
C
12
R
12
7221
7226
12'
Limestone
hard,tight
No show
2.1%
1.0%
63%
97%
1.1%
74%
831
680
856
806
756
12'
Limestone
hard,tight
No
show
1.5%
80%
1.5%
1.0%
1.6%
7231
7236
7238
64%
1.7
1.4%
36%
1.1%
2.1%
7241
7'4" Lime-
stone
hard,tight
grey


680
.10
831
881
680
130
957
805
001
982
881
805
856
931
781
856
7246
7250
7251
7256
7259
7261
7266
R
12
C
9
R
9
C
12'
R
11'10"
No show
4'8"
Brown sucrose pinpoint oil & gas seeps
4' Brown sucrose, bleeding oil
1' grey lime seeps
5' grey, hard, tight
No show
11'10"
Limestone
hard, tight
No show
Chimneyhill
S.J.7248 (-6059)
76%
1.6%
22%
2.3%
3.0%
4.4%
21%
16%
30%
26%
11%
9%
24%
8%
9.9%
40%
17%
15%
20%
13%
18%
18%
8%
18%
2.3%
28%
57%
2.1%
1.9%
1.9%
1.5%
65%
100%
46%
1.5%
1.2%
4.1%
5.4%
7.7%
8.6%
9.0%

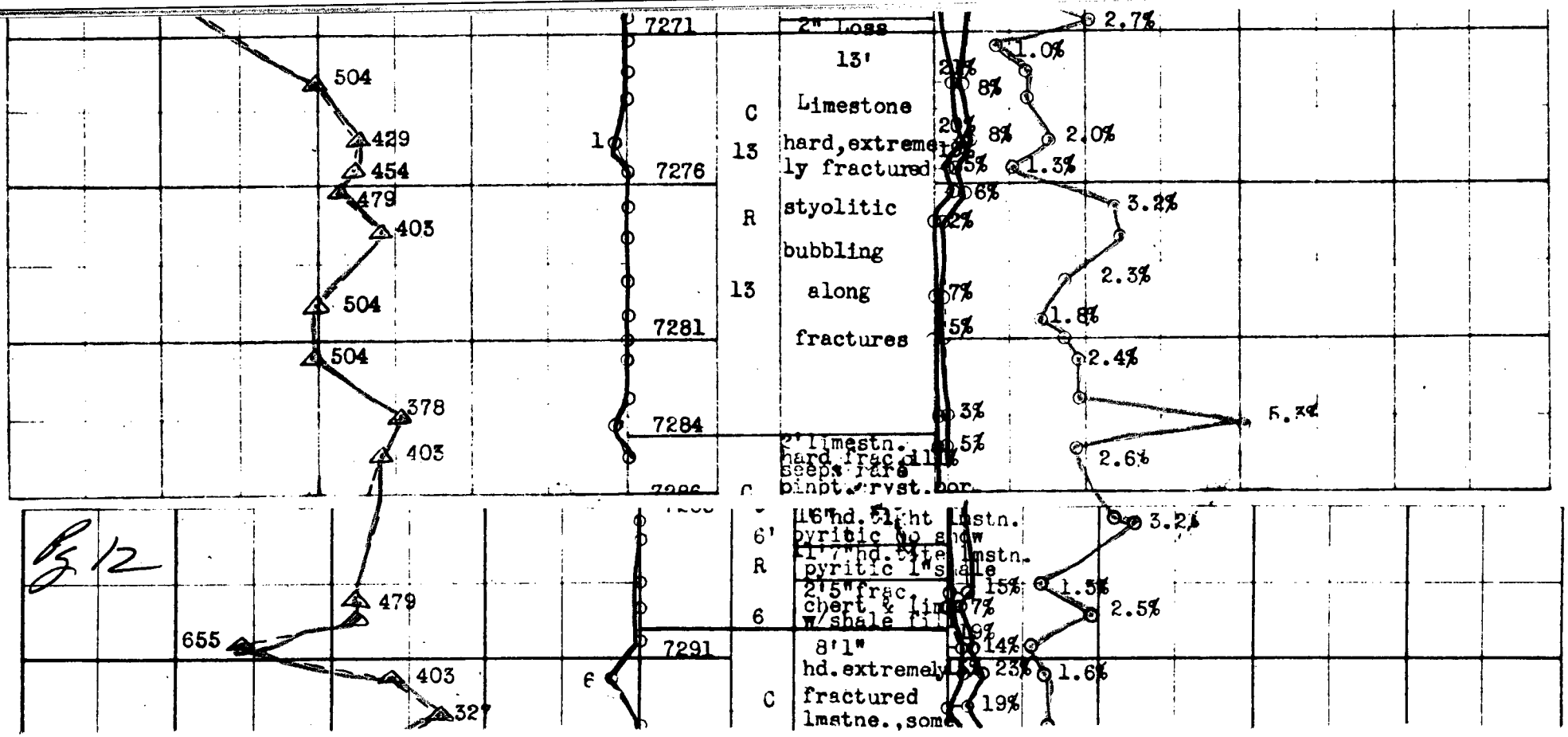
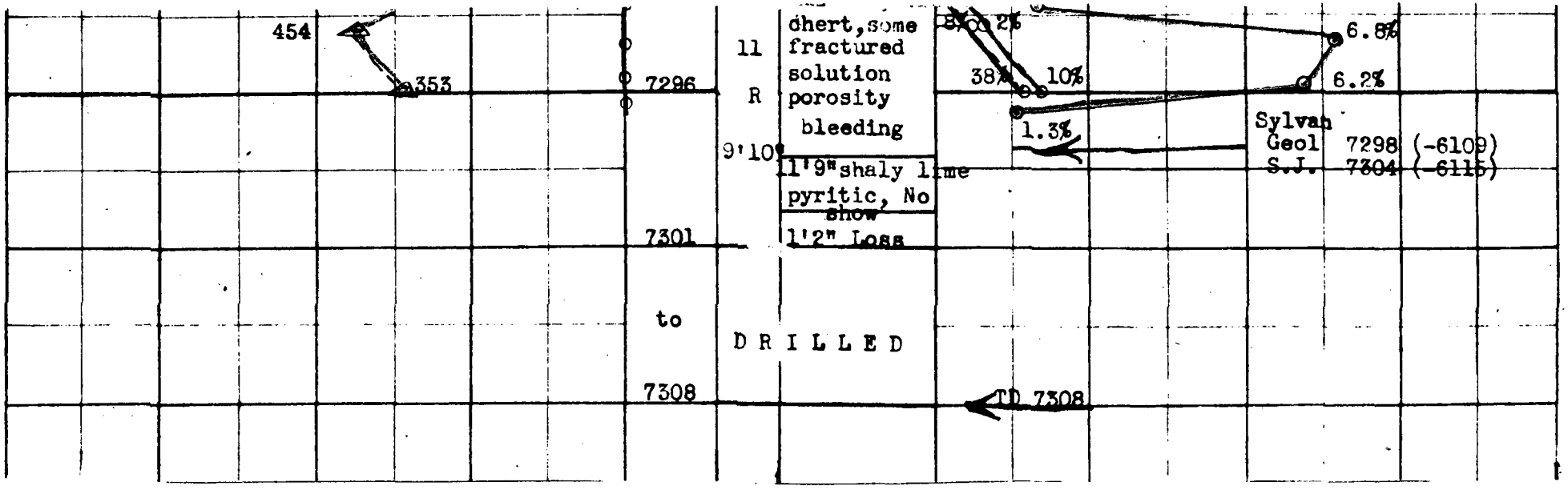

7271
2" Loss
13'
C
13
R
13
C
6'
R
6
C
7276
7281
7284
7291
Limestone
hard, extremely fractured
styolitic
bubbling
along
fractures
2' limestn.
hard frac
seeps rare
binpt. cryst. por.
6" hd. light lmstn.
pyritic no show
1'7" hd. pyritic lmstn.
pyritic 1" shale
2'5" frac.
chert & lim
w/shale fill
8'1"
hd. extremely
fractured
lmstne., some
504
429
454
479
403
504
504
378
403
479
655
403
327
1
6
2.7%
1.0%
2.0%
1.3%
3.2%
2.3%
1.8%
2.4%
5.3%
2.6%
3.2%
1.5%
2.5%
1.6%
8%
8%
5%
6%
2%
7%
5%
3%
5%
15%
7%
9%
14%
23%
19%

