

UNIT OPERATING AGREEMENT  
CANYON LARGO UNIT AREA  
COUNTY OF RIO ARRIBA  
STATE OF NEW MEXICO

THIS AGREEMENT, made and entered into this \_\_\_\_ day of \_\_\_\_\_, 195\_\_, by and between THE SUPERIOR OIL COMPANY, a California corporation, herein designated as Unit Operator and sometimes referred to as Superior, and the parties executing, consenting to or ratifying this Agreement other than Unit Operator,

WITNESSETH:

WHEREAS, the parties hereto are also parties to that certain Unit Agreement for the Development and Operation of the Canyon Largo Unit Area, County of Rio Arriba, State of New Mexico, dated the \_\_\_\_ day of \_\_\_\_\_, 195\_\_, and now of record in the office of the County Recorder of Rio Arriba County, New Mexico, in Book \_\_\_\_ of \_\_\_\_\_, Page \_\_\_\_ et seq, covering the following described lands in said County and State, to-wit:

New Mexico Principal Meridian, New Mexico

T. 24 N., R. 6 W.

Secs. 1 through 29: All

Secs. 32 through 36: All

T. 25 N., R. 6 W.

Secs. 1 through 36: All

T. 24 N., R. 7 W.

Secs. 1 through 13: All

Sec. 24: All

T. 25 N., R. 7 W.

Secs. 1 through 4: All

Secs. 9 through 16: All

Secs. 21 through 36: All

which lands constitute the Canyon Largo Unit Area and will herein be referred to as unit area and which unit agreement is hereinafter sometimes referred to as Unit Agreement; and,

WHEREAS, a map of said unit area is attached to said Unit

Agreement as Exhibit A and is incorporated herein by reference and made a part hereof as if set out at length herein and will be referred to herein as Exhibit A; and,

WHEREAS, a schedule showing the percentage and kind of ownership of oil and gas interests of the parties hereto and others in all the land in the unit area is attached to said Unit Agreement as Exhibit B and is incorporated herein by reference and made a part hereof as if set out at length herein and will herein be referred to as Exhibit B; and,

WHEREAS, pursuant to the provisions of Section 7 and other provisions of said Unit Agreement the parties hereto wish to enter into this Unit Operating Agreement for the purpose of setting forth their agreements and understandings with respect to the matters therein referred to,

NOW, THEREFORE, for and in consideration of the premises and the mutual promises and covenants of the parties hereto, it is hereby agreed as follows:

1.

Unit Operator. The unit area, as now defined or as hereafter enlarged or contracted pursuant to the terms of the Unit Agreement, shall be developed and operated by Unit Operator for the purposes set forth in the Unit Agreement, subject to the provisions contained therein and in this Agreement.

2.

Titles in Unit Area, Generally. Each of the parties hereto represents to all other parties hereto that its ownership of oil, gas and mineral interests in the unit area is as set out in Exhibit B. However, should such representations prove incorrect such fact shall not be a cause for cancelling or terminating this Agreement. In such event or in the event of failure of a party's title to all or part of the oil, gas and mineral interests in any tract of land included within the unit area, the interests of the parties hereto shall be revised so that no party will be credited with interests in lands subject hereto which it does not own.

To the extent hereinafter in this paragraph specified, each party to this Agreement hereby indemnifies and agrees to hold harmless each other party hereto from all loss sustained by them, or any of them, as a result of any failure of title of such indemnifying party to all or any portion of such party's right at the effective date of this agreement to develop and operate the lands contributed to the unit by the indemnifying party, free and clear of the adverse interest of any person whomsoever. Such indemnity shall be limited to the amount of money which any party is obligated to pay and does pay to the true owner of any adverse interest in said lands as to which title has so failed, on account of unitized substances actually produced in the course of the unit operation from wells located on such land, together with all costs and expenses, including reasonable attorneys' fees, incurred by the Unit Operator and any other party hereto in connection with the defense against any such failure of title or claim thereof.

3.

Drilling Blocks and Apportionment of Costs. The participating area or areas and the drilling blocks hereinafter provided for shall be established for each geologic horizon, in the lands subject hereto, separately, and all of the provisions of this Agreement hereinafter stated insofar as they relate to a participating area or drilling blocks, or insofar as they relate to any rights, privileges, obligations or liabilities flowing from ownership of any interests in a participating area or a drilling block or drilling blocks, shall be applicable separately to each separate horizon within said lands.

The parties hereto who are owners of overriding royalties or production payments upon lands within the unit area shall not, as such owners, be responsible for any of the costs, expenses and liabilities accruing or resulting from operations upon the unit area.

All the costs, expenses and liabilities accruing or resulting from operations upon the unit area shall be borne by the

parties hereto who are working interest owners (that is, oil and gas lessees or owners of operating rights on lands within the unit area) in the following manner:

(a) The unit area is divided into drilling blocks containing approximately 320 acres each, which drilling blocks conform substantially to public survey half-sections of land and are of such location and size and are identified as specified in the Unit Agreement. In the event that there is, in any instance, no approved public survey, then Unit Operator shall identify the drilling blocks by projection from the nearest established public survey points and any cost or expense of so doing shall be charged as joint expense (as herein elsewhere provided) to the working interest owners in each drilling block so identified.

(b) Subject to the provisions of Section 7 hereof, all costs, expenses and liabilities accruing or resulting from operations of any nature upon a drilling block prior to its admission to a participating area (which areas are defined in Section 5 hereof), including the drilling, testing, completing, equipping or operating of any well or wells thereon, shall be borne by the working interest owners in the drilling block who have executed the Unit Agreement and this Agreement in the same proportion that the acreage owned by each in the drilling block bears to the total owned by all working interest owners in the drilling block who have executed the Unit Agreement and this Agreement.

(c) Subject to the provisions of Section 7 hereof, all costs, expenses and liabilities accruing or resulting from development and operations within any participating area on and after the effective date hereof shall be borne by the working interest owners in such participating area who have executed the Unit Agreement and this Agreement in the same proportion that the acreage owned by each in such participating area bears to the total acreage owned by all working interest owners in such participating area who have executed the Unit Agreement and this Agreement. Except as specially

provided in Paragraph (d) of this Section, no adjustment of investment or previously incurred costs shall be made upon the admission of a drilling block into such participating area, but thenceforth all costs of development and operations in such enlarged participating area shall be borne as set forth in the preceding sentence hereof, and in no event shall any adjustment be made for prior production or the proceeds thereof upon the admission of a drilling block into any participating area.

(d) On the admission of a drilling block or blocks into any participating area there shall be an investment adjustment between the owners of the working interest in such enlarged participating area who are parties hereto and the owners of working interest in such former participating area who are parties hereto, to the end that the investment in wells, well equipment, facilities, and all other property within such enlarged participating area shall be paid for by the affected owners of working interest in such enlarged participating area proportionate to the interest of each in the cost of operation and unitized substances produced from such enlarged participating area, and also to the end that the parties who have previously paid such costs shall be reimbursed on the basis hereinafter set forth. The affected owners of working interest in such participating area before its enlargement shall receive credit for the intangible cost of drilling, completing, and equipping for production all wells capable of producing unitized substances situated within such participating area. Credit shall also be given for the casing and other tangible property and facilities installed in the wells and for new structures, facilities or other property at its reasonable value determined so far as possible as provided in the accounting procedure attached hereto as Exhibit C and incorporated herein by reference, but never to be less than 25% of the original cost. The affected owners of working interest in the drilling block or blocks that is or are to be admitted to such enlarged participating area shall likewise receive credit for the

intangible cost, if any, incurred by them, of drilling, completing, and equipping any wells on their respective leases, together with the value of the tangible equipment, facilities, and structures located thereon and used in connection therewith, all on the basis as hereinabove set out. The sum total of all credit shall be the investment cost apportionable to such enlarged participating area. The investment adjustment shall be made by cash settlement through the Unit Operator, provided, however, that if any working interest owner in the drilling block or blocks newly admitted to such participating area should fail to make such cash settlement on demand, Unit Operator shall withhold and dispose of such party's full share of production from wells on lands in such former participating area and shall apply the proceeds thereof, after the payment of all operating or other charges applicable thereto, to the settlement of the investment adjustment until such time as the parties entitled thereto shall have received 150% of what they otherwise would have received from such settlement adjustment. No credit shall be given for the previous cost of operating any wells or repairing or maintaining other property, nor shall there be any debit for or on account of production taken from wells prior to the effective date of the enlargement of such participating area. All costs computed under this Section 3(d) shall be computed and determined as provided in the Accounting Procedure attached hereto as Exhibit C and incorporated herein by reference. In the event that more than one drilling block be admitted to a participating area at one time, the provisions of this Section 3(d) shall apply to each such drilling block separately, and, in the event that one such drilling block shall be admitted pursuant to the Unit Agreement without a well having been drilled thereon, the owners of working interest therein shall, of course, receive no credit in the computations of investment adjustment as above provided for.

4.

Apportionment of Production. The working interest owners who are parties to the Unit Agreement and this Agreement shall share

in the unitized substances (which term shall have the same meaning in this Agreement as in the Unit Agreement) produced from any participating area in the same proportion that the acreage owned by each in such participating area bears to the total acreage owned by all working interest owners in such participating area who have executed the Unit Agreement and this Agreement. All unitized substances produced from a drilling block prior to its admission to any participating area shall be shared by the working interest owners therein who are parties to the Unit Agreement and this Agreement in the same proportion that the acreage owned by each in such drilling block bears to the total acreage owned by all working interest owners in such drilling block who have executed that Unit Agreement and this Agreement. For all purposes of this Agreement, the acreage of a drilling block or of tracts therein shall be as shown by the approved Government survey or as calculated therefrom by Unit Operator.

The owners of overriding royalties and production payments who are parties to the Unit Agreement and this Agreement shall participate in unitized substances produced from the unit area in the same manner as the working interest owners whose interests are subject to such overriding royalties and production payments, that is, such owner of an overriding royalty or production payment shall participate according to the terms of his contract, conveyance or reservation in the unitized substances allocated to the lands subject to his interest which lie within any participating area or within a drilling block which is not within any participating area, but from which production is being obtained, but shall not be entitled to receive anything on account of such interests with respect to such lands which lie outside any participating area or such drilling block.