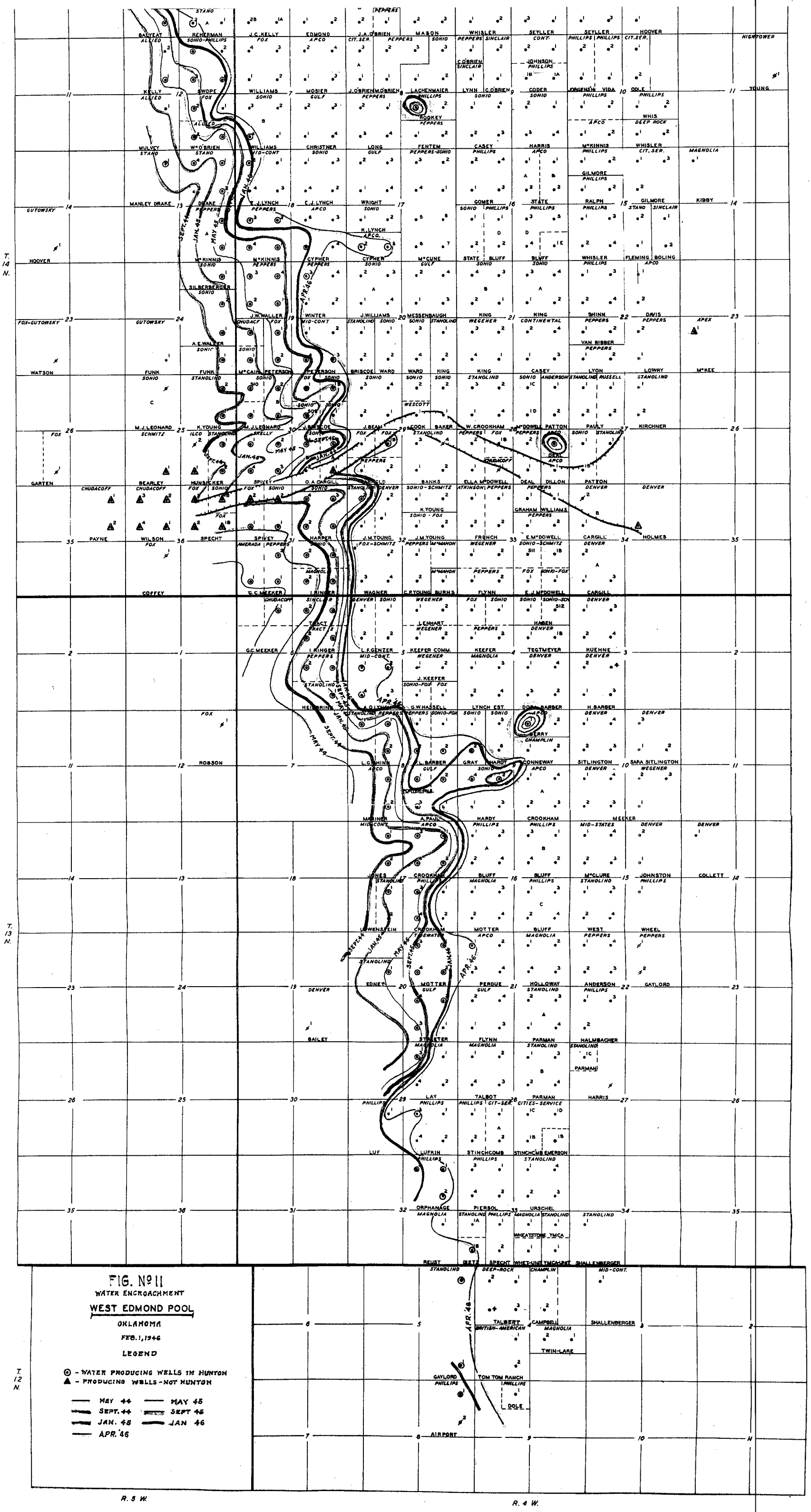
Fig 12

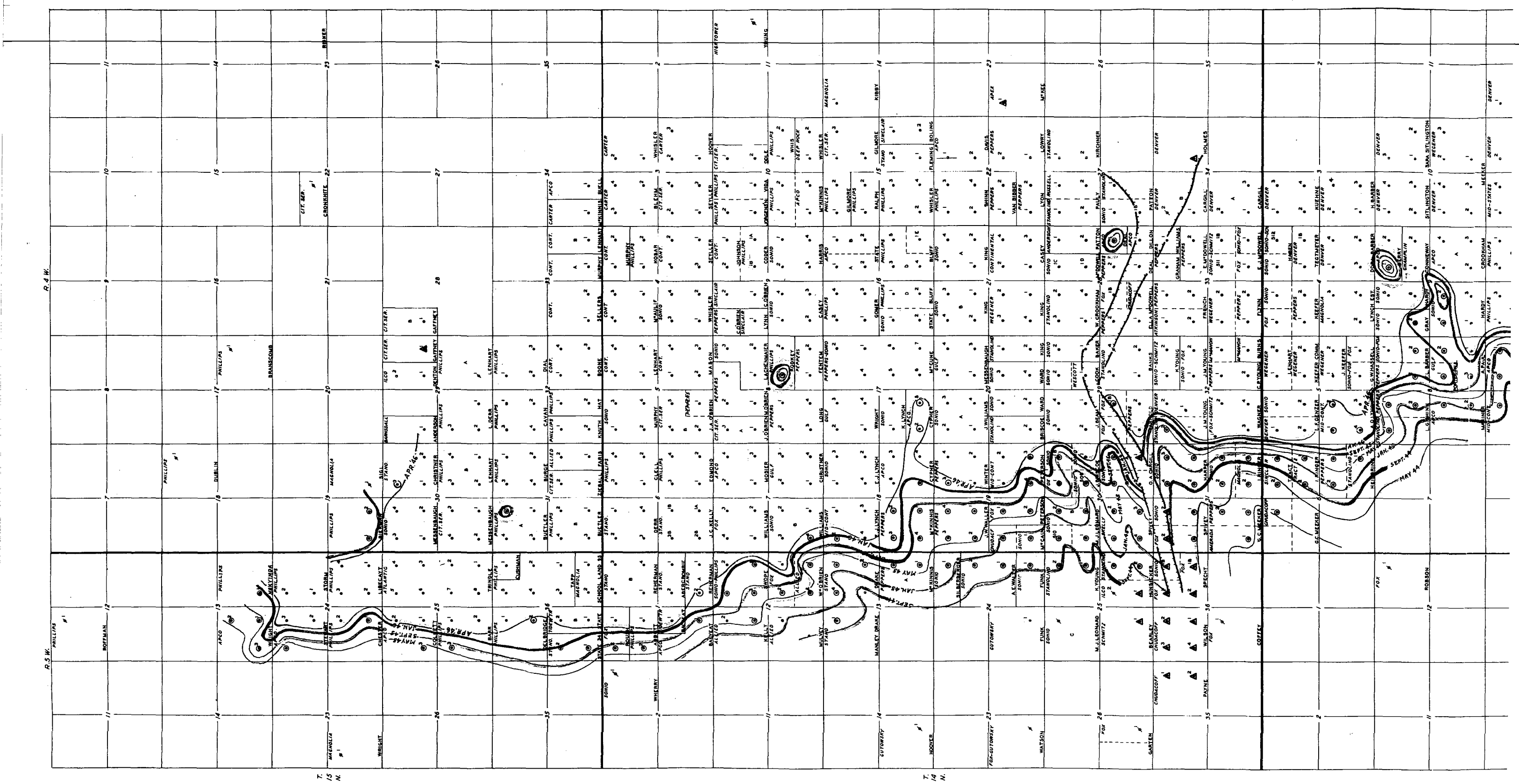


STREETER NO. 1 — CORE ANALYSIS

FIG. NO. 6

Pg 12


T. 14 N.
T. 13 N.
T. 12 N.
R. 5 W.
R. 4 W.
SEPT. 44
JAN. 45
MAY 45
APR. 46
JAN. 46
SEPT. 45
MAY 44
JAN. 48
APR. '46
FIG. Nº 11
WATER ENCROACHMENT
WEST EDMOND POOL
OKLAHOMA
FEB. 1, 1946
LEGEND
- WATER PRODUCING WELLS IN HUNTON
- PRODUCING WELLS - NOT HUNTON
MAY 44
SEPT. 44
JAN. 48
APR. '46
MAY 45
SEPT 45
JAN 46


R.4 W.
R.5 W.
T. 15 N.
T. 14 N.
APR.46
MAY 46
JAN.46
SEPT.46
JAN.48
SEPT.48
MAY 48
JUN.48

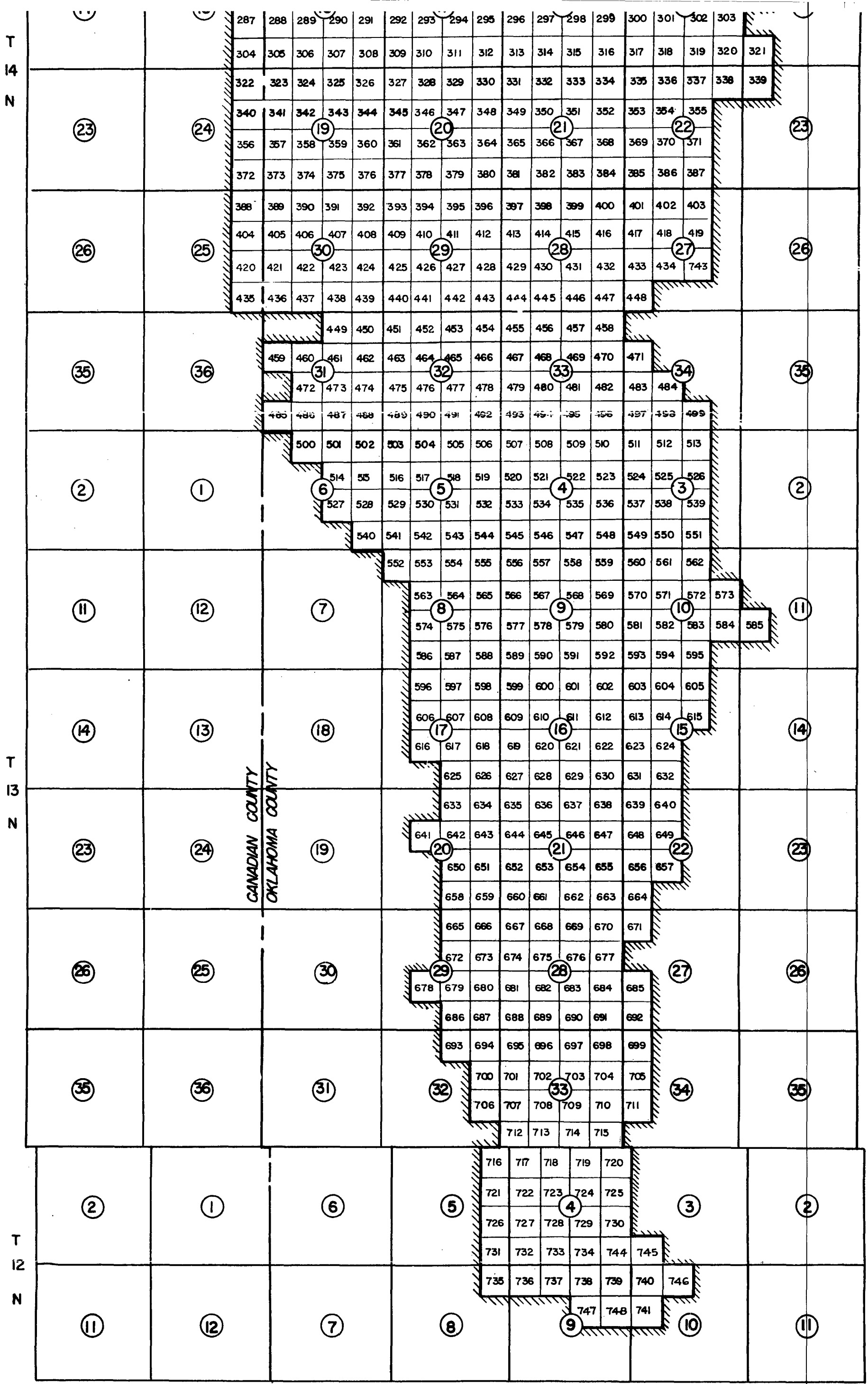
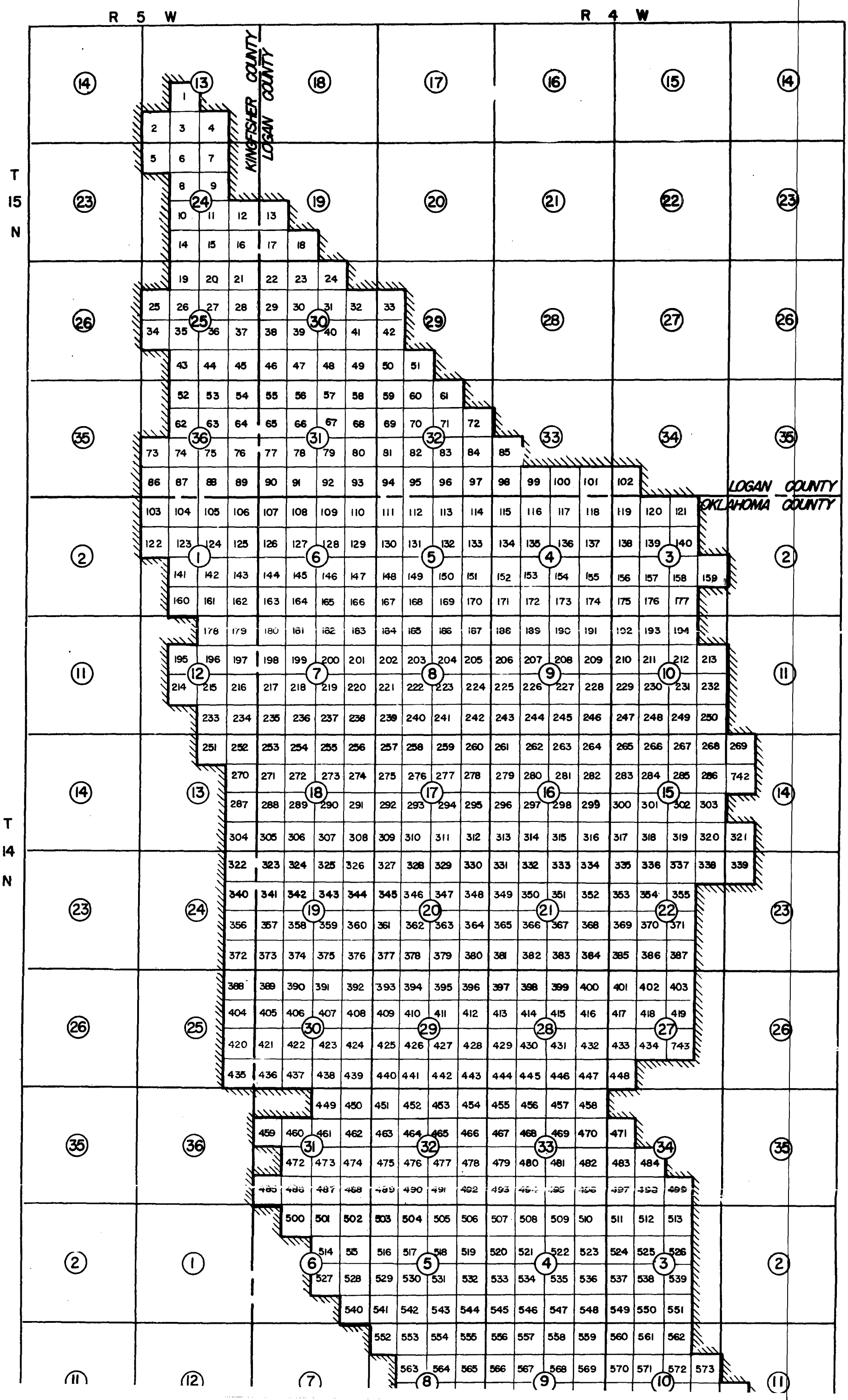


EXHIBIT A

UNIT AREA - WEST EDMOND HUNTON LIME UNIT

AS AMENDED TO INCLUDE 748 TRACTS


R 5 W
R 4 W
T 15 N
T 14 N
KINGFISHER COUNTY
LOGAN COUNTY
LOGAN COUNTY
OKLAHOMA COUNTY

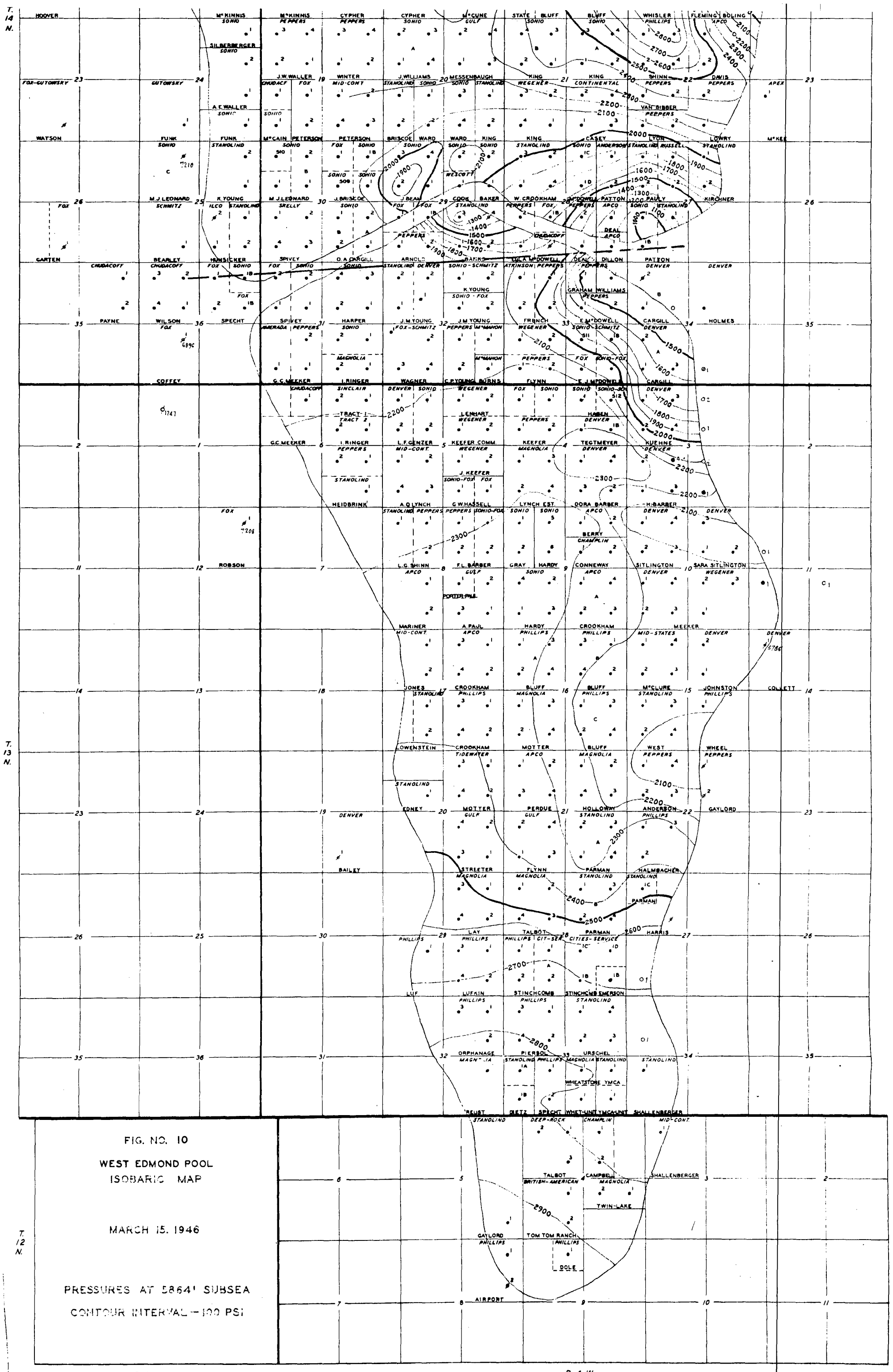
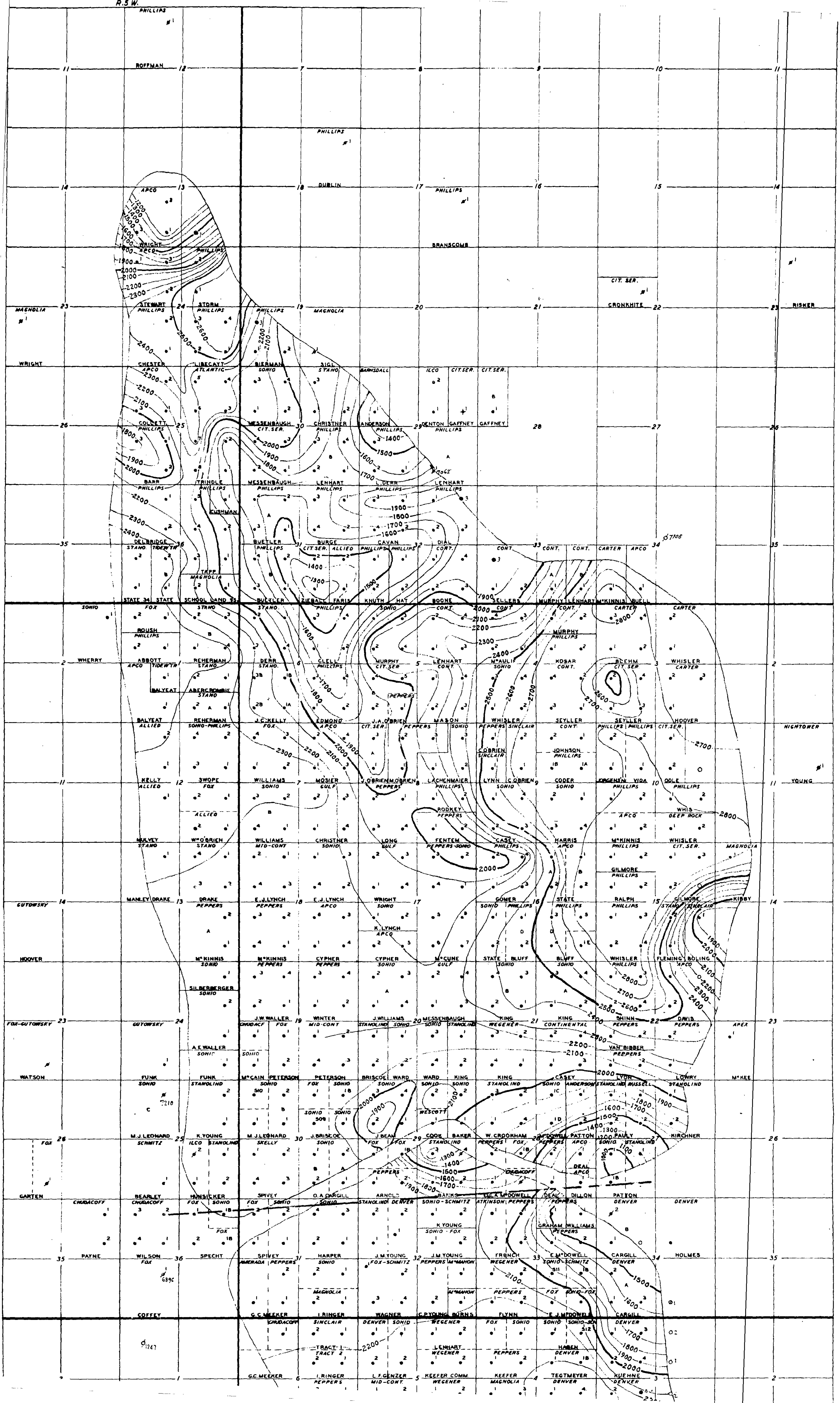