The working interest owners in any participating area who are parties to the Unit Agreement and this Agreement shall pool,

or cause the purchaser or purchasers of the unitized substances to pool, into separate pools or accounts for each participating area designated and made effective pursuant to Section 11 of the Unit Agreement one-eighth ( $1/8$ ) of all unitized substances produced from each such participating area and deliver the same or pay or cause the purchaser or purchasers of such unitized substances to pay the proceeds thereof to the royalty owners entitled thereto. If a producing well in a drilling block which is not admitted to any participating area is not located within a participating area designated and made effective pursuant to Section 11 of the Unit Agreement the working interest owners in such drilling block shall deliver or pay or cause the purchaser thereof to pay, the proceeds of one-eighth ( $1/8$ ) of the unitized substances produced therefrom to the royalty owners entitled thereto under the underlying leases or other agreements pursuant to which the well was drilled.

5.

Participating Areas and Well Locations. There shall be separate participating areas for each horizon which is productive in paying quantities within the geographic boundaries of the lands subject hereto and the first such area shall initially be composed of the drilling block, established as hereinbefore set out, on which is drilled the original test well provided for in the Unit Agreement, as to that horizon, if any, in which production in paying quantities may be established in said well as provided in the Unit Agreement. It is hereby agreed for the purposes of this Agreement that all wells completed for production in the Pictured Cliffs formation shall be regarded as producing from a single zone or pool and all wells completed for production in the Mesaverde group shall be regarded as producing from a single zone or pool. Additional drilling blocks, subject to any limitations set out hereinafter, shall be admitted to any participating area at the time and in the manner set out and prescribed in Section 11 of the Unit Agreement.

The initial well in each drilling block must be drilled in one of the four middle 40-acre tracts of the block or as near thereto



as terrain will permit, unless such 40-acre tracts are not fully committed to the Unit Agreement and this Agreement or unless it is otherwise agreed by the owners of a majority (on an acreage basis) of the working interest rights in the particular drilling block and by the owners of a majority (on an acreage basis) of the working interest rights in the applicable participating area. If the initial well in a drilling block cannot be drilled on a middle 40-acre tract because of terrain or because the middle 40-acre tracts are not fully committed to the Unit Agreement, it shall be drilled elsewhere on the block at a location structurally comparable, or as nearly comparable as possible, to the best middle 40-acre location.

If the initial well on any block is not capable of production in paying quantities and at a later date a well is drilled on such drilling block which is capable of production in paying quantities, then that portion of the drilling block considered to be capable of producing in paying quantities by reasonable geological inference shall be admitted to the applicable participating area upon recommendation of the Unit Operator, and approval by the Director, the Commissioner and the Commission, all as defined in the Unit Agreement. If geologic inference is not applicable, the 40-acre tract by government survey, existing or projected, on which the producible well is drilled and all other untested 40-acre tracts or lots in the government survey approximating 40 acres lying within the drilling block shall be admitted to such participating area.

If any drilling block, or portion thereof, on which a well has been drilled is not included in a participating area, conformably with the provisions of this Agreement, and thereafter should become capable of production in paying quantities by reason of repressuring or other methods of secondary recovery, such drilling block or portion thereof shall be admitted to the applicable participating area on recommendation of the Unit Operator and

approval thereof as provided for the inclusion of lands in a participating area in the preceding paragraph hereof.

Once land has been included in any participating area, it shall not be excluded therefrom except for loss of title by the working interest party hereto who claims the same and the refusal of the true owner thereof to commit it to the Unit Agreement and this Agreement.

6.

Examination of Titles to Drillsites. Prior to the commencement of any drilling operations in the unit area under the terms of this Agreement, the working interest owner or owners of the forty (40) acre tract on which any proposed well is to be located shall submit to Unit Operator an abstract of title covering such tract certified to a date within thirty (30) days of the date on which such abstract is submitted, together with all title papers possessed by such party or parties relating to its or their interest therein. Unit Operator shall examine the same within ten (10) days after receipt thereof and promptly deliver such abstracts and title papers to the working interest party or parties who will be responsible for the cost of drilling, completing, equipping and testing such well under the terms of this Agreement. Each of such parties shall have ten (10) days to examine such abstracts and title papers. Unit Operator and each of such parties shall promptly deliver to the working interest owner or owners of such tract, copies of their respective attorneys' title opinions upon such tract and such working interest owner or owners shall promptly, and in any event, within thirty (30) days after the receipt of the last title opinion, satisfy all requirements contained in such opinions which are not waived by both Unit Operator and such working interest party or parties. Unit Operator and such working interest party or parties may by unanimous agreement extend the time within which such requirements may be satisfied or may by unanimous agreement waive any or all of such requirements if such

working interest owner or owners indemnify each such working interest party or parties in a manner satisfactory to each against any loss or damage which might accrue to any of them by reason of waiver of such requirement or requirements.

Each of the working interest parties hereto agree to inaugurate title examinations under this Section sufficiently in advance of the time contemplated for commencement of any well in order to enable satisfaction of title requirements in adequate time to permit Unit Operator to meet any development obligations that may arise under any plan of development approved as set out in Section 10 of the Unit Agreement.

Upon satisfaction of all of such requirements or the waiver thereof, with or without indemnity, title to such tract shall be deemed approved for drilling by Unit Operator. If such requirements are not satisfied or waived, then title shall be deemed disapproved and no well shall be drilled on such tract by Unit Operator under the terms of this Agreement until and unless title is subsequently approved as herein set forth. It is the intention of this section to provide all working interest parties hereto who will be responsible for the costs of drilling, completing, equipping and testing any given well, the right to insist that title to the tract on which the well is drilled be satisfactory to them before such well is drilled thereon.

If title subsequently fails to any tract which has been approved as herein provided, the working interest owner thereof shall bear the entire loss in participation in unitized substances produced after such title failure, which would be attributable to the leasehold estate in such tract under the terms of the Unit Agreement, but shall not be obliged to save any parties hereto harmless from any other loss occasioned thereby except to the extent of any separate indemnity as specifically provided for in Section 2 hereof.

Wells Not Mutually Agreed To. In the event the working interest owners in a drilling block cannot mutually agree upon the drilling of a particular well on the drilling block or in the event the working interest owners in any participating area cannot mutually agree upon the drilling of a particular well therein, and in the event the provisions of the Unit Agreement do not prevent the drilling of such well, the party or parties desiring to drill such well shall give written notice thereof, specifying the location, proposed depth, and estimated cost, to the other parties hereto who would be obliged, under the terms of Sections 3(b) and 3(c) hereof, to participate in the costs, expenses and liabilities accruing or resulting therefrom. The party or parties to whom such notice is given shall have thirty (30) days after receipt thereof within which to notify the party or parties desiring that said well be drilled whether or not it or they elect to participate in the cost of drilling said well. The failure to give such notice within said period of thirty (30) days shall be construed as an election by said party or parties not to participate in the cost of drilling said well. Any well drilled pursuant to the provisions of this Section shall be drilled by Unit Operator and at the sole cost, risk and expense of the party or parties electing to drill except that, if Unit Operator does not participate in the drilling of such well, such drilling shall be done by the participating party or parties under such designation of sub-operator as may be appropriate or necessary, and in such event no such drilling shall be commenced or prosecuted until such drilling party or parties shall have fully indemnified, by proper bond of a qualified corporate surety, Unit Operator against any loss, responsibility or liability which might otherwise accrue to Unit Operator by, on account of or in connection with the drilling of such well. Any such well shall conform to the well-spacing pattern established under the plan of development and operation adopted and approved

pursuant to Section 10 of the Unit Agreement, if one has then been adopted, and, if it is in a drilling block not then included in a participating area, it shall conform to the location as specified in Section 5 hereof. If any party shall elect not to participate in the drilling of said well, then, within ninety (90) days after the expiration of said thirty (30) days, the party or parties desiring to drill shall commence the actual drilling of said well at said location, and thereafter complete said well with due diligence, in order to be entitled to the benefit of this section. If any such well be completed as a well capable of producing unitized substances in quantities sufficient to repay the cost of drilling, completing, equipping and operating such well plus a reasonable profit, it shall be operated by Unit Operator and the parties hereto shall have the same rights with respect to the unitized substances produced from such well as are herein set forth in Section 4 hereof, except that the proportionate share or shares of the unitized substances produced from such well which would otherwise be allocable to the participating interests owned by the non-drilling party or parties who, under the terms of Section 3(b) and 3(c) hereof, would be obliged to participate in the costs, expenses and liabilities accruing or resulting from such well, shall be sold and disposed of by the drilling party or parties, and all the proceeds from the sale thereof after deducting all applicable royalty interests, overriding royalty interests, and production payments, if any, shall be retained by such drilling party or parties until it or they shall have been reimbursed from such proceeds in an amount equal to the non-drilling party or parties' share of the total accrued expenses of operating such well plus one hundred fifty per cent (150%) of that portion of the cost and expenses of drilling, testing, completing and equipping such well which is proportionate to the share such non-drilling party or parties would have otherwise had to pay, under the terms of Section 3(b) and 3(c) hereof, of the costs, expenses and liabilities accruing or resulting from such well had they originally elected to participate in the cost thereof. Any

amount realized from the sale or disposition of equipment acquired in connection with drilling, testing, completing and equipping and operating any well drilled pursuant to this Section shall be credited against the total unreturned cost of drilling, testing, completing and equipping said well and, to the extent allocable to the non-drilling parties, shall be credited against their obligation to the drilling parties set out above. Until the drilling party or parties shall have been so reimbursed, the cost of operating any such well shall be borne wholly by the party or parties who drilled it.

No party or parties hereto shall drill a well under the provisions of this Section unless it or they own or control a majority of the working interest in the drilling block on which the well is to be drilled or, if the location is then included in a participating area, in the quarter-quarter section or substantially equivalent surveyed lot on which the well is to be drilled, and until it has given Unit Operator the opportunity to drill said well, as provided for in Section 13 of the Unit Agreement, for the account of the parties desiring to drill said well.

8.

Unit Operations. Unit Operator shall have full control of the unit area and, subject to the provisions hereof and of the Unit Agreement shall conduct and manage the development and operation of said premises for the production of unitized substances therefrom. Unit Operator shall pay and discharge all costs and expenses incurred pursuant to this Agreement or the Unit Agreement, and shall charge each of the parties hereto with its respective proportionate share thereof upon the cost and expense basis provided in the Accounting Procedure attached hereto, marked Exhibit C and made a part hereof. The proportionate share of any working interest party hereto in such costs and expenses shall be the total of all such costs and expenses allocable to all the participating interests of such party as provided in Section 3 hereof and as so allocated shall be paid by the working interest parties hereto. As nearly

as may be done all charges shall be charged directly to the participating area and to each non-admitted drilling block served. Each party other than Unit Operator will promptly pay Unit Operator such costs and expenses as are hereunder chargeable to it. All unitized substances produced from the unit area, subject to the payment of applicable royalties, overriding royalties, and production payments, if any, and all materials and equipment acquired pursuant hereto, shall be owned by the working interest parties hereto in accordance with their respective interests in the participating area or non-admitted drilling blocks from which the unitized substances are produced or in connection with which such materials and equipment are acquired.