FIG. NO. 10

WEST EDMOND POOL
ISOBARIC MAP

MARCH 15. 1946

PRESSURES AT 5864' SUBSEA
CONTOUR INTERVAL — 100 PSI

 R.5 W.
T. 14 N.
PHILLIPS
ROFFMAN
DUBLIN
BRANSCOMB
WRIGHT
APCO
CIT. SER.
CRONKHITE
RISKER
MAGNOLIA
STEWART
STORM
CHESTER
LIBECAYT
ATLANTIC
BIERMAN
SOHIO
SIGL
STANO
BARNSDALL
ILCO
GAFFNEY
DENTON
COLLETT
MESSENBAUGH
CHRISTNER
ANDERSON
BARR
TRINDLE
LENHART
L.DERR
CUSHMAN
DELBRIDGE
TIDEWTR
BUETLER
BURGE
CAVAN
DIAL
CONT.
CARTER
TAPP
STATE 34
STATE
SCHOOL LAND 33
ZIEBALL
FARIS
KNUTH
HAT
BOONE
SELLERS
MURPHY
M'KINNIS
BUELL
ROUSH
WHERRY
ABBOTT
REHERMAN
DERR
CLELL
KOSAR
BLEHM
WHISLER
BALYEAT
ABERCROMBIE
J.C.KELLY
EDMOND
J.A.O'BRIEN
PEPPERS
MASON
SEYLLER
HOOVER
HIGHTOWER
ALLIED
FOX
SINCLAIR
JOHNSON
KELLY
SWOPE
WILLIAMS
MOSIER
GULF
LACHENMAIER
LYNN
C.O'BRIEN
CODER
JORGENSEN
VIDA
OOLE
YOUNG
RODKEY
DEEP ROCK
MULVEY
W.O'BRIEN
MID-CONT
LONG
FENTEM
CASEY
HARRIS
GILMORE
MANLEY DRAKE
DRAKE
E.J.LYNCH
GOMER
RALPH
KIBBY
GUTOWSKY
K.LYNCH
M'KINNIS
CYPHER
M'CUNE
BLUFF
FLEMING
BOLING
SILBERBERGER
J.W.WALLER
WINTER
J.WILLIAMS
STANOLIND
KING
WEGENER
CONTINENTAL
SHINN
DAVIS
APEX
FOX-GUTOWSKY
CHUDACOFF
A.F.WALLER
VAN BIBBER
WATSON
FUNK
M'CAIN
PETERSON
BRISCOE
WARD
ANDERSON
RUSSELL
LOWRY
M'KEE
WESCOTT
M.J.LEONARD
SCHMITZ
K.YOUNG
SKELLY
J.BRISCOE
J.BEAN
COOK
BAKER
W.CROOKHAM
M'DOWELL
PATTON
PAULY
KIRCHNER
DEAL
CARTEN
BEARLEY
HUNSICKER
SPIVEY
O.A.CARGILL
ARNOLD
BANKS
ATKINSON
DILLON
DENVER
SOHIO-SCHMITZ
GRAHAM
SOHIO-FOX
PAYNE
WILSON
SPECHT
AMERADA
HARPER
J.M.YOUNG
FOX-SCHMITZ
M'MAHON
FRENCH
E.M'DOWELL
CARGILL
HOLMES
COFFEY
G.C.MEEKER
I.RINGER
WAGNER
C.P.YOUNG
BURNS
FLYNN
E.J.M'DOWELL
TRACT 1
TRACT 2
HABEN
KEEFER COMM
KEEFER
TEGTMEYER
KUEHNE
L.F.GENZER
1200
1300
1400
1500
1600
1700
1800
1900
2000
2100
2200
2300
2400
2500
2600
2700
2800
7210
6890
1247
7062
7108

PETROLEUM AND ITS PRODUCTS

GULF OIL CORPORATION

P. O. BOX 661 · TULSA 2, OKLAHOMA

GYPSY
DIVISION

CD 1586

PLAN OF UNITIZATION

OF

WEST EDMOND HUNTON LIME UNIT
(748 Tracts)

I N D E X

I N D E X

****

EXHIBITS

I N D E X

*
*****
*

PLAN OF UNITIZATION

OF

WEST EDMOND HUNTON LIME UNIT

KNOW ALL MEN BY THESE PRESENTS:

The following shall constitute the Plan of Unitization applicable to the West Edmond Hunton Lime Unit created pursuant to authority of House Bill 339 of the 1945 Legislature of the State of Oklahoma and having for its purpose the unitized management, operation and further development of the Hunton Lime common source of supply of Oil and Gas underlying the lands outlined by the hatched line on the map hereto attached and marked "Exhibit A", all to the end that a greater ultimate recovery of Oil and Gas may be had therefrom, waste prevented and the correlative rights of the respective owners protected.

I.

DEFINITIONS

As used in this Plan of Unitization, the following terms and expressions are defined as follows:

(a) "Unit" shall mean the West Edmond Hunton Lime Unit.

(b) "Commission" shall mean the Corporation Commission of the State of Oklahoma.

(c) "Person" shall mean any individual, corporation, partnership, common law or statutory trust, association of any kind, the State of Oklahoma or any subdivision or agency thereof acting in a proprietary capacity, guardian, executor, administrator, fiduciary of any kind or any other entity capable of holding an interest in and to the Unit Area.

(d) The pronoun "it" is used to refer to any person regardless of gender.

(e) "Unit Production" shall mean and include all Oil and Gas produced from the Unit Area from and after the Effective Date hereof regardless of the well or tract within the Unit Area from which the same is produced.

(f) "Lessee" shall mean any owner, in whole or in part, of an Oil and Gas lease or any unleased mineral interest, who alone or in association with another person or persons has the right, except for this Plan of Unitization, to explore, develop and operate a Separately Owned Tract for Oil and Gas and in so doing would be personally chargeable with a proportionate part of the cost and expense of the operation thereof. An owner of an overriding royalty interest, oil payment, carried interest, net profit contract, or other oil and gas rights of a similar nature, who is not personally chargeable with the cost and expense of operations, shall not be regarded as a Lessee.

(g) "Unit Operator" shall mean and refer to the Lessee designated to carry on and conduct the Unitized Operations within the Unit Area as provided in Section X hereof.

(h) "Oil and Gas" shall not only refer to Oil and Gas as such in combination one with the other, but shall have reference to oil, gas, casinghead gas, casinghead gasoline or other hydrocarbons, or any combination or combinations thereof, or any one thereof, which may be found in or produced from the Unit Area.

(i) "Oil and Gas Rights" shall mean and include the right to explore, develop and operate lands within the Unit Area for the production of Oil and Gas, to reduce the same to possession or to share in the production so obtained or the proceeds thereof.

(j) "Effective Date" shall mean the date on which the Unit assumes and takes over the operation of the Unit Area as is provided in Section IX hereof.

(k) "Unit Expense" shall include any and all cost, expense or indebtedness incurred by the Unit or Unit Operator as authorized by this Plan of Unitization or the order of the Commission creating the Unit.

(l) "Unqualified Subscribers" shall mean and refer to those Lessees who sign this Plan of Unitization as Unqualified Subscribers as is provided for in Section XXVII hereof.

(m) "Qualified Subscribers" shall mean and refer to those Lessees who sign this Plan of Unitization as Qualified Subscribers as is provided for in Section XXVII hereof.

II.

NAME OF UNIT

The name of the Unit created hereby shall be West Edmond Hunton Lime Unit.

III.

UNIT AREA

The Unit Area of the Unit shall extend to and include all of the Hunton Lime formation underlying the lands outlined by the hatched line on the map hereto attached, marked "Exhibit A" and made a part hereof, the same being a single common source of supply of Oil and Gas, located in Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma.

IV.

SEPARATELY OWNED TRACTS

Each well spacing or drilling unit as defined and established by Order No. 17082 of the Corporation Commission entered in Cause C.D. No. 894 and located within the Unit Area shall be defined, regarded and treated as a Separately Owned Tract within the purview of this Plan of Unitization. The Separately Owned Tracts as so defined and established are shown on the map hereto attached and marked "Exhibit A" and are for convenient identification numbered thereon and may be referred to by number.

V.

GENERAL POWERS OF UNIT

The Unit is authorized and empowered on behalf and for the account of all the Lessees within the Unit Area, without profit to the Unit, to supervise, manage and conduct the further development and operation of the Unit Area for the production of Oil and Gas, pursuant to the powers conferred and subject to the limitations imposed by the provisions of House Bill 339 of the 1945 Session of the Oklahoma Legislature and by this Plan of Unitization.

VI.

EFFECT OF UNITIZATION

The adoption of this Plan of Unitization and the creation of the Unit as herein provided shall have the effect from and after the Effective Date hereof of unitizing all further development and

operations for the production of Oil and Gas from the Unit Area and of pooling and unitizing the production so obtained, all to the same extent as if the Unit Area had been included in a single lease and all rights thereunder owned by the Lessees in undivided interests. Property rights, leases, contracts and all other rights and obligations in respect of the Oil and Gas Rights in and to the several Separately Owned Tracts within the Unit Area are hereby amended and modified to the extent necessary to make the same conform to the provisions and requirements of this Plan of Unitization, but otherwise to remain in full force and effect.

The relationship between the Lessees within the Unit Area, resulting from the creation of the Unit shall not be that of a trust, partnership or association but shall be in the nature of a tenancy in common.

Nothing herein contained shall be construed to require or result in a transfer to or the vesting in the Unit of title to the Separately Owned Tracts within the Unit Area or to the leases thereon, other than the right to use and operate the same to the extent set out in this Plan of Unitization; nor shall the Unit be regarded as owning any of the Unit Production. The Unit Production and the proceeds from the sale thereof shall be owned by the several persons to whom the same is allocated under this Plan of Unitization. All property, real or personal, acquired, held or possessed for use in the operation of the Unit Area shall be the property of the Lessees as their interests may appear under this Plan of Unitization, subject, however, to the rights and powers herein granted the Unit and the Unit Operator.

The amount of the Unit Production allocated to each Separately Owned Tract and only that amount, regardless of the well or wells in the Unit Area from which it may be produced, and regardless of whether it be more or less than the amount of the production from the well or wells, if any, on any such Separately Owned Tract shall, for all intents, uses and purposes, be regarded and considered as production from such Separately Owned Tract.

Operations carried on, under and in accordance with this Plan of Unitization shall be regarded and considered as a fulfillment of and compliance with all the provisions, covenants and conditions, express or implied, of the several oil and gas mining leases upon lands included within the Unit Area, or other contracts pertaining to the development thereof, to the same extent that the development and operation of and the production of Oil and Gas from each of the several Separately Owned Tracts within the Unit Area would have constituted a fulfillment of and compliance with such leases and contracts. Wells drilled or operated on any part of the Unit Area, no matter where located, shall for all purposes be regarded as wells drilled on each Separately Owned Tract within the Unit Area.

VII.

ALLOCATION OF UNIT PRODUCTION

All Unit Production, except so much thereof as is used in the development and operation of the Unit Area, including repressuring, pressure maintenance and other operations carried on in accordance with this Plan of Unitization, or is unavoidably lost, shall be apportioned among and allocated to the several Separately Owned Tracts within the Unit Area in accordance with the percentage and division of interest set forth and shown in "Exhibit B" hereto attached and made a part hereof.

Except as may be otherwise authorized or provided in this Plan of Unitization, the Unit Production allocated to each Separately Owned Tract shall be distributed among or the proceeds thereof paid to the several persons entitled to share in the production from such Separately Owned Tract in the same manner, in the same proportions, and upon the same conditions that they would have participated and shared in the production from such Separately Owned Tract, or the proceeds thereof, had not the Unit been organized, and with the same legal force and effect.

Except as may be otherwise authorized or provided in this Plan of Unitization, and provided adequate provisions are made for the receipt thereof, the share of the Unit Production allocated to each Separately Owned Tract shall be delivered in kind to the persons entitled thereto by virtue of ownership of Oil and Gas Rights therein or by purchase from such owners, subject, however, to the right of the Unit Operator to withhold and sell the same in payment of Unit Expense pursuant to this Plan of Unitization, and subject further to the right of the Unit Operator to take and use a portion thereof as hereinafter provided. Persons so entitled to take and receive in kind any portion of the Unit Production shall have the right to construct, maintain and operate within the Unit Area all necessary facilities for that purpose, provided the same are so constructed, maintained and operated as not to interfere with the operations carried on pursuant hereto.

To the extent that any person entitled to take and receive in kind any portion of the Unit Production shall fail to take and receive the same currently as and when produced, the Unit Operator, as agent and for the account and at the expense of such person, is authorized to market and sell or itself purchase, at not less than the market price prevailing at the time of such sale or purchase, the portion of Unit Production not so taken in kind by the person entitled to take and receive the same. Proceeds of the Unit Production so sold, or purchased by the Unit Operator, shall be paid by the Unit Operator to the person or persons for whose account the same is so marketed.

The person or persons receiving in kind the Unit Production allocated to any Separately Owned Tract or receiving the proceeds of such Unit Production, if the same is sold or purchased by the Unit Operator, shall be responsible for the payment of, and shall indemnify the Unit, the other Lessees and the Unit Operator against any liability for, any and all royalties, overriding royalties, production payments, gross production taxes and any and all other payments and taxes chargeable against or payable out of the Unit Production which is received in kind by, or the proceeds of which are paid to, such person or persons, and neither the Unit nor the Unit Operator shall have any responsibility or liability for payment of such royalties, overriding royalties, production payments, gross production taxes or the other payments or taxes.

If at any time the title or right of any person claiming the right to receive in kind all or any portion of the Unit Production allocated to a Separately Owned Tract is in dispute or is disapproved by the Unit Operator, the Unit Operator in its discretion may either (a) withhold and market, or itself purchase the portion of the Unit Production, title to which is in dispute or is disapproved, and impound the proceeds thereof until such time as the title or right thereto is established, by final judgment of a court of competent jurisdiction or otherwise to the satisfaction of the Unit Operator, whereupon, the proceeds so impounded shall be paid, without interest, to the person or persons rightfully entitled thereto, or (b) may require that the person or persons to whom such Unit Production is delivered, or to whom the proceeds thereof are paid, furnish security for the proper accounting therefor to the rightful owner or owners in the event the title or right of such person or persons shall fail, in whole or in part.

Subject to the limitations and conditions set out in "Exhibit D" hereto attached with respect to residue gas, the Unit Operator shall have the right to take and utilize so much of the Unit Production as may be necessary or desirable in the development and operation of the Unit Area, including but without being limited to, the use of gas for repressuring, pressure maintenance or other operations carried on in accordance with this Plan of Unitization. No royalties, overriding royalties, production payments or other payments (other than as may be provided in "Exhibit D" hereto attached) shall be payable upon or with respect to that portion of the Unit Production so taken and utilized by the Unit Operator or which may be lost in handling or otherwise without want of due diligence on the part of the Unit Operator.

VIII.

OPERATING COMMITTEE

(1) An Operating Committee is hereby created to consist of one representative to be designated by each Lessee within the Unit Area, pro-

vided that an individual Lessee may himself be a member of the Committee. Such designation shall be in writing and with respect to the representative to participate at the organization meeting of the Committee shall be presented at such meeting, or if thereafter made, shall be filed with the Secretary of the Operating Committee. Any such Lessee may in like manner (a) designate an alternate representative on the Operating Committee, who, in the absence of the Lessee or its regular representative, shall have the same full right and power to represent the interest of such Lessee, or (b) may from time to time discharge any such regular or alternate representative and designate a new representative to act for such Lessee on the Operating Committee.

(2) The Operating Committee shall have the general overall management and control of the Unit and the conduct of its business and affairs and the operations carried on by it, and is authorized and empowered, subject to the terms and provisions hereof, to do all things necessary, proper and convenient for carrying out the terms and spirit of this Plan of Unitization and to that end, not excluding or limiting any other power or powers that may be necessary or proper for that purpose, shall have the following specific powers and duties:

(a) To adopt rules and regulations for the proper functioning of the Operating Committee, including such matters as the time and places of holding meetings, the calling thereof or the manner of taking the vote on any question all in a manner not inconsistent with the express requirements of this Plan of Unitization.

(b) To remove any Unit Operator.

(c) To select a successor to any Unit Operator.

(d) To determine the extent of drilling operations and development to be carried on by the Unit Operator, including the approval or disapproval of the contemplated drilling, deepening, plugging back, reconditioning, abandonment or the use to be made of any well or wells.

(e) To pass upon and approve or disapprove all costs and estimates of costs and any proposed expenditure by the Unit Operator; provided, that the Committee may permit without prior approval by it the incurring of normal operating expense and any proposed expenditure by the Unit Operator of not more than Five Thousand ($5,000.00) Dollars; and provided further that the approval by the Operating Committee of the drilling of any well or wells or carrying out any specific project of development or operation shall mean and include the approval of all necessary expenditures in drill-

ing, completing and equipping such well or wells or carrying out such project.

(f) To determine from time to time the rate at which and the wells from which the Unit Production shall be produced in conformity with good engineering practices and any applicable conservation laws or regulations.

(g) To pass upon, approve or disapprove the purchase, sale or other disposal of materials and equipment by the Unit Operator otherwise than in the normal course of approved operations.

(h) To approve and authorize the purchase, construction, location, abandonment, sale or other disposal of any compressor plant, gasoline plant, tank batteries, salt water disposal system or other facilities serving the Unit Area.

(i) To determine the manner in which, the location at which and the extent to which gas can best and should be injected into the reservoir to accomplish the Plan of Operation set forth in Section XV hereof.

(j) To provide for the proper auditing of the accounts of the Unit Operator with respect to the operation and development of the Unit Area.

(k) To appoint such subcommittees as it may deem proper and requisite, as for example, an advisory committee, legal committee, engineering committee, plant committee, geological committee and tax committee to act under the authority and subject to the control of the Operating Committee consonant with the terms of this Plan of Unitization.

(l) To approve or disapprove any proposed plan of development or operation or amendment thereof required to be submitted to any regulatory body having jurisdiction of the subject matter thereof.

(m) To approve or disapprove any proposed expenditures for expert technical advice, including any extra services rendered by the Unit Operator's technical staff, not contemplated by the provisions of the accounting procedure hereto attached, marked "Exhibit C" and not covered by the overhead charges therein authorized, which overhead charges in said accounting procedure are intended to cover only normal lease development and lease operations.

(n) To direct and consult with the Unit Operator in all matters pertaining to the duties and functions of the Unit Operator.

(o) To provide for the finances in the manner herein provided for the carrying on of the Unit Operations hereunder.

(3) Each Lessee within the Unit Area who is represented on the Operating Committee shall have a vote equal to the proportionate interest of said Lessee in the Unit determined as follows:

(a) In respect of each Separately Owned Tract, the Lessee or Lessees thereof shall have a vote equal to the percentage indicated opposite such Separately Owned Tract in "Exhibit B" hereto attached.

(b) Should there be more than one Lessee of a Separately Owned Tract, the vote in respect thereof shall be divided between such Lessees in proportion as such Lessees share in the Unit Expense chargeable to such tract.

(c) The vote of a Lessee having an interest in more than one Separately Owned Tract shall be the sum total of the votes of such Lessee in respect of all such tracts.

(4) Except as hereinafter provided, all action of the Operating Committee shall be by vote on behalf of Lessees having a majority of the voting interest in the Unit.

(5) The affirmative vote on behalf of Lessees having 66-2/3% of the total voting interest in the Unit shall be necessary to authorize the following action:

(a) The removal of a Unit Operator.

(b) The expenditure of more than $100,000.00 for any one purpose, project or activity, exclusive of normal operating expenses.

(c) The abandonment of operations and dissolution of the Unit as provided in Section XXV hereof.

(6) Notwithstanding the percentage of voting interest which may be voted in favor thereof, the Unit shall not take any of the following actions if the vote on behalf of Lessees having 15% or more of the voting interest in the Unit is voted against the taking thereof:

(a) The expenditure of more than $500,000.00 for any one purpose, project or activity, exclusive of normal operating expenses.

(b) The extension of the gas injection project described in "Exhibit E" hereto attached.

(c) The construction, purchase or other acquisition of a plant or plants for the processing of gas (including casinghead gas) for the extraction of liquefied hydrocarbons therefrom or for the conversion of gas into liquefied hydrocarbons.

The Operating Committee shall not vote on any of the actions the taking of which may be prevented by a vote on behalf of Lessees having 15% or more of the total voting interest in the Unit Area unless written notice of the time and place of the meeting and the actions to be so considered is first given to all Lessees within the Unit Area at least ten (10) days in advance of the date of the meeting.

(7) Due notice of any meeting of the Operating Committee shall be deemed to have been given to a Lessee within the Unit Area if and when such notice is deposited in the United States mails addressed to such Lessee at the address shown on the records of the Operating Committee at the time such notice is mailed as being the address of such Lessee, or, if the address of a Lessee is not shown on the records of the Operating Committee, to the last known address of such Lessee.

(8) If at any time the voting interest of a Lessee should be such as to control the action taken by the Committee, the vote of such Lessee shall not serve to carry or defeat action taken by the Committee unless such vote is supported by the vote of a majority in interest of the remaining Lessees.

(9) Minutes shall be made of all meetings of the Operating Committee and kept as a part of the permanent records of the Unit. Such minutes need not be a verbatim record of all the proceedings, but shall show and reflect (a) the names of all members present at the meeting; (b) all motions and resolutions offered or acted upon, together with the result of such action; and (c) such other formal action as may be taken by the Committee. A copy of the minutes of each such meeting shall be mailed to each member of the Committee within a reasonable time after the meeting.

(10) Notices or other communications addressed and sent to the Unit or to the Operating Committee by United States mail or telegraph in care of the Unit Operator shall be deemed to have been properly given to or served upon the Operating Committee. The Unit Operator shall promptly deliver all such notices or communications to the Chairman or Secretary of the Operating Committee.

IX.

ORGANIZATION OF UNIT AND EFFECTIVE DATE OF PLAN

Subject to call by Lessees of record owning 50% or more in interest in and to the Unit as shown in "Exhibit B" hereto attached, the representatives designated by the several Lessees to serve on the Operating Committee shall meet at some convenient place to perfect the organization of the Operating Committee. Such meeting may be held at any time after twenty (20) days from the entry of the order of the Commission approving this Plan of Unitization. Notice of the time and place of said meeting shall be mailed at least ten (10) days prior thereto to all Lessees within the Unit Area whose names and addresses are known to the Lessees calling said meeting, as well as those Lessees who shall have within ten (10) days from the entry of said order notified the Secretary of the Commission in writing of their desire to be so notified of the meeting. Any Lessee within the Unit Area desiring notice of such meeting may file a statement of such desire with the Secretary of the Commission, giving its name and the address to which it desires the notice to be sent.