If Unit Operator so elects, it may request advances by the working interest parties of sufficient sums each month to cover the estimated costs of operation and development during the ensuing month. Such request shall be addressed to the working interest parties on whose behalf such expenditures are to be made. If Operator requests advances, it shall furnish each such working interest party on or before the 20th day of each month an estimate of such cash requirements and the amounts expected to be used on behalf of each. Thereupon, such working interest parties shall, on or before the 5th day of the succeeding month, remit to Unit Operator their respective shares of such estimate. Unit Operator shall credit each working interest owner with the advances so made.

Unit Operator may likewise request that each working interest party furnish in kind its proportionate share of casing and other tubular goods used in the drilling, completion, equipping and testing any wells drilled hereunder. The share of such goods furnished by any party shall be proportionate to its share in the costs of drilling, completing, equipping and testing any well for which the same is requested. If such request is made by Unit Operator, each working interest party affected shall furnish its share of such goods at the time and place requested by Unit

Operator. Such goods shall be delivered in good condition and shall be of the same quality already in use in the unit area. If a working interest owner fails or is unable to furnish such goods Unit Operator may then purchase such goods at the current market price plus any premium required and charge the cost thereof to the working interest owners responsible therefor as herein set out.

9.

Overriding Royalties or Charges on Production. If any of the oil and gas leases held by any party hereto on the lands covered hereby be subject to any overriding royalty, production payment or other charge in addition to the usual one-eighth (1/8) royalty, the party contributing any such lease shall bear, assume and discharge any such overriding royalty, production payment or other charge out of the unitized substances allocated to such party under the terms of this Agreement.

10.

Payment of Rentals. Each party holding an oil and gas lease subjected to this Agreement shall, before the due date, pay all delay rentals which may become due under the lease as amended by the Unit Agreement. In event of failure to make proper payment of any delay rental through mistake or oversight where such rental is required to continue the lease in force as to all or part of the land subject thereto, there shall be no money liability on the part of the party failing to pay such rental, but such party shall make a bona fide effort to secure a new lease covering the same interest and in event of failure to secure a new lease within a reasonable time, the interests of the parties hereto shall be revised so that the party failing to pay such rental will not be credited with the ownership of any lease on which rental was required but was not paid.

11.

Majority Interests Control. In any matter in which the action of the Unit Operator requires the concurrence of the working interest parties hereto or any of them, Unit Operator will be



governed by the decision of the owners of a majority of the working interest in the participating area, or the non-admitted drilling block, as the case may be, unless otherwise specified herein or in the Unit Agreement, determined in the proportion that the acreage interest of each such party in the participating area or such affected drilling block bears to the total acreage interest in the participating area or affected drilling block. Matters affecting the unit area as a whole, shall be determined in accordance with the proportionate acreage interest as above defined in the entire unit area. In any case where one working interest party hereto holds such a majority in interest, but less than the full working interest in the area affected, his vote shall require the concurrence of one additional party in order to constitute the controlling vote.

In any case in which it is necessary to poll the working interest parties hereto, Unit Operator shall notify all affected working interest owners in writing of the question for decision and its recommended course of action. Each such working interest owner shall within ten (10) days of receipt of such notice advise Unit Operator in writing of its decision thereon. Within five (5) days thereafter Unit Operator shall notify each affected working interest owner in writing of the result of such poll. In the event that any working interest owner fails to advise Unit Operator in writing of its decision, within the ten (10) day period above provided, it shall be conclusively presumed that its decision is in accord with the course of action originally recommended by Unit Operator, except that, if the matter for decision is one where the non-responding working interest owner might elect pursuant to the provisions of this agreement not to participate originally in some element of cost or expense but instead to pay his share thereof out of production or the proceeds thereof, it shall be conclusively presumed that such non-responding working interest owner elects to follow that latter course.

The Unit Operator, except when otherwise required by Governmental authority, shall not do any of the following without first obtaining the approval of such a majority interest, as provided above, in the affected participating area or drilling block or unit area, as the case may be:

(a) Make any expenditure in excess of \$5,000.00 other than normal operating expenses except in connection with a well, the drilling of which has been previously authorized by this Agreement, the Unit Agreement, or by subsequent agreement between the parties hereto who are responsible for such well under the terms hereof, provided, however, that nothing in this paragraph shall be deemed to prevent Unit Operator from making an expenditure in excess of this amount if the same becomes necessary because of sudden emergency which may cause the loss of life or property. In the event of such emergency expenditure, Unit Operator shall, within fifteen (15) days after making such expenditure, give written notice thereof to the parties hereto who are responsible therefor under the terms of this Agreement and for whose benefit such expenditure is made.

(b) Make any arrangements for the use of facilities owned by the participating area or any non-admitted drilling block, and used in its operation and development, outside of any said area, nor determine the amount of any charges therefor, unless otherwise provided for in this Agreement or in the Unit Agreement.

(c) Dispose of any major items of surplus material or equipment other than junk, having an original cost of \$500.00 or more (any such item or items of less cost may be disposed of without such consent). When such sale is so authorized, surplus material and equipment from the premises, which in the judgment of the Unit Operator is not necessary for the development and operation thereof,

may be sold by Unit Operator to any of the parties to this Agreement or to others for the benefit of the parties hereto who own the same, or may be divided in kind between such parties. Proper charges and credits shall be made by Unit Operator as provided in the Accounting Procedure, marked Exhibit C, attached hereto.

(d) Submit to the Federal Oil and Gas Supervisor, the Commissioner of Public Lands of the State of New Mexico or the Oil Conservation Commission of the State of New Mexico, any plan for development of the unit area or any participating area or amendment thereof, or submit to such parties or the Director of the United States Geological Survey any proposed expansion or contraction of the unit area or any designation or enlargement of a participating area, unless otherwise required so to do by any such parties under the terms of the Unit Agreement.

(e) Readjust the percentages of participation.

(f) Make any arrangements for repressuring or recycling or any change in the existing method of operation.

## 12.

Abandonment of Wells. No well which is producing or has once produced unitized substances shall be abandoned without the mutual consent of the owners of a majority of the working interest parties in the participating area in which the well is located. However, if parties owning interests in a well which is producing or has once produced from land not within any participating area are unable to agree upon the abandonment of any such well, then the party or parties not desiring to abandon such well shall tender to each of the parties desiring to abandon the proportionate share of each party desiring to abandon of the reasonable value of the material and equipment in and on said well, such value to be determined, so far as possible, in accordance with the attached Exhibit C -- Accounting Procedure. Upon receipt of said sum, each party desiring to abandon such well shall, without express or

implied warranty of title, assign to the party or parties tendering said sum its interest in said well and the equipment therein, together with all its rights in the oil and gas lease or leases under which such well is operated to the extent of the forty (40) acre legal subdivision, or fractional lots approximating the same, embracing such well, except any acreage included within a participating area, unless a well spacing pattern has been adopted or used in the field designating a lesser acreage for such well in which event, it shall be in amount and location to accord with such well spacing pattern, but only insofar as such lease or leases cover the formation or formations from which such well is then producing. If there is more than one non-abandoning party, such assignment shall run in favor of the non-abandoning parties in proportion to their respective participating interests in the tract subject to the assignment and in which the well is located.

13.

Employees. The number of employees, the selection of such employees, the hours of labor, and the compensation for services to be paid any and all such employees, shall be determined by Unit Operator. Such employees shall be the employees of Unit Operator.

14.

Insurance. Unit Operator shall carry such Workmen's Compensation and Employer's Liability Insurance as may be required by the laws of the state in which said lands are located. In the event that steam boilers are used in connection with operations hereunder, Unit Operator shall provide for the benefit of and shall charge to the joint account, Boiler and Machinery Insurance in the amount of not less than \$50,000.00 per accident. No other insurance shall be carried for the joint benefit of the parties hereto except by mutual consent of all of said parties.

15.

Unit Operator's Lien. Unit Operator shall have a lien on the interest or interests of each party hereto other than Unit Operator subjected to this Agreement, the oil and gas produced

therefrom, the proceeds thereof, and the material and equipment attributable thereto, to secure Unit Operator in the payment of any sum due to Unit Operator hereunder from any such party. The lien herein provided for shall not extend to any royalty rights attributable to any interest subjected hereto.

16.

Disposition of Production. Each of the working interest parties hereto shall take in kind or separately dispose of his or its proportionate share of the unitized substances produced from the unit area and allocated to it under the provisions of this Agreement, exclusive of production which may be used in development and producing operations on the unit area and in preparing and treating oil for marketing purposes and production unavoidably lost, and shall pay or cause to be paid all applicable royalties thereon. Any extra expenditure incurred by the taking in kind or separate disposition by any party hereto of its proportionate share of the unitized substances produced from the unit area shall be borne by such party. Each party hereto shall be entitled to receive directly payment for its proportionate share of the proceeds from the sale of all unitized substances produced, saved and sold from said premises, and on all purchases or sales, each party shall execute any division order or contract of sale pertaining to its interest. In event any working interest party hereto shall fail to make the arrangements necessary to take in kind or separately dispose of its proportionate share of the unitized substances produced from said premises, Unit Operator shall have the right, subject to revocation at will by the party owning the same, to purchase such unitized substances or sell the same to others for the time being at not less than the market price prevailing in the area and not less than the price which Unit Operator receives for its own portion of such unitized substances, any such purchase or sale to be subject always to the right of the owner of such unitized substances to exercise, at any time, its right to take in kind or separately dispose of its share of such unitized substances not previously delivered to a purchaser pursuant hereto.

17.

Payment of Taxes. Unit Operator shall file returns and pay all taxes on all real and personal property including minerals subject to this agreement, and shall pay all taxes and assessments on or measured by the production of hydrocarbons from said lands, and shall charge same to the joint account.

18.

Non-Operators' Access. Each of the parties hereto shall have access to any participating area in which they have a participating interest at all reasonable times to inspect and observe any operations thereon, and shall have access at reasonable times to information pertaining to the development or operation thereof, including Unit Operator's books and records relating to such participating areas in which they have a participating interest. Unit Operator, upon request, shall furnish each of the other parties hereto with copies of all drilling reports, well logs, tank tables, daily gauge and run tickets and reports of stock on hand at the first of each month, and shall make available samples of any cores or cuttings taken from any wells drilled hereunder within such a participating area in which they have a participating interest.

19.

Contract Drilling. Prior to drilling any unit well in a drilling block or participating area in which Unit Operator does not own 100% of the working interest, Unit Operator shall submit to the other owners of working interest in such drilling block or participating area a notice of the well location and proposed depth thereof. Any such working interest owner may, within 10 days after receipt of such estimate, submit a contract bid, either for its own account or by a financially responsible contractor regularly engaged in the business, for the drilling of such well. The Unit Operator shall drill or cause to be drilled such well or perform or cause to be performed such other work at a cost not greater than the lowest of the bids, if any, submitted and approved by Unit Operator as to

the financial responsibility and capabilities of the bidder or bidders, or shall enter into a contract therefor with the approved working interest owner or contractor submitting the lowest approved bid.

20.

Surrender of Leases and Operating Rights. The oil and gas leases and operating rights subject to this Agreement may be surrendered while the Unit Agreement continues in force if the requirements of said Unit Agreement are satisfied. However, should any party hereto at any time desire to surrender any of the oil and gas leases subject hereto, or any interest therein, it shall notify all other working interest parties hereto in writing. Within thirty (30) days following receipt of such notice by the other working interest parties hereto the party desiring to surrender such leases insofar as they affect such lands may proceed to surrender the same, in accordance with the provisions of the Unit Agreement, if such right is reserved in the leases, unless any other working interest party or parties hereto have, within said thirty (30) day period, given written notice to the party desiring to surrender that they desire an assignment of said leases insofar as they cover such lands. In such event, the party desiring to surrender shall assign, without express or implied warranty of title, all its interest in such leases and the wells, material and equipment located thereon, insofar as they cover such lands, to the working interest party or parties desiring an assignment of such leases and thereupon such assigning party shall be relieved from all obligations thereafter accruing (but not theretofore accrued) hereunder with respect to the leases assigned insofar as they cover such lands. From and after the making of such assignment, the assigning party shall have no further interest in the leases assigned and the wells and equipment thereon, insofar as they cover such lands, but shall be entitled to be paid for its interest in any material located on the lands with respect to which the leases are assigned at its reasonable value determined, so far

as possible, as provided in the attached Exhibit C. If such assignment shall run in favor of more than one party hereto, the interest covered thereby shall be shared by such parties in the proportions that the interest of each party assignee in lands within the unit area bears to the total interest of all parties assignee in lands within the unit area.

21.

Sale of Interests. In the event any working interest party desires to sell all or any part of its interest subject to this Agreement, the other working interest party or parties hereto shall have a preferential right to purchase the same. In such event, the selling party shall promptly communicate to the other working interest party or parties hereto the offer received by it from a prospective purchaser ready, willing and able to purchase the same, together with the name and address of such prospective purchaser, and said party or parties shall thereupon have an option for a period of ten (10) days after the receipt of said notice to purchase such interest for the benefit of such remaining working interest parties hereto as may agree to purchase the same. Any interest so acquired by more than one party hereto, shall be shared by the parties purchasing the same in the proportions that the interest of each acquiring party in the lands in the unit area bears to the total interest of all acquiring parties in the lands in the unit area. The limitations of this Section shall not apply where any party hereto desires to mortgage its interest or to dispose of its interest by merger, reorganization, consolidation or sale of all its assets, or a sale of its interest hereunder to a subsidiary or parent company or subsidiary of a parent company or to any company in which any one party hereto owns a majority of the stock.

In the event of a sale by Unit Operator of the interests owned by it which are subject hereto, a new Unit Operator shall be selected as provided for in Section 6 of the Unit Agreement.



22.

Liabilities Are Several. The liability of the parties hereunder shall be several and not joint or collective. Each party shall be responsible only for its obligations, as herein set out, and shall be liable only for its proportionate share of the cost of developing and operating the premises subject hereto, as determined by the provisions hereof.

23.

Force Majeure. Unit Operator shall not be liable for any loss of property or of time caused by strikes, riots, fires, tornadoes, floods or for any other cause beyond the control of Unit Operator through the exercise of reasonable diligence. All of the provisions of this Agreement are hereby expressly made subject to all applicable Federal or State laws, orders, rules and regulations, and in the event this contract or any provision hereof is found to be inconsistent with or contrary to any such law, order, rule or regulation, or inconsistent or in conflict with the Unit Agreement, the latter shall be deemed to control and this contract shall be regarded as modified accordingly and as so modified shall continue in full force and effect.

24.

Term of Agreement. This Agreement shall remain in force and effect for the same term as the term of the Unit Agreement, and shall apply to the lands subject hereto, or to any of them, for the same term as the Unit Agreement shall apply to them.

25.

Notices. All notices that are required or authorized to be given hereunder, except as otherwise specifically provided herein, shall be given in writing by United States mail or Western Union telegram, postage or charges prepaid, and addressed to the party to whom such notice is given as follows, or to such other address as may be hereafter prescribed by notice in writing:

The Superior Oil Company  
Midland, Texas  
Attn.: J. E. Beakey

Copy to:

The Superior Oil Company  
930 Edison Building  
Los Angeles 17, California  
Attn.: J. C. Cody

The originating notice to be given under any provision hereof shall be deemed given only when received by the party to whom such notice is directed, and the time for such party to give any response thereto shall run from the date the originating notice is received. The second or any subsequent responsive notice shall be deemed given when deposited in the United States Post Office or with Western Union Telegraph Company, with postage or charges prepaid.

26.

Anti-Discrimination. Unit Operator shall not discriminate against any employee or applicant for employment because of race, creed, color, or national origin, and an identical provision shall be incorporated in all sub-contracts.

27.

Unleased Interests. Should the owner of any unleased interest in lands lying within the unit area become a party to the Unit Agreement and this Agreement, such unleased interest shall be treated for all the purposes of this Agreement as if it were an oil and gas lease covering such unleased interest on a form providing for the usual and customary one-eighth (1/8) royalty and containing the usual and customary "lesser interest clause." This Agreement shall in no way affect the right of the owner of any such unleased interest to receive an amount or share of unitized substances equivalent to the royalty which would be payable or due under the terms of the Unit Agreement if such unleased interest were subject to an oil and gas lease as provided in the preceding sentence of this Section.

Call 54

UNIT AGREEMENT FOR THE DEVELOPMENT AND  
OPERATION OF THE CANYON LARGO UNIT AREA  
COUNTY OF RIO ARRIBA, STATE OF NEW MEXICO

I-Sec. No. \_\_\_\_\_

This agreement entered into as of the \_\_\_\_\_ day of \_\_\_\_\_, 195\_\_, by and between the parties subscribing, ratifying, or consenting hereto, and herein referred to as the "parties hereto,"

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

Whereas the Act of February 25, 1920, 41 Stat. 437, as amended by the Act of August 8, 1946, 60 Stat. 950, 30 U. S. C. Secs. 181 et seq., authorizes Federal lessees and their representatives to unite with each other, or jointly or separately with others, in collectively adopting and operating a cooperative or unit plan of development or operation of any oil or gas pool, field, or like area, or any part thereof, for the purpose of more properly conserving the natural resources thereof whenever determined and certified by the Secretary of the Interior to be necessary or advisable in the public interest; and

Whereas the Commissioner of Public Lands of the State of New Mexico is authorized by an Act of the Legislature (Chap. 88, Laws 1943) to consent to or approve this agreement on behalf of the State of New Mexico, insofar as it covers and includes lands and mineral interests of the State of New Mexico; and

Whereas, The Oil Conservation Commission of the State of New Mexico is authorized by an Act of the Legislature (Chap. 72, Laws 1935) to approve this agreement and the conservation provisions hereof; and

Whereas the parties hereto hold sufficient interests in the Canyon Largo Unit Area covering the land hereinafter described to give reasonably effective control of operations therein; and

Whereas it is the purpose of the parties hereto to conserve natural resources, prevent waste, and secure other benefits obtainable through development and operation of the area subject to this agreement under the terms, conditions, and limitations herein set forth;

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

1. Enabling act and regulations. The act of February 25, 1920 as amended, supra, and all valid pertinent regulations, including operating and unit plan regulations, heretofore issued thereunder or valid pertinent and reasonable regulations hereafter issued thereunder are accepted and made a part of this agreement as to Federal lands, provided such regulations are not inconsistent with the terms of this agreement; and as to non-Federal lands, applicable State laws and operating regulations, and Federal oil and gas operating regulations in effect as of the effective date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the State in which the non-Federal land is located, are hereby accepted and made a part of this agreement.

2. Unit Area. The following described land is hereby designated and recognized as constituting the unit area:

New Mexico Principal Meridian, New Mexico

T. 24 N., R. 6 W.

Secs. 1 through 36: All

T. 25 N., R. 6 W.

Secs. 1 through 36: All

T. 24 N., R. 7 W.

Secs. 1 through 13: All

Sec. 24: All

T. 25 N., R. 7 W.

Secs. 1 through 4: All

Secs. 9 through 16: All

Secs. 21 through 36: All

Rio Arriba County, New Mexico

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

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

(a) Unit Operator, on its own motion or on demand of the Director of the Geological Survey, hereinafter referred to as "Director", or on demand of the Commissioner, shall prepare a notice of proposed expansion or contraction describing the contemplated changes in the boundaries of the unit area, the reasons therefor, and the proposed effective date thereof.

(b) Said notice shall be delivered to the Supervisor and Commissioner and copies thereof mailed to the last known address

of each working interest owner, lessee, and lessor whose interests are affected, advising that 30 days will be allowed for submission to the Unit Operator of any objections.

(c) Upon expiration of the 30-day period provided in the preceding item (b) hereof, Unit Operator shall file with the Supervisor and Commissioner evidence of mailing of the notice of expansion or contraction and a copy of any objections thereto which have been filed with the Unit Operator.

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

All land committed to this agreement shall constitute land referred to herein as "unitized land" or "land subject to this agreement."

3. Unitized substances. All oil and gas in any and all formations of the unitized land are unitized under the terms of this agreement and herein are called "unitized substances."

4. Unit Operator. The Superior Oil Company, a corporation, is hereby designated as Unit Operator and by signature hereto as Unit Operator agrees and consents to accept the duties and obligations of Unit Operator for the discovery, development, and production of unitized substances as herein provided. Whenever reference is made herein to the Unit Operator, such reference means the Unit Operator acting in that capacity and not as an owner of interest in unitized substances, and the term "working interest owner" when used herein shall include or refer to Unit Operator as the owner of a working interest when such an interest is owned by it.