The Operating Committee shall organize by selecting a Chairman, a Vice-Chairman, a Secretary and such other officers as to the Committee may seem proper. The Chairman and Vice-Chairman shall be selected from among the members of the Operating Committee. The Secretary and other officers may or may not be members of the Committee. The Chairman shall preside at all meetings of the Operating Committee when he is present and shall be the Chief Executive Officer of the Unit. The Vice-Chairman shall perform all duties of the Chairman in the absence of the Chairman. The Secretary shall keep and maintain all the records of the Committee and shall also be Secretary of the Unit. Such officers shall serve at the will of the Operating Committee and perform such other duties as are delegated to them by the Operating Committee.

Upon completion of its organization, the Operating Committee shall proceed to make plans and preparations and take such steps as are necessary for the taking over of the unitized operations and further development of the Unit Area by the Unit, and shall in advance thereof fix the time when the Unit will take over such operation and development, and give the Lessees within the Unit Area reasonable notice thereof. The time so fixed shall not be less than sixty-one (61) days after the entry of the order of the Commission approving this Plan of Unitization nor more than three months after the time when said order shall have become final.

The time when the Unit takes over the operation and further development of the Unit Area shall be the Effective Date of this Plan of Unitization.

In the event the Unit shall fail to assume and take over the operation of the Unit Area on or before three (3) months after the time when the order of the Commission approving this Plan of Unitization shall have become final, then and in that event the Unit shall, without further action on the part of the Operating Committee or the Commission, be dissolved and all rights and obligations under this Plan of Unitization shall be at an end, except that any and all cost and expense incurred by the Unit incident to its organization or preparatory to the taking over of the operation of the Unit Area shall be borne and paid for by the Lessees whose representatives on the Operating Committee by their vote authorized the incurring of such expense, in proportion as the interest of each such Lessee in and to the Unit as set out in "Exhibit B" bears to the total interest of all such Lessees in and to the Unit as shown on said "Exhibit B". In the event the Unit assumes and takes over the operation of the Unit Area within the time so named, this Plan of Unitization shall thereafter remain in force and effect until such time as the Unit is dissolved and abandoned as provided in Section XXV hereof.

The order of the Commission approving this Plan of Unitization shall be regarded as having become final at the end of the time allowed by law for any appeal therefrom, if no appeal is taken, or, if an appeal is taken, then upon the final determination of any such appeal.

The Unit on or before five (5) days after the Effective Date hereof shall submit to the County Clerks of Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, for filing, a written declaration signed by the Chairman and Secretary of the Operating Committee, setting forth

(a) The hour, day and year on which the Unit took over the operation of the Unit Area;

(b) A description or plat of the lands included within the Unit Area; and

(c) The cause number and date of the Commission order approving this Plan of Unitization, with an appropriate reference to such order and the files of the Commission for further information concerning this Plan of Unitization.

X.

UNIT OPERATOR

Subject to the further provisions of this Plan of Unitization, operations in connection with the development and the operation of the Unit Area for Oil and Gas shall be carried on and conducted by a Unit Operator in accordance with the instructions of the Operating Committee.

The Unit Operator shall:

(a) Conduct all such operations in a good and workmanlike manner.

(b) Keep full, true and correct books, accounts and records of its operations hereunder which shall be made available for inspection at all reasonable times by any of the Lessees within the Unit Area.

(c) Mail to each Lessee on or before the 10th day of each calendar month a full, true and correct statement of all oil produced from the Unit Area during the next preceding calendar month, the amount delivered to each Lessee or other persons entitled thereto during such preceding month and the amount on hand in Unit tankage as of 7 o'clock A. M. on the 1st day of the month in which such statement is made.

(d) Mail to each Lessee on or before the last day of each calendar month a full, true and correct statement of all gas produced from the Unit Area and processed, sold or otherwise utilized during the next preceding calendar month.

(e) Comply, to the extent of its operations within the Unit Area, with the Workmen's Compensation Laws of the State of Oklahoma and with all other valid and applicable federal and state laws and regulations.

(f) Carry such insurance as may be required by the Operating Committee.

(g) Render and pay all ad valorem taxes payable on property owned jointly by the Lessees and such other taxes as may be specified by the Operating Committee.

(h) Keep the land and leases within the Unit Area free from liens and encumbrances occasioned by the operations of the Unit Operator save only the lien granted the Unit and the Unit Operator under this Plan of Unitization.

The Operating Committee may remove a Unit Operator at any time. A Unit Operator may resign only after giving the Operating Committee six month's written notice of its intention to resign, or sooner if a successor is selected and has assumed the duties of Unit Operator prior to the end of such time. Upon the removal or resignation of a Unit Operator the Operating Committee shall designate a successor Unit Operator from among the Lessees within the Unit Area.

Sohio Petroleum Company is hereby designated as Unit Operator.

XI.

UNIT EXPENSE

The Unit Operator in the first instance shall pay and discharge all cost and expense incurred in the development and operation of the Unit Area and in the conduct of the activities and affairs of the Unit. All such cost and expense incurred in the development and operation of the Unit Area shall be in accordance with the Accounting Procedure hereto attached, marked "Exhibit C" and made a part hereof. All other costs and expense shall be only such sums as are approved by the Operating Committee.

All such Unit Expense as it accrues shall be charged to the several Separately Owned Tracts in the Unit Area in proportion to the percentage of interest of such tracts in and to the Unit as set forth and shown in "Exhibit B" hereto attached.

Except as may be otherwise hereinafter specifically provided, a Lessee or Lessees obligated or responsible for the cost and expenses of operating a Separately Owned Tract for Oil and Gas in the absence of unitization shall, in the same proportion and to the same extent, be chargeable with and responsible for the payment of the Unit Expense charged against such Separately Owned Tract.

On or before the last day of each calendar month, the Unit Operator shall mail to each Lessee within the Unit Area a statement of all charges and credits for the preceding calendar month (which statement shall itemize all charges and credits to investment account and shall properly classify all other charges and credits) and of the amount due from or to each Lessee in respect of its interest in the Unit Area. If the Unit Operator so elects, such statement of account may also include a charge by way of an advance of the proportionate part of the estimated Unit Expense for the ensuing month chargeable to the Lessee against whom such statement is rendered, using as a basis therefor the budget hereinafter provided for. Except as may be otherwise provided herein, each Lessee chargeable with the payment thereof shall, within fifteen (15) days from the mailing of such statement, pay to the Unit Operator the amount thereof. If not paid when due, the unpaid balance shall bear interest at the rate of 6% per annum until paid. Payment of any such statement shall not prejudice the right of any Lessee to protect or question the correctness thereof; provided, the Unit Operator shall not be required to adjust any item of charge or credit unless a claim therefor has been presented in writing within six (6) months after the approval by the Operating Committee of the annual audit for the period in which the charge or credit was made.

Before or as soon as practical after the Effective Date hereof, the Operating Committee, acting in conjunction with the Unit Operator,

shall prepare a budget of estimated Unit Expense for the remainder of the calendar year and on or before the first day of each December thereafter shall prepare a budget of estimated Unit Expense for the ensuing calendar year, which budgets shall set forth the estimated Unit Expense by quarterly periods. Unless otherwise specified in the budget, it shall be presumed for the purpose of advance billings as aforesaid, that the estimated Unit Expense for each month of a quarterly period shall be one-third (1/3) of the estimate for the quarterly period. Budgets so prepared shall be estimates only and shall be reviewed by the Operating Committee and Unit Operator at least once each quarter and adjusted and corrected if it shall appear that an adjustment or correction is proper. A copy of each such budget and adjusted budget shall be promptly furnished each Lessee within the Unit Area.

Any Lessee, other than an Unqualified Subscriber, who does not elect to pay its proportionate share of the Unit Expense, shall not be personally obligated for the payment thereof, but the amount thereof or such portion thereof as such Lessee shall elect not to pay, together with interest thereon at the rate of 6% per annum, shall be carried and shall be payable, so far as such Lessee is concerned, as follows:

(a) So much of said charge as is made up of current operating costs, as distinguished from items of investment, together with interest thereon, shall be payable out of proceeds from all Unit Production to the credit of the interest or interests chargeable therewith.

(b) So much of said charge as is made up of items of investment, together with interest thereon, shall be payable out of 50% of the net proceeds of the Unit Production to the credit of the interest or interests chargeable therewith after deducting the charge for Operating costs under subparagraph (a) last above.

(c) All credits to any such Lessee on account of the sale or other disposal of surplus material or equipment or otherwise shall be applied against any such unpaid Unit Expense charged against such Lessee.

Amounts so carried as aforesaid, shall be billed to and paid by the Lessees who sign this Plan of Unitization as Unqualified Subscribers, in the proportion that the interest of each in the Unit bears to the total interests in the Unit of all of the Unqualified Subscribers to this Plan of Unitization, Lessees so paying the same shall be reimbursed therefor, together with interest thereon, as and when the amounts so carried and the interest thereon are collected from the Lessees or interests primarily chargeable therewith.

The Unit shall have a first and prior lien upon the leasehold interest (exclusive of a 1/8 royalty interest) in and to each Separately Owned Tract, the interest of the owners thereof in and to the Unit Production and all equipment in possession of the Unit, to secure the payment of the Unit Expense and other items of cost charged to and against such Separately Owned Tract, provided such lien may be enforced as against overriding royalty, oil and gas payments, royalty interests in excess of a 1/8 of the production, or other interests which otherwise are not chargeable with such costs, only in the event the owner of the interest or interests primarily responsible fails to pay such Unit Expense when due, and the production to the credit thereof is insufficient for that purpose. In the event the owner of any royalty interest, overriding royalty, oil and gas payment or other interest which under the Plan of Unitization is not primarily responsible therefor pays any part of such Unit Expense for the purpose of protecting such interest or the amount of such Unit Expense in whole or in part is deducted from the Unit Production to the credit of such interest, the owner thereof shall, to the extent of such payment or deduction, be subrogated to all of the rights of the Unit and of the Unit Operator with respect to the interest or interests primarily chargeable with such Unit Expense. A one-eighth (1/8) part of the Unit Production allocated to each Separately Owned Tract shall in all events be regarded as royalty to be distributed to and among the proceeds thereof paid to the royalty owners free and clear of all Unit Expense and free of any lien therefor. The lien hereinabove provided for shall be for the use, benefit and protection of Unit Operator or other Lessees or persons entitled to receive or share in the monies, the payment of which is secured thereby, and in the event of failure of the Unit to enforce such lien, the Unit Operator or other person entitled to the benefit thereof, shall be subrogated to the lien rights of the Unit, including the right of foreclosure.