5. Resignation or removal of unit operator. Unit Operator shall have the right to resign at any time prior to the establishment of a participating area or areas hereunder, but such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator and terminate Unit

Operator's rights as such for a period of 6 months after notice of intention to resign has been served by Unit Operator on all working interest owners, the Director and Commissioner, and until all wells then drilled hereunder are placed in a satisfactory condition for suspension or abandonment whichever is required by the Supervisor as to Federal lands and the Commission as to State and privately owned lands, unless a new Unit Operator shall have been selected and approved and shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

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

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

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

The resignation or removal of Unit Operator under this agreement shall not terminate its right, title, or interest as the owner of a working interest or other interest in unitized substances, but upon the resignation or removal of Unit Operator becoming effective, such Unit Operator shall deliver possession of all equipment, materials, and appurtenances used in conducting the unit operations and owned by the working interest owners to the new duly qualified successor Unit Operator or to the owners thereof if no such new Unit

Operator is elected, to be used for the purpose of conducting unit operations hereunder. Nothing herein shall be construed as authorizing removal of any material, equipment and appurtenances needed for the preservation of any wells.

6. Successor unit operator. Whenever the Unit Operator shall tender his or its resignation as Unit Operator or shall be removed as hereinabove provided, the owners of the working interests in the participating area or areas according to their respective acreage interests in such participating area or areas, or, until a participating area shall have been established, the owners of the working interests according to their respective acreage interests in all unitized land, shall by majority vote select a successor Unit Operator; Provided, that, if a majority but less than 75 per cent of the working interests qualified to vote are owned by one party to this agreement, a concurring vote of one or more additional working interest owners shall be required to select a new operator. Such selection shall not become effective until (a) a Unit Operator so selected shall accept in writing the duties and responsibilities of Unit Operator, and (b) the selection shall have been approved by the Director and Commissioner. If no successor Unit Operator is selected and qualified as herein provided, the Director and Commissioner at their election may declare this unit agreement terminated.

7. Accounting provisions and unit operating agreement. If the Unit Operator is not the sole owner of working interests, costs and expenses incurred by Unit Operator in conducting unit operations hereunder shall be paid and apportioned among and borne by the owners of working interests, all in accordance with the agreement or agreements entered into by and between the Unit Operator and the owners of working interests, whether one or more, separately or collectively. Any agreement or agreements entered into between the working interest owners and the Unit Operator as provided in this section, whether one or more, are herein referred to as the "unit operating agreement." Such unit operating agreement shall also provide the manner



in which the working interest owners shall be entitled to receive their respective proportionate and allocated share of the benefits accruing hereto in conformity with their underlying operating agreements, leases, or other independent contracts and such other rights and obligations as between Unit Operator and the working interest owners as may be agreed upon by Unit Operator and the working interest owners; however, no such unit operating agreement shall be deemed either to modify any of the terms and conditions of this unit agreement or to relieve the Unit Operator of any right or obligation established under this unit agreement, and in case of any inconsistency or conflict between the unit agreement and the unit operating agreement this unit agreement shall prevail. Three true copies of any unit operating agreement executed pursuant to this section shall be filed with the Supervisor.

8. Rights and obligations of Unit Operator. Except as otherwise specifically provided herein, the exclusive right, privilege, and duty of exercising any and all rights of the parties hereto which are necessary or convenient for prospecting for, producing, storing, allocating, and distributing the unitized substances are hereby delegated to and shall be exercised by the Unit Operator as herein provided. Acceptable evidence of title to said rights shall be deposited with said Unit Operator and, together with this agreement, shall constitute and define the rights, privileges, and obligations of Unit Operator. Nothing herein, however, shall be construed to transfer title to any land or to any lease or operating agreement, it being understood that under this agreement the Unit Operator, in its capacity as Unit Operator, shall exercise the rights of possession and use vested in the parties hereto only for the purposes herein specified.

9. Drilling to discovery. Within 6 months after the effective date hereof, the Unit Operator shall begin to drill an adequate test well at a location approved by the Supervisor if such location is upon lands of the United States, and approved by the Commission

if such location is on State lands or privately owned lands, unless on such effective date a well is being drilled conformably with the terms hereof, and thereafter continue such drilling diligently until the Dakota formation has been tested or until at a lesser depth unitized substance shall be discovered which can be produced in paying quantities (to wit: quantities sufficient to repay the costs of drilling, and producing operations, with a reasonable profit) or the Unit Operator shall at any time establish to the satisfaction of the Supervisor that further drilling of said well would be unwarranted or impracticable, provided, however, that Unit Operator shall not in any event be required to drill said well to a depth in excess of 7,400 feet; and provided further, however, that should drilling be stopped, above the Dakota formation and at a depth less than 7,400 feet, because of the discovery of unitized substances in paying quantities at such lesser depth, the Unit Operator shall, within 6 months after completion of said well, begin to drill another adequate test well at a location approved by the Supervisor, the drilling of which well shall thereafter be continued diligently until the Dakota formation has been tested or until Unit Operator shall at any time establish to the satisfaction of the Supervisor that further drilling of said well would be unwarranted or impractical in which event Unit Operator shall begin another adequate test well to the Dakota formation within 6 months after abandonment of the prior test well unless the drilling of such well is excused by the Director, provided, however, that Unit Operator shall not in any event be required to drill said well or wells to a depth in excess of 7,400 feet. Until the discovery of a deposit of unitized substances capable of being produced in paying quantities, the Unit Operator shall continue drilling diligently one well at a time, allowing not more than 6 months between the completion of one well and the beginning of the next well, until a well capable of producing unitized substances in paying quantities is completed to the satisfaction of said Supervisor if on Federal land, or the

*and the Commission*  
Commissioner if on State land, ~~or~~ the Commission if on privately owned land, or until it is reasonably proved that the unitized land is incapable of producing unitized substances in paying quantities in the formations drilled hereunder. Nothing in this section shall be deemed to limit the right of the Unit Operator to resign as provided in Section 5 hereof, or as requiring Unit Operator to commence or continue any drilling during the period pending such resignation becoming effective in order to comply with the requirements of this section. The Director and the Commissioner may modify the drilling requirements of this section by granting reasonable extensions of time when, in their opinions, such action is warranted.

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

10. Plan of further development and operation. Within 6 months after completion of a well capable of producing unitized substances in paying quantities, the Unit Operator shall submit for the approval of the Supervisor, the Commissioner and the Commission an acceptable plan of development and operation for the unitized land which, when approved by the Supervisor, the Commissioner and the Commission, shall constitute the further drilling and operating obligations of the Unit Operator under this agreement for the period specified therein. Thereafter, from time to time before the expiration of any existing plan, the Unit Operator shall submit for the approval of the Supervisor, the Commissioner and the Commission a plan for an additional specified period for the development and operation of the unitized land. Any plan submitted pursuant to this section shall provide for the exploration of the unitized area and for the determination of the area or areas thereof capable of producing unitized substances in paying quantities in each and every

productive formation and shall be as complete and adequate as the Supervisor, the Commissioner and the Commission may determine to be necessary for timely development and proper conservation of the oil and gas resources of the unitized area and shall (a) specify the number and location of any wells to be drilled and the proposed order and time for such drilling; and (b) to the extent practicable specify the operating practices regarded as necessary and advisable for proper conservation of natural resources. Separate plans may be submitted for separate productive zones, subject to the approval of the Supervisor, the Commissioner and the Commission. Said plan or plans shall be modified or supplemented when necessary to meet changed conditions or to protect the interests of all parties to this agreement. Reasonable diligence shall be exercised in complying with the obligations of the approved plan of development. The Supervisor and the Commissioner are authorized to grant a reasonable extension of the 6-month period herein prescribed for submission of an initial plan of development where such action is justified because of unusual conditions or circumstances. After completion hereunder of a well capable of producing any unitized substance in paying quantities, no further wells, except such as may be necessary to afford protection against operations not under this agreement or such as may be specifically approved by the Supervisor and Commission shall be drilled except in accordance with a plan of development approved as herein provided.

11. Participation after discovery. The unit area is hereby divided into Drilling Blocks containing 320 acres each, more or less, which Drilling Blocks shall constitute one-half sections, by government survey, the sections being divided by a line running north and south in such manner that each Drilling Block shall be either the East Half (E/2) or the West Half (W/2) of each given section, provided, however, that in any instances of irregular surveys that portion of a section which most nearly constitutes either the East Half (E/2) or the West Half (W/2) shall constitute a Drilling Block

even though its acreage may be irregular, and provided further that any irregular strips or small tracts shall attach to the adjacent Drilling Blocks to which they most logically attach within the limitations for Drilling Blocks as herein set forth, and provided further that in the event any portion of the area subject to this agreement is not surveyed, Unit Operator shall project the survey from the nearest established government survey points for the purposes of this agreement.

Upon completion of a well capable of producing unitized substances or as soon thereafter as required by the Supervisor or the Commissioner, the Unit Operator shall determine whether said well is capable of producing unitized substances in paying quantities and shall advise the Supervisor, the Commissioner and the Commission of its conclusion in that regard, giving the data upon which its conclusion is based and identifying the Drilling Block upon which said well is located. Protests against said conclusion may be filed with the Director, the Commissioner and the Commission within 15 days thereafter but unless the Director, the Commissioner or the Commission shall, within 30 days after the filing of the original statement of conclusion by Unit Operator, disapprove of such conclusion, all of the land in said Drilling Block shall constitute a participating area effective as of the date of first production. Said schedule also shall set forth the percentage of unitized substances to be allocated as herein provided to each unitized tract in the participating area so established, and shall govern the allocation of production from and after the date the participating area becomes effective. A separate participating area shall be established in like manner for each separate pool or deposit of unitized substances or for any group thereof producing as a single pool or zone, and all of the provisions of this section of this agreement shall be considered as applicable separately for each such participating area. It is hereby agreed for the purposes of this agreement that all wells completed for production in the Pictured

Cliffs formation shall be regarded as producing from a single zone or pool and all wells completed for production in the Mesaverde group shall be regarded as producing from a single zone or pool. Additional Drilling Blocks, subject to any limitations elsewhere set out in this agreement, shall be admitted to the participating area on the first day of the month following the month in which it has been established that a well capable of production of unitized substances in paying quantities has been drilled on any such Drilling Block, and the percentage of allocation shall be revised accordingly, in which event all of the production prior to the effective date of admission of such Drilling Block to the participating area shall be credited solely to the account of that particular block. For the purposes hereof, it shall be deemed that the capability of a well to produce unitized substances in paying quantities has been established when so determined by the Unit Operator and when notice of such determination shall have been delivered to the Supervisor, the Commissioner and the Commission, which notice includes the data upon which the determination is based and identifies the Drilling Block upon which the well is located, subject to the right of any interested party to protest in writing against said determination to the Unit Operator, the Director, the Commissioner and the Commission within 15 days thereafter, however, in any event, such determination shall become effective within 30 days from the date thereof unless disapproved within said 30-day period by the Director, the Commissioner or the Commission. In the event such determination is not upheld and changed conditions subsequently warrant, a new determination based on new showing and a new effective date may be submitted and processed in the same manner as aforesaid. No land shall be excluded from a participating area on account of depletion of the unitized substances.

In the event that any Drilling Block is admitted to a participating area as hereinabove provided when it lies directly north, south, east, or west of any Drilling Block already included in said participating area, and where there is one, but only one intervening

Drilling Block on which no well has then been drilled, said intervening Drilling Block shall also be admitted to said participating area at the same time, in the same manner and subject to the same conditions as the Drilling Block which is then admitted to such participating area by reason of the completion of a well thereon capable of producing unitized substances in paying quantities. In such event, the drilling of a well on such undrilled intervening Drilling Block shall be commenced, within one year from the effective date of said Drilling Block's inclusion in the participating area, unless said time be extended by the Director, Commissioner, and Commission, and shall be continued with due diligence to the depth necessary to test the horizon from which production is secured in said participating area.

If the initial well on any Drilling Block is not capable of production in paying quantities and at a later date a well is drilled on such Drilling Block which is capable of production of unitized substances in paying quantities, then that portion of the Drilling Block considered to be capable of production in paying quantities by reasonable geologic inference shall be admitted to the participating area upon recommendation of the Unit Operator and approval of the Director, the Commissioner and the Commission. If geologic inference is not applicable, the forty-acre tract by government survey, existing or projected, on which the producible well is drilled and all other untested forty-acre tracts or lots approximating 40 acres lying within the Drilling Block shall be admitted to the participating area.

If any drilling block, or portion thereof, on which a well has been drilled is not included in a participating area, conformably with the provisions of this agreement, and thereafter should become capable of production in paying quantities by reason of repressuring or other methods of secondary recovery, such drilling block or portion thereof shall be admitted to the applicable participating area on recommendation of the Unit Operator and approval thereof as provided for the inclusion of lands in a participating area in the preceding paragraph hereof.

Regardless of any revision of the participating area, and except as herein elsewhere specifically provided, there shall be no retroactive adjustment for production obtained prior to the effective date of any such revision of the participating area.

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

Whenever it is determined in the manner provided in this agreement that a well drilled under this agreement is not capable of production in paying quantities and inclusion of the Drilling Block on which it is situated in a participating area is unwarranted, production from such well shall, for the purposes of settlement among all parties other than working interest owners, be allocated to the Drilling Block on which the well is located so long as such land is not within a participating area established for the pool or deposit from which such production is obtained. Settlement for working interest benefits from such a well shall be made as provided in the unit operating agreement.

12. Allocation of production. All unitized substances produced from each participating area established under this agreement, except any part thereof used in conformity with good operating practices within the unitized area for drilling, operating, camp and



other production or development purposes, for repressuring or recycling, in accordance with a plan of development approved by the Supervisor, Commissioner and the Commission, or unavoidably lost, shall be deemed to be produced equally on an acreage basis from the several tracts of unitized land of the participating area established for such production and, for the purpose of determining any benefits accruing under this agreement each such tract of unitized land shall have allocated to it such percentage of said production as the number of acres of such tract included in said participating area bears to the total acres of unitized land in said participating area. It is hereby agreed that production of unitized substances from a participating area shall be allocated as provided herein regardless of whether any wells are drilled on any particular part or tract of said participating area. If any gas produced from one participating area is used for repressuring or recycling purposes in another participating area, the first gas withdrawn from such last mentioned participating area for sale during the life of this agreement shall be considered to be the gas so transferred until an amount equal to that transferred shall be so produced for sale and such gas shall be allocated to the participating area from which initially produced as constituted at the time of such final production. For all purposes of this agreement, the acreage of a drilling block, the participating area, or of any separate tracts in either, shall be as shown by the approved Government survey or as calculated therefrom by Unit Operator with the approval of the Director and the Commissioner.

13. Development or operation of non-participating land or formations and drilling of wells not mutually agreed upon. Any party or parties hereto owning or controlling the working interest or a majority of the working interests in any unitized land having thereon a regular well location may, with the approval of the Supervisor as to Federal land, the Commissioner as to State land and the Commission as to privately owned land, and subject to the provision of the Unit Operating Agreement, at such party's sole risk,

cost, and expense drill a well to test any formation for which a participating area has not been established or to test any formation for which a participating area has been established if such location is not within said participating area, or drill any well not mutually agreed to by all interested parties, unless within 90 days of receipt of notice from said party of his intention to drill the well the Unit Operator elects and commences to drill such well in like manner as other wells are drilled by the Unit Operator under this agreement.

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

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

14. Royalty settlement. The United States and any State and all royalty owners who, under existing contract, are entitled to take in kind a share of the substances now unitized hereunder produced from any tract, shall hereafter be entitled to the right to take in kind their share of the unitized substances allocated to such tract, and Unit Operator, or in case of the operation of a well by a working interest owner as herein in special cases provided for, such working interest owner, shall make deliveries of such royalty share taken in kind in conformity with the applicable contracts, laws and regulations. Settlement for royalty interest not taken in kind shall

be made by working interest owners responsible therefor under existing contracts, laws and regulations, on or before the last day of each month for unitized substances produced during the preceding calendar month; provided, however, that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any royalties due under their leases.

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

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

Royalty due on account of State and privately owned lands shall be computed and paid on the basis of all unitized substances

allocated to such lands.

15. Rental settlement. Rental or minimum royalties due on leases committed hereto shall be paid by working interest owners responsible therefor under existing contracts, laws and regulations provided that nothing herein contained shall operate to relieve the lessees of any land from their respective lease obligations for the payment of any rental or minimum royalty in lieu thereof due under their leases. Rental or minimum royalty for lands of the United States subject to this agreement shall be paid at the rate specified in the respective leases from the United States unless such rental or minimum royalty is waived, suspended, or reduced by law or by approval of the Secretary or his duly authorized representative.

Rentals on State of New Mexico lands subject to this agreement shall be paid at the rates specified in the respective leases, or may be reduced or suspended upon the order of the Commissioner pursuant to applicable laws and regulations.

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

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

17. Drainage. The Unit Operator shall take appropriate and adequate measures to prevent drainage of unitized substances from unitized land by wells on land not subject to this agreement or pursuant to applicable regulations pay a fair and reasonable

compensatory royalty as determined by the Supervisor for Federal lands or as approved by the Commissioner for State lands.

18. Leases and contracts conformed and extended. The terms, conditions, and provisions of all leases, subleases, and other contracts relating to exploration, drilling, development, or operation for oil or gas of lands committed to this agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect; and the parties hereto hereby consent that the Secretary and the Commissioner respectively shall and by their approval hereof, or by the approval hereof by their duly authorized representatives, do hereby establish, alter, change or revoke the drilling, producing, rental, minimum royalty, and royalty requirements of Federal and State leases committed hereto and the regulations in respect thereto to conform said requirements to the provisions of this agreement, and, without limiting the generality of the foregoing, all leases, subleases, and contracts are particularly modified in accordance with the following:

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

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

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

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

(e) Any Federal lease for a fixed term of twenty (20) years ~~or~~ any renewal thereof or any part of such lease which is made subject to this agreement shall continue in force beyond the term provided therein until the termination hereof. Any other Federal lease ~~or any State lease~~ committed hereto shall continue in force beyond the term so provided therein or by law as to the committed land so long as such land remains committed hereto, provided unitized substances are discovered in paying quantities within the unit area prior to the expiration date of the primary term of such lease.

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

(g) Any lease having only a portion of its lands committed hereto shall be segregated as to the portion committed and the portion not committed, and the terms of such lease shall apply separately to such aggregated portions commencing as of the effective date hereof. In the event any such lease provides for a lump sum rental payment such payment shall be prorated between the portions so segregated in proportion to the acreage of the

respective tracts.

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

20. Effective date and term. This agreement shall become effective upon approval by the Secretary or his duly authorized representative and shall terminate five (5) years from the effective date of this agreement unless (a) such date of expiration is extended by the Director and Commissioner, or (b) it is reasonably determined prior to the expiration of the fixed term or any extension thereof that the unitized land is incapable of production of unitized substances in paying quantities in the formations tested hereunder and after notice of intention to terminate the agreement on such ground is given by the Unit Operator to all parties in interest at their last known addresses, the agreement is terminated with the approval of the Director and Commissioner, or (c) a valuable discovery of unitized substances has been made on unitized land during said initial term or any extension thereof, in which event the agreement shall remain in effect for such term and so long as unitized substances can be produced in paying quantities, i. e., in this particular instance in quantities sufficient to pay for the cost of producing same from wells on unitized land within any participating area established hereunder and, should production cease, so long thereafter as diligent operations are in progress for the restoration of production or discovery of new production and so long thereafter as the unitized substances so discovered can be produced as aforesaid, or (d) it is terminated as heretofore

provided in this agreement.

This agreement may be terminated at any time by not less than 75 per centum, on an acreage basis, of the owners of working interests signatory hereto, with the approval of the Director; notice of any such approval to be given by the Unit Operator to all parties hereto.

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

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

22. Automatic Elimination. Notwithstanding any other provisions of this agreement, any lease no portion of which is included within a participating area within 5 years after the first sale of unitized substances from any lands subject to this agreement, shall be automatically eliminated from this agreement and said lease and the lands covered thereby shall no longer be a part of the unit area and shall no longer be subject to this agreement, unless at the expiration of said 5 year period drilling operations are in progress on such lease in which event the lands covered by such lease



shall remain subject hereto and within said unit area for so long as such drilling operations are continued diligently and so long thereafter as such lands or any portion thereof may be included in a participating area hereunder. Inasmuch as any elimination under this section is automatic, the Unit Operator shall, within 90 days after any such elimination hereunder, describe the area so eliminated and promptly notify all parties in interest.