In the event of a failure of any Lessee to pay its share of the Unit Expense when due, and also in the case of a Lessee who elects to be carried as aforesaid, the Unit Operator shall be entitled to take and market, or itself purchase the Unit Production to the credit of such Lessee or to the credit of the interest or interests chargeable with or subject to the lien of such Unit Expense, or to otherwise collect and receive the proceeds from the sale thereof, and shall apply all such sums so collected against the delinquent or unpaid Unit Expense due from such Lessee or interest, the balance of such proceeds, if any, to be paid to the Lessee or other person entitled thereto. The Unit Operator may likewise take any other credit due any such Lessee or interest and apply the same against sums due from such Lessee or interest for Unit Expense.

Any and all income and credits received by Unit Operator on account of Unit Operations hereunder, from whatever source received, shall currently be accounted for and credited to the Lessees or interests entitled to credit therefor.

XII.

INITIAL ADJUSTMENT OF INVESTMENT

Upon the Effective Date hereof the Unit shall assume control and management of the further development and operation of the Unit Area, and, except as may be otherwise herein provided, each Lessee within the Unit Area shall deliver possession to the Unit Operator of (a) all wells within the Unit Area, (b) all lease and other operating equipment used in the operation of such wells, and (c) all production and well records and other pertinent data pertaining thereto.

1. Wells (Exclusive of Casing and Equipment)

Each separately Owned Tract on which is located, on the Effective Date, a producing well in the Hunton Lime Formation shall be given credit for a completed well.

Any well being drilled, repaired, deepened or plugged back to the Hunton Lime Formation within the Unit Area on the Effective Date may be completed by the Lessee or Lessees of the Separately Owned Tract on which such well is located and upon the completion thereof as a producing well in the Hunton Lime Formation the Separately Owned Tract shall be given credit for a completed well.

For the purpose of adjustment of well investment, as hereinafter provided, the cost of drilling and completing (exclusive of casing, tubing and other equipment) a well within the Unit Area shall be deemed to be Fifty Thousand Dollars ($50,000), and the total cost of drilling and completing (exclusive of casing, tubing and other equipment) all wells within the Unit Area shall be the sum of Fifty Thousand Dollars ($50,000) multiplied by the number of completed wells credited to Separately Owned Tracts pursuant to the next two preceding paragraphs hereof.

Each Separately Owned Tract which is not credited with a completed well as aforesaid, shall be charged with a percentage of said total cost of drilling and completing (exclusive of casing, tubing and equipment) all wells within the Unit Area, equal to the percentage of interest of such Separately Owned Tract in the Unit as shown in "Exhibit B" hereto attached. The amount of such charge shall be paid, draw interest and in other respects be treated and regarded as any other item of Unit Expense charged against such a Separately Owned Tract, except, that unless the Lessee or Lessees thereof shall elect to voluntarily pay the same, the amount of such charge, together with the interest thereon, shall, both as to Qualified and Unqualified Subscribers, be payable only out of the proceeds of Unit Production to the credit of such Tract. Amounts so collected on account of any such charge so made against Separately Owned Tracts not credited with completed wells, as aforesaid, shall be credited in equal amounts to the Separately Owned

Tracts given credit for completed wells, as aforesaid, and paid to the Lessees thereof in proportion to the ownership of such Lessees in and to such wells.

Except as hereinabove provided, no remuneration shall be paid by or to the Lessee or Lessees of any Separately Owned Tract on account of wells (exclusive of casing, tubing and other equipment) drilled or being drilled within the Unit Area on the Effective Date.

2. Lease and Operating Equipment

As of the Effective Date hereof all lease and other operating equipment (exclusive of warehouses, lease houses, camps and office buildings) used in the operations of wells taken over by the Unit, including by way of example, but not thereby excluding, other equipment of a like or different kind, casing and tubing in the wells, derricks, tank batteries, separators, rods, pumps, flow lines, water lines, gas lines, etc., shall be delivered to and taken over by the Unit. All equipment not so taken over shall remain the separate property of the several owners thereof. The acquisition of existing warehouses, lease houses, camps, or office buildings considered desirable to the operation and development of the Unit Area shall be by negotiation and separate contract of purchase with the owner or owners of such warehouses, lease houses, camps and office buildings.

An accounting for the lease and operating equipment so transferred to and taken over by the Unit shall be had as between the owners thereof and all Lessees within the Unit Area, on the basis of the value thereof, determined as follows:

(a) Tubular goods (2" and over), fittings, machinery and other equipment in sound and serviceable condition shall be valued at 75% of the price of new materials of like kind.

(b) Tanks, derricks, buildings and other equipment involving erection costs shall be valued at not more than 75% of knocked down new prices for the materials comprised therein.

(c) Other materials, machinery and equipment in serviceable condition but requiring repair or reconditioning shall be valued at 50% of new prices for like materials.

(d) For the purposes of said valuation, the prices of new materials shall be determined on the basis of prices prevailing on the Effective Date at the nearest reliable supply stores or f.o.b. railway receiving point, and proper charges and credits entered against the several Separately Owned Tracts, all to the end that on and after the Effective Date hereof each of the several Lessees within the Unit Area instead of separately owning the equipment delivered to the Unit by such Lessees, will

have exchanged the same for an undivided interest in and to all the equipment so taken over and acquired by the Unit and will have paid or have been paid, as the case may be, for any difference in value. The amount of any net charge made against a Separately Owned Tract under this paragraph shall be treated and regarded in all respects the same as any other charge for Unit Expense chargeable to such tract.

3. Wells and Equipment of Non-Subscribers

Notwithstanding the foregoing provisions, the Unit shall not take over the well or wells or lease and operating equipment of any Lessee who has not subscribed to this Plan of Unitization without the consent of such Lessee, except to the extent permitted by law. However, from and after the Effective Date, any such well or wells not taken over by the Unit shall not be operated by the owner or owners thereof for the production of Oil and Gas from the Unit Area, and the Separately Owned Tract on which any such well is located shall not be given credit for a completed well pursuant to subdivision 1 hereof unless and until such well is transferred to the Unit as a producing well in the Hunton Lime formation.

4. Salt Water Disposal System

The Salt Water Disposal System of the West Edmond Salt Water Disposal Association shall be taken over by the Unit at a valuation equal to the actual cost thereof to said Association, and the several Separately Owned Tracts shall be charged therewith on the basis of their respective percentage interests in the Unit as shown on said Exhibit "B" and the Lessees who are members of said Association shall be credited therewith in proportion to their respective interests in said System.

5. Separately Owned Tracts Not Credited With Wells

The entire net proceeds of Unit Production accruing to the interest or interests chargeable with Unit Expense charged against a Separately Owned Tract not credited with a completed well, as above provided, and remaining after payment of current operating expenses charged against such tract, shall be applied in payment of the charges herein provided to be made against such tract with respect to well investment and lease and operating equipment and the salt water disposal system.

XIII.

OIL IN LEASE TANKAGE AS OF EFFECTIVE DATE

A proper and timely gauge shall be made of all lease or other tanks taken over by the Unit to ascertain the amount of oil in such tanks

at the time the Unit assumes and takes over the development and operation of the Unit Area. So much of such oil as is legally produced shall remain and be the property of the parties entitled thereto had not the Unit been created, and upon request, shall be delivered in kind to persons entitled thereto, or in the absence of such request, shall be sold by the Unit Operator for the credit of such persons at not less than the prevailing market price and the proceeds thereof paid to such persons.

XIV.

PROCESSING AND COMPRESSION OF GAS

The gas produced from the Unit Area, except so much thereof as is used in the development and operation of the Unit Area without being processed or is unavoidably lost, shall be processed and the products thereof, including both liquid products and residue gas, distributed and handled in the manner set out in Exhibit "D" hereto attached and made a part hereof.

XV.

PLAN OF OPERATION

From and after the effective date hereof the Unit Area shall be developed and operated as a unit as follows:

(a) As soon as reasonably practicable after the Effective Date hereof and before any more extensive pressure maintenance operations are carried on, the Unit shall make the necessary preparations therefor and with diligence and in accordance with the requirements of Exhibit "E" hereof establish and engage in the pilot gas injection projects therein described to determine the extent to which, the manner in which, the conditions under which and the location or locations at which gas can best be injected into the Unit Area for the efficient recovery within economic limits of the greatest quantities of oil therefrom.

(b) Pending a determination of the results of the pilot gas injection projects referred to in Paragraph (a) above and until a pressure maintenance program is inaugurated, wells making water shall, in accordance with good engineering practice be so produced as to minimize water encroachment into the Unit Area. Thereafter, the production of Oil and Gas from the different parts of the Unit Area shall be regulated in such manner as to retard, control or effectively utilize such water encroachment, in such manner and to such extent as may be found reasonably possible and economically advisable from time to time.

(c) To the extent and in the manner determined by the Operating Committee to be economically profitable on the basis of the information developed by the aforesaid pilot gas injection projects, and subject to the provisions of subsection 6 of Section VIII of this Plan of Unitization and Exhibit "E" hereto attached, pressure maintenance or repressuring operations through the return of gas to the reservoir may, in accordance with good engineering and production practices, be engaged in by the Unit.

(d) The oil produced from the Unit Area shall be produced from those wells in the Unit Area from which the same can be obtained with the smallest loss or dissipation of reservoir energy reasonably possible under practical operating conditions as they may exist from time to time.

(e) Gas wells and wells which produce oil with gas-oil ratios found to be excessive in relation to the gas-oil ratios of other wells producing oil from the Unit Area shall be shut in or the production therefrom restricted in such manner as to make the most effective utilization of the gas energy of the reservoir reasonably possible under practical operating conditions as they may exist from time to time.

(f) Gas (other than gas produced in connection with the production of oil) shall be produced from the Unit Area only at such time or times and in such manner as in the judgment of the Operating Committee such gas may be produced without materially decreasing the quantity of oil economically recoverable from the Unit Area.

(g) Such other unitized method or methods of operation as may from time to time be determined by the Operating Committee to be feasible, necessary or desirable to efficiently and substantially increase the ultimate recovery of Oil and Gas from the Unit Area, provided the estimated additional cost thereof does not exceed the value of the additional Oil and Gas to be so recovered.

Except as otherwise provided in paragraph (a) above or in Exhibit "E" with respect to the pilot gas injection projects, nothing contained herein shall prevent the Unit from abandoning or changing in whole or in part any particular method or methods of operation, if and in the event, at such time, and to the extent that any such method of operation as applied to the Unit Area is, in the best judgment of the Operating Committee, no longer in accord with good engineering or production practices.

XVI.

RIGHT TO INFORMATION REGARDING UNIT OPERATIONS

Each and all Lessees within the Unit Area shall have access to the entire Unit Area at all reasonable times to inspect and observe operations of every kind and character on the property, and shall have access at all reasonable times to any and all information pertaining to wells drilled, production secured, marketing of Unit Production and to the books, records and vouchers relating to the operation of the Unit Area. Unit Operator shall, upon request, furnish to any such Lessee tank tables, daily gauge and run tickets and reports of stock on hand at the first of each month and any other pertinent information pertaining to the Unit Area or development and operation thereof. All of the rights herein granted shall apply with equal force to the construction and operation by the Unit of any repressuring or pressure maintenance plant or other facilities in connection therewith.