23. Determinations by unit operator and review thereof.

Whenever a determination is required to be made in order to carry out the express terms of this agreement and the agreement does not specify by whom such determination shall be made, the Unit Operator is hereby authorized to make the necessary determination subject to approval of the Director in the manner hereinafter provided. Notice of any such determination by the Unit Operator, accompanied by data in support thereof shall be furnished to the Director through the Supervisor. If, after reviewing all the available evidence the Director finds that the determination reviewed is incorrect he shall advise the Unit Operator accordingly, stating the reasons therefor, and thereupon such determination shall be of no force and effect.

The Unit Operator shall then make a new determination in conformity with the finding of the Director or appeal to the Secretary as provided in the Operating Regulations. All determinations made by the Unit Operator pursuant to this section shall be effective unless and until altered, modified, or rescinded as herein provided.

Any party hereto shall have the right to request the Director (such request to be accompanied by appropriate supporting evidence) to review any determination made by the Unit Operator pursuant to this section not previously reviewed on appeal to the Secretary. Such request will be granted or denied in the discretion of the Director within 60 days after being received. If denied, the requesting party shall have the right to appeal to the Secretary. If the request for review is granted and thereafter the Director finds that the determination should be altered, modified, or rescinded, the Unit Operator shall be advised accordingly and shall

either comply with the finding of the Director or appeal to the Secretary.

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

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

26. Notices. All notices, demands or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if given in writing and personally delivered to

the party or sent by postpaid registered mail, addressed to such party or parties at their respective addresses set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party may have furnished in writing to party sending the notice, demand or statement.

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

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

29. Fair employment. The Unit Operator shall not discriminate against any employee or applicant for employment because of race, creed, color or national origin, and an identical provision shall be incorporated in all subcontracts.

30. Loss of title. In the event title to any tract of unitized land shall fail and the true owner cannot be induced to join in this unit agreement, such tract shall be automatically regarded as not committed hereto and there shall be such readjustment of future costs and benefits as may be required on account of the loss of such title. In the event of a dispute as to title as to any royalty, working interest, or other interests subject thereto, payment or delivery on account thereof may be withheld without liability

for interest until the dispute is finally settled; provided, that, as to Federal and State land or leases, no payments of funds due the United States or State of New Mexico should be withheld, but such funds shall be deposited as directed by the Supervisor, and with the Commissioner as to State lands, to be held as unearned money pending final settlement of the title dispute, and then applied as earned or returned in accordance with such final settlement.

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

31. Non-joinder and subsequent joinder. If the owner of any substantial interest in a tract within the unit area fails or refuses to subscribe or consent to this agreement, the owner of the working interest in that tract may withdraw said tract from this agreement by written notice to the Director, Commissioner and the Unit Operator prior to the approval of this agreement by the Director. Any oil or gas interests in lands within the Unit area not committed hereto prior to submission of this agreement for final approval may thereafter be committed hereto by the owner or owners thereof subscribing or consenting to this agreement, and, if the interest is a working interest, by the owner of such interest also subscribing to the unit operating agreement. After operations are commenced hereunder the right of subsequent joinder, as provided in this section by a working interest owner is subject to such requirements or approvals, if any, pertaining to such joinder, as may be provided for in the unit operating agreement. After final approval hereof joinder by a non-working interest owner must be consented to in writing by the working interest owner committed hereto and responsible for the payment of any benefits that may accrue hereunder in behalf of such non-working interest. Prior to final approval hereof, joinder by any owner of a non-working interest must be accompanied by appropriate joinder by the owner of the corresponding working interest in order for the interest to be regarded as effectively committed hereto. Except as may otherwise herein be provided, subsequent joinders to this agreement shall be

effective as of the first day of the month following the filing with the Supervisor, the Commissioner and the Commission of duly executed counterparts of all or any papers necessary to establish effective commitment of any tract to this agreement unless objection to such joinder is duly made within 60 days by the Director, Commissioner or Commission.

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

33. Surrender. Nothing in this agreement shall prohibit the exercise by any working interest owner of the right to surrender vested in such party in any lease, sub-lease, or operating agreement as to all or any part of the lands covered thereby, provided that each party who will or might acquire such working interest by such surrender or by forfeiture as hereafter set forth, is bound by the terms of this agreement.

If as a result of any such surrender, the working interest rights as to such lands become vested in any party other than the fee owner of the unitized substances, said party shall forfeit such rights and no further benefits from operations hereunder as to said land shall accrue to such party, unless within ninety (90) days thereafter said party shall execute this agreement and the unit operating agreement as to the working interest acquired through such surrender, effective as though such land had remained continuously subject to this agreement and the unit operating agreement. And in the event such agreements are not so executed, the party next in the chain of title shall be and become the owner of such working interest at the end of such ninety (90) day period, with the same force and

effect as though such working interest had been surrendered to such party.

If, as the result of any such surrender or forfeiture, the working interest rights as to such lands become vested in the fee owner of the unitized substances such owner may:

(1) Execute this agreement and the unit operating agreement as a working interest owner, effective as though such land had remained continuously subject to this agreement and the unit operating agreement.

(2) Again lease such lands but only under the condition that the holder of such lease shall within thirty (30) days after such lands are so leased execute this agreement and the unit operating agreement as to each participating area theretofore established hereunder, effective as though such land had remained continuously subject to this agreement and the unit operating agreement.

(3) Operate or provide for the operation of such land independently of this agreement as to any part thereof or any oil or gas deposits therein not then included within a participating area.

If the fee owner of the unitized substances does not execute this agreement and the unit operating agreement as a working interest owner or again lease such lands as above provided with respect to each existing participating area, within six (6) months after any such surrender or forfeiture, such fee owner shall be deemed to have waived the right to execute the unit operating agreement or lease such lands as to each such participating area, and to have agreed, in consideration for the compensation hereinafter provided, that operations hereunder as to any such participating area or areas shall not be affected by such surrender.

For any period the working interests in any lands are not expressly committed to the unit operating agreement as the result of any such surrender or forfeiture, the benefits and obligations of operations accruing to such lands under this agreement and the unit operating agreement shall be shared by the remaining owners of unitized

working interests in accordance with their respective participating working interest ownerships in any such participating area or areas, and such owners of working interests shall compensate the fee owner of unitized substances in such lands by paying sums equal to the rentals, minimum royalties, and royalties applicable to such lands under the lease in effect when the lands were unitized, as to such participating area or areas.

Upon commitment of a working interest to this agreement and the unit operating agreement as provided in this section, an appropriate accounting and settlement shall be made, to reflect the retroactive effect of the commitment, for all benefits accruing to or payments and expenditures made or incurred on behalf of such surrendered working interest during the period between the date of surrender and the date of recommitment, and payment of any moneys found to be owing by such an accounting shall be made as between the parties then signatory to the unit operating agreement and this agreement within thirty (30) days after the recommitment. The right to become a party to this agreement and the unit operating agreement as a working interest owner by reason of a surrender or forfeiture as provided in this section shall not be defeated by the non-existence of a unit operating agreement and in the event no unit operating agreement is in existence and a mutually acceptable agreement between the proper parties thereto cannot be consummated, the Supervisor may prescribe such reasonable and equitable agreement as he deems warranted under the circumstances.

Nothing in this section shall be deemed to limit the right of joinder or subsequent joinder to this agreement as provided elsewhere in this agreement. The exercise of any right vested in a working interest owner to reassign such working interest to the party from whom obtained shall be subject to the same conditions as set forth in this section in regard to the exercise of a right to surrender.

34. Taxes. The working interest owners shall render and pay for their account and the account of their royalty owners all valid taxes on or measured by the unitized substances in and under or that

EXHIBIT "B"

RECAP

Tracts 1 to 81 Inclusive

Total No. of Acres:

Federal Leases: 62,109.63

State Leases: 8,672.46

Fee Lands: 2,599.25

Total Acreage in Unit 73,381.34

PERCENT OF TOTAL

84.6%

11.8%

3.6%

100.0%



Tract No.	Description of Land	Number of Acres	Application or Serial No. and Effective Date of Lease	Basic Royalty and Percentage	FEDERAL LEASES		
					Lessee of Record	Overriding Royalty and Percentage	Working Interest and Percentage
1.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 29: SW<math>\frac{1}{4}</math>, W<math>\frac{1}{2}</math>SE<math>\frac{1}{4}</math></u> <u>Sec. 30: S<math>\frac{1}{2}</math></u>	560	Federal 078532 4-1-48	U. S. - All	Jules Constantine, deceased	None	Jules Constantine, deceased - All
2.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 31: All</u>	640	Federal 078534 7-1-48	U. S. - All	John L. Tracy	None	John L. Tracy - All
3.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 33: All</u>	640	Federal 078555 7-1-48	U. S. - All	Lucielle H. Pipkin	None	Lucielle H. Pipkin - All
4.	<u>T. 24 N., R. 7 W.</u> <u>Sec. 13: S<math>\frac{1}{2}</math></u> <u>T. 24 N., R. 6 W.</u> <u>Sec. 18: S<math>\frac{1}{2}</math></u> <u>Sec. 19: All</u> <u>T. 24 N., R. 6 W.</u> <u>Sec. 30: N<math>\frac{1}{2}</math></u>	1598.54	Federal 078562 5-1-48	U. S. - All	W. Edward Lee, 9/128 int. E. B. Germany, 1/4 int. # Isadore Roosth, 1/4 int. # A. S. Genecov, 1/4 int. S. Otto Craft, 7/128 int. # W. A. Pounds, 1/16 int. # Leo R. Manning, 1/16 int.	Zollie H. Tyrone 195/256 of 1% Ralph A. Johnston 1 $\frac{1}{4}$ % Ewel H. Stone 1/4 of 1% Gladys Watford, 2% Phil E. Davant 125/256 of 1% B. W. Woolley 1/4 of 1%	W. Edward Lee - 9/128 int. E. B. Germany - 1/4 int. Isadore Roosth - 1/4 int. A. S. Genecov - 1/4 int. S. Otto Craft - 7/128 int. W. A. Pounds, 1/16 int. Leo R. Manning, 1/16 int.
5.	<u>T. 24 N., R. 7 W.</u> <u>Sec. 24: NW<math>\frac{1}{4}</math></u>	160	Federal 078563 2-1-48	U. S. - All	Helen Fields Harkins	Ewel H. Stone, 5/8 of 1% Ralph A. Johnston 195/512 of 1% Phil E. Davant 125/512 of 1% B. W. Woolley 5/8 of 1%	Helen Fields Harkins - All