XVII.

LIABILITY

No member of the Operating Committee or any other committee shall be personally liable or individually responsible for any act, error, default or omission as a member of such committee or committees.

Neither the Unit nor the Unit Operator shall be liable or responsible under any of the provisions of this Plan of Unitization for any acts or omissions resulting from causes beyond the control of the Unit or such Unit Operator, or other causes which by the exercise of due diligence could not have been prevented or overcome.

Unit Operator shall not be liable or responsible for any damage to the Unit Area or the property, equipment or facilities used in the development and operation thereof, or for the loss of any production arising out of its operation of the Unit Area, except only for bad faith or gross negligence in connection therewith.

If and in the event, notwithstanding the foregoing provisions of this section, the Unit, the Unit Operator or any member of the Operating Committee is held liable by a court of competent jurisdiction for any matter or thing for which it is herein provided the Unit or person so named shall not be liable, the amount of such liability as finally determined shall thereupon be treated, regarded and paid as an item of Unit Expense.

XVIII.

CHANGE OF INTEREST

All transfers, assignments and conveyances of any interest in, or with respect to, any of the Separately Owned Tracts within the Unit Area shall be subject to the terms, provisions and conditions of this Plan of Unitization, but shall not be binding on the Unit or the Unit Operator unless and until a photostatic or certified copy of the recorded instrument evidencing such change of ownership has been delivered to the Unit Operator. Each such transfer, assignment or conveyance, whether so stating or not, shall operate to impose upon the person or persons acquiring such interest the obligation of the assignor or grantor with respect to the interest so transferred and shall likewise operate to give and grant to the person or persons acquiring such interest all benefit attributable hereunder to such interest.

XIX.

AUDITS

The Operating Committee shall cause an audit to be made of the books, accounts and records of the Unit Operator in respect to matters pertaining to the Unit and the operation of the Unit Area at least once each year and shall furnish a copy thereof to each of the Lessees within the Unit Area. Each such audit shall cover the period intervening since the last audit. The audit may be made by an auditor or auditing committee from the accounting staff of one or more of the Lessees within the Unit Area, or by an independent auditor or auditors employed by the Unit to make such audit.

XX.

RIGHTS OF WAY

The Unit shall have a servitude and right of way on, over and across all of the lands in the Unit Area for the purpose of laying, constructing, building, using and maintaining, operating, changing, repairing and removing pipelines, tanks, telegraph and telephone lines, water lines, and other facilities for the development and operation of the Unit Area for Oil and Gas and for the gathering, handling and disposal of the Unit Production; provided, the Unit shall pay all damages to growing crops, timber, fences, improvements and structures on the land resulting from the exercise of the rights and privileges granted to it in this section.

XXI.

CLAIMS, SUITS AND JUDGMENTS AGAINST INDIVIDUAL OWNERS OF UNIT AREA

In the event claim is made against any of the Lessees of the Unit Area or any of such Lessees are sued on account of any matter or

thing growing out of the development and operation of the Unit Area by the Unit and over which such Lessee or Lessees have no control because of the rights, powers and duties herein granted the Unit, said Lessee or Lessees shall immediately notify the Operating Committee in writing of such claim or suit. The Operating Committee shall assume and take over the further handling of such claim or suit and in pursuance thereof may select an attorney or attorneys for that purpose, who, subject to the directions of the Operating Committee, shall have the exclusive right to direct and control the settlement or defense thereof. Should such claim be settled, final judgment be entered against any such defendant or defendants upon said cause of action and any such defendant is required to pay or satisfy such judgment or expense of litigation in whole or in part, the amount of such settlement or judgment shall be treated, regarded and paid as any other item of Unit Expense. Nothing herein contained shall apply to or relieve any such Lessee or Lessees of liability which may have accrued prior to the Effective Date of this Plan of Unitization.

XXII.

TITLE INFORMATION

Upon request of either the Operating Committee or the Unit Operator, the Lessees of the several Separately Owned Tracts shall furnish and make available to the Unit or the Unit Operator, as the case may be, an abstract brought to the date of the request, together with all other title information in the possession and files of such Lessees, title opinions, original or true copies of all leases, assignments, contracts, curative matter and all other data and information pertaining to or otherwise affecting titles to the Oil and Gas Rights in and to the Unit Area.

XXIII.

OTHER FORMATIONS

It is understood that the common source of supply described herein as the Unit Area, namely, the Hunton Lime Formation of the West Edmond Field, underlies and may overlie other reservoirs or common sources of supply of Oil and Gas not a part of the aforesaid Hunton Lime Formation or a part of the Unit Area of the Unit created hereby. Except as specifically provided in this Plan of Unitization, all rights of any and all persons in and to such other reservoirs or common sources of supply of Oil and Gas and the production therefrom, together with the right of ingress and egress and the use of the surface of the Unit Area for the exploration, development and operation of such other reservoirs or common sources of supply of Oil and Gas, are expressly reserved unto the separate owners thereof and shall remain unaffected by the creation of the Unit and the adoption of this Plan of Unitization, all to the same extent as if this Plan of Unitization had not been adopted except

that in the exercise of such rights the owners thereof shall have due regard for the rights granted the Unit with respect to its operations hereunder. Likewise, any reference in this Plan of Unitization to a Separately Owned Tract or to the Unit Area, although in general terms broad enough to include the surface and all underlying common sources of supply of Oil and Gas, shall have reference to the lands embraced within such Separately Owned Tract and within the Unit Area only in relation to the Hunton Lime Formation of the West Edmond Field.

XXIV.

ABANDONMENT OF WELLS

If the Operating Committee at any time desires to abandon any well and salvage the casing and other equipment that is a part of the well, the Lessee or Lessees of the Separately Owned Tract on which such well is located shall be notified in writing of such decision and shall have and be granted thirty (30) days from receipt of such notice within which to elect to take over such well for the purpose of completing the same in some other formation not a part of the Unit Area. Any such Lessee electing to take over such a well shall pay to the Unit Operator the fair market value of the casing and other equipment comprised in the well, less the reasonable cost of salvaging the same, and shall agree to assume full responsibility for the proper plugging and abandonment thereof at such time as the well is ultimately abandoned. No such well shall be operated or used for the production of Oil and Gas from the Unit Area and to that end the Lessee taking over such a well shall immediately cause the Hunton Lime Formation in such well to be sealed off in a manner satisfactory to the Operating Committee. In the event the Lessee or Lessees of such a Separately Owned Tract do not elect to take over such well, the Unit Operator shall proceed to properly plug and abandon the same and salvage the casing and other equipment therefrom.

XXV.

ABANDONMENT OF OPERATIONS AND DISSOLUTION OF UNIT

At such time as it is determined by the Operating Committee that Unit Production can no longer be produced from the Unit Area in paying quantities the further development and operation of the Unit Area by the Unit shall be abandoned, the Unit dissolved and its affairs wound up.

Upon abandonment of Unit Operations,

(a) All rights in and to the several Separately Owned Tracts shall revert to the separate owners and Lessees thereof;

(b) The owner or Lessee of a Separately Owned Tract desiring to take over and continue to operate a well located on such Separately Owned Tract may do so by paying the fair market value of the casing and

other equipment comprised in the well, less the reasonable cost of salvaging the same and by agreeing to properly plug and abandon the well at such time as it is ultimately abandoned;

(c) With respect to all wells not taken over by the owner or Lessees of the Separately Owned Tracts as aforesaid, the Unit Operator shall salvage so much of the casing and other equipment therein as can economically and reasonably be salvaged and shall cause such well to be properly plugged and abandoned;

(d) The salvaging, liquidation or other distribution of assets and properties used in the operation of the Unit Area shall be in a manner determined by the Operating Committee; provided, any Lessee desiring to take its share of the physical assets or any portion thereof in kind may do so. All such assets and property shall belong to the several Lessees in proportion to their respective interests in the Unit.

At such time as the Unit Operations are abandoned and the affairs of the Unit wound up, the Unit shall submit for filing a declaration to that effect with the Secretary of the Corporation Commission and with the County Clerks of Oklahoma, Logan, Kingfisher and Canadian Counties, Oklahoma, whereupon the rights, powers and duties of the Unit shall be at an end; provided, however, that if any liability or obligation incurred prior thereto should accrue and become payable thereafter, the amount thereof shall be borne and paid as Unit Expense in the same manner as if it had accrued prior to dissolution of the Unit.

XXVI.

AMENDMENT TO PLAN OF UNITIZATION AND ENLARGEMENT OF UNIT

Any amendment of this Plan of Unitization or any enlargement of the Unit or Unit Area shall be in accordance with the provisions of Sections 11 and 12 of House Bill 339 of the 1945 Legislature of the State of Oklahoma or any amendment thereto.

XXVII.

SUBSCRIBERS

Provision is made below for the signing of this Plan of Unitization by Lessees within the Unit Area who wish to expressly signify their agreement to the terms, provisions and conditions hereof. Such Lessees may sign either as Unqualified or Qualified Subscribers. Those signing as Unqualified Subscribers agree to all the terms, provisions and conditions hereof, including the agreement to participate in carrying the Lessees who elect to be carried under the provisions of Section XI. Those signing as Qualified Subscribers agree to all the terms, provisions and conditions hereof, except that they reserve the right

to be carried in respect to the payment of Unit Expense as is provided in Section XI and do not agree to participate in carrying the other Lessees who elect to be carried under the terms of said Section. This Plan of Unitization may be signed by the subscribers hereto at any time by signing the original or any counterpart hereof or may be ratified by the signing of a separate instrument in writing specifically referring hereto all with the same force and effect as if all parties had signed the same instrument. The original of this Plan of Unitization, together with all signed counterparts and all signed ratifications hereof, shall be filed with and at all times from and after the approval hereof by the Commission remain on file in the office of the Secretary of the Commission.

The signing hereof by Lessees within the Unit Area is subject to the following conditions and provisions:

(a) If an order of the Commission approving this Plan of Unitization is not entered on or before June 1, 1947, any such subscriber may revoke its execution hereof by filing written notice of such revocation with the Secretary of the Commission, if petition for approval of this Plan of Unitization has theretofore been filed with the Commission, or by mailing such written notice to the company herein designated as Unit Operator, in the event such petition has not theretofore been filed, provided such notice is so filed or mailed prior to the entry of an order of the Commission approving this Plan of Unitization.

(b) Lessees executing this Plan of Unitization as Unqualified Subscribers shall not be bound hereby unless, on or before the entry of an order of the Commission approving this Plan of Unitization, this Plan of Unitization is executed by Unqualified Subscribers who, on the basis of their respective lease ownerships at the times of execution by them respectively, are chargeable with at least fifty per cent (50%) of the Unit Expense as herein provided for.

Otherwise than as herein provided, the signing hereof by Lessees within the Unit Area shall be binding upon such Lessees, their heirs, personal representatives, successors and assigns.

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