<u>Tract No.</u>	<u>Description of Land</u>	<u>Number of Acres</u>	<u>Application or Serial No. and Effective Date of Lease</u>	<u>Basic Royalty and Percentage</u>	<u>Lessee of Record</u>	<u>Overriding Royalty and Percentage</u>	<u>Working Interest and Percentage</u>
6.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 14: S<math>\frac{1}{2}</math></u>	320	Federal 078573 5-1-48	U. S. - All	S. Victor Day	None	S. Victor Day - All
7.	<u>T. 24 N., R. 7 W.</u> <u>Sec. 6: NW<math>\frac{1}{4}</math></u>	170.56	Federal 078575 4-1-48	U. S. - All	Dacresa Corporation- 56.332% Brookhaven Oil Co. - 43.668%	None	Dacresa Corporation - 56.332% Brookhaven Oil Co. - 43.668%
8.	<u>T. 24 N., R. 7 W.</u> <u>Sec. 12: NE<math>\frac{1}{4}</math>, S<math>\frac{1}{2}</math></u> <u>Sec. 13: NE<math>\frac{1}{2}</math></u>	800	Federal 078584 5-1-48	U. S. - All	T. H. McElvain and Forrest B. Miller	Fay H. Dasho 1-1/4% W. R. Childers 1-1/4% # Mrs. Hilda First, Lorraine Miller & Walter C. Miller - 1/2 of 1%	T. H. McElvain and Forrest B. Miller - All
9.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 22: W<math>\frac{1}{2}</math>, SE<math>\frac{1}{4}</math></u>	480	Federal 078598 4-1-48	U. S. - All	Robert Donnell	None	Robert Donnell - All
10.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 23: NE<math>\frac{1}{2}</math></u>	320	Federal 078608 4-1-48	U. S. - All	James W. Crockett	None	James W. Crockett - All
11.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 15: N<math>\frac{1}{2}</math>NE<math>\frac{1}{4}</math></u> <u>S<math>\frac{1}{2}</math>SE<math>\frac{1}{4}</math></u>	160	Federal 078628 4-1-48	U. S. - All	Walter Famariss, Jr. 1/2 int. J. B. Davis 1/2 int.	None	Walter Famariss, Jr. 1/2 int. J. B. Davis 1/2 int.

<u>Tract No.</u>	<u>Description of Land</u>	<u>Number of Acres</u>	<u>Application or Serial No. and Effective Date of Lease</u>	<u>Basic Royalty and Percentage</u>	<u>Lessee of Record</u>	<u>Overriding Royalty and Percentage</u>	<u>Working Interest and Percentage</u>
12.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 15: W<math>\frac{1}{2}</math></u>	320	Federal 078628-A  4-1-48	U. S. - All	Claude A. Teel	Walter Famarriss, Jr. and J. B. Davis 2-1/2% J. Felix Hickman and Wife 2-1/2%	Claude A. Teel - All
13.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 4: All</u>	640.00	Federal 078629 4-1-48	U. S. - All	H. K. Riddle	None	H. K. Riddle
14.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 10: N<math>\frac{1}{2}</math></u> <u>Sec. 9: W<math>\frac{1}{2}</math></u>	320 320	Federal 078631 4-1-48	U. S. - All	T. Jack Foster	None	T. Jack Foster - All
15.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 29: N<math>\frac{1}{2}</math>W<math>\frac{1}{4}</math>, S<math>\frac{1}{2}</math>NE<math>\frac{1}{4}</math></u>	160	Federal 078724 5-1-48	U. S. - All	H. H. Phillips	None	H. H. Phillips - All
16.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 3: All except Lots</u> <u>1, 2, 3 and 4</u> <u>Sec. 4: All except Lots</u> <u>1, 2, 3 and 4</u> <u>Sec. 5: All except Lots</u> <u>1, 2, 3 and 4</u> <u>Sec. 6: All except Lots</u> <u>1, 2, 3 and 4</u>	       2559.04	Federal 078874  8-1-49	U. S. - All	H. J. Phillips	*H. J. Phillips 2-1/2%	Option to Superior Oil Company All

Tract No.	Description of Land	Number of Acres	Application or Serial No. and Effective Date of Lease	Basic Royalty and Percentage	Lessee of Record	Overriding Royalty and Percentage	Working Interest and Percentage
17.	<u>T. 25 N., R. 6 W.</u> Sec. 29: All Sec. 30: All Sec. 31: All Sec. 33: All	2561.68	Federal 078875  8-1-48	U.S. - All	Inabeth Phillips	*Inabeth Phillips 2-1/2%	Option to Superior Oil Company - All
18	<u>T. 25 N., R. 7 W.</u> Sec. 29: All Sec. 30: All Sec. 31: All Sec. 33: All	2561.64	Federal 078876  5-1-48	U.S. - All	Jack B. Wilkinson	*Jack B. Wilkinson 2-1/2%	Option to Superior Oil Company - All
19.	<u>T. 24 N., R. 6 W.</u> Sec. 8: All Sec. 9: All Sec. 11: All Sec. 12: N <sub>2</sub> <sup>1</sup> , SW <sub>4</sub> <sup>1</sup> , N <sub>2</sub> SE <sub>4</sub> <sup>1</sup> Sec. 13: W <sub>2</sub> NE <sub>4</sub> <sup>1</sup>	8-1-48   2560	Federal 078877  8-1-48	U.S. - All	W. H. Sloan	*W. H. Sloan 2-1/2%	Option to Superior Oil Company - All
20.	<u>T. 25 N., R. 7 W.</u> Sec. 25: All Sec. 26: All Sec. 27: All Sec. 28: All	9-1-49   2560	Federal 078878  9-1-49	U.S. - All	James D. Sadler	*James D. Sadler 2-1/2%	Option to Superior Oil Company - All
21.	<u>T. 25 N., R. 7 W.</u> Sec. 21: All Sec. 22: All Sec. 23: All Sec. 24: All	2560	Federal 078879  10-1-48	U.S. - All	C. C. Hightower	*Anne Lou Home 2-1/2%	Option to Superior Oil Company - All

<u>Tract No.</u>	<u>Description of Land</u>	<u>Number of Acres</u>	<u>Application or Serial No. and Effective Date of Lease</u>	<u>Basic Royalty and Percentage</u>	<u>Lessee of Record</u>	<u>Overriding Royalty and Percentage</u>	<u>Working Interest and Percentage</u>
22.	T. 25 N., R. 7 W. Sec. 9: S $\frac{1}{4}$ Sec. 10: S $\frac{1}{2}$ Sec. 13: All Sec. 14: All Sec. 15: All	2560	Federal 078880  8-1-48	U.S. - All	Helen Fasken House	*Helen Fasken House 2-1/2%	Option to Superior Oil Company - All
23.	T. 25 N., R. 7 W. Sec. 1: All Sec. 3: Lots 1, 2, S $\frac{1}{2}$ NE $\frac{1}{4}$ , S $\frac{1}{2}$ Sec. 11: All Sec. 12: All	2400.64	Federal 078881  7-1-48	U.S. - All	Ina Belle Hightower	*Ina Belle Hightower 2-1/2%	Option to Superior Oil Company - All
23A.	T. 25 N., R. 7 W. Sec. 3: Lots 3, 4, S $\frac{1}{2}$ NW $\frac{1}{4}$	160.80	Federal 078881A 7-1-48	U.S. - All	The Superior Oil Co.	*Ina Belle Hightower 2-1/2%	The Superior Oil Company
24.	T. 25 N., R. 6 W. Sec. 17: All Sec. 18: All Sec. 19: All Sec. 20: All	2561.72	Federal 078882  7-1-48	U.S. - All	H. P. Slagel	*Barron Kidd 2-1/2%	Option to Superior Oil Company - All
25.	T. 25 N., R. 6 W. Sec. 4: NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 5: S $\frac{1}{2}$ S $\frac{1}{2}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ NE $\frac{1}{4}$ Sec. 6: All Sec. 7: All Sec. 8: All	2570.55	Federal 078883  8-1-48	U.S. - All	Mary Velma Sealy	*Mary Velma Sealy 2-1/2%	Option to Superior Oil Company - All

Tract No.	Description of Land	Number of Acres	Application or Serial No. and Effective Date of Lease	Basic Royalty and Percentage	Lessee of Record	Overriding Royalty and Percentage	Working Interest and Percentage
26.	T. 25 N., R. 6 W. Sec. 12: All Sec. 13: All Sec. 14: All Sec. 15: N <sub>2</sub> <sup>1</sup> , N <sub>2</sub> <sup>1</sup> S <sub>2</sub> <sup>1</sup> , S <sub>2</sub> <sup>1</sup> SE <sub>4</sub> <sup>1</sup> Sec. 22: N <sub>2</sub> <sup>1</sup> NE <sub>4</sub> <sup>1</sup>	2560	Federal 078884  8-1-48	U.S. - All	Alberta Sloan	*Alberta Sloan 2-1/2%	Option to Superior Oil Company - All
27.	T. 25 N., R. 6 W. Sec. 1: All Sec. 3: All Sec. 10: All Sec. 11: All	2563.32	Federal 078835  8-1-48	U.S. - All	Katherine B. Yarbrough	*Anne Lou Home 2-1/2%	Option to Superior Oil Company - All
28.	T. 24 N., R. 6 W. Sec. 17: All Sec. 20: All Sec. 21: All Sec. 28: All	2560	Federal 078886  8-1-48	U.S. - All	C. B. Yarbrough	*C. B. Yarbrough 2-1/2%	Option to Superior Oil Company - All
29.	T. 24 N., R. 7 W. Sec. 1: N <sub>2</sub> <sup>1</sup> , N <sub>2</sub> <sup>1</sup> S <sub>2</sub> <sup>1</sup> , SW <sub>4</sub> <sup>1</sup> SW <sub>4</sub> <sup>1</sup> Sec. 3: All Sec. 4: All Sec. 5: All	2552.32	Federal 078922  4-1-48	U.S. - All	Hal C. Peck	*Hal C. Peck 2-1/2%	Option to Superior Oil Company - All
30.	T. 24 N., R. 7 W. Sec. 9: All Sec. 10: All	1280	Federal 078923 2-1-48	U.S. - All	Ralph Lowe	*Ralph Lowe 2-1/2%	Option to Superior Oil Company - All

<u>Tract No.</u>	<u>Description of Land</u>	<u>Number of Acres</u>	<u>Application or Serial No. and Effective Date of Lease</u>	<u>Basic Royalty and Percentage</u>	<u>Lessee of Record</u>	<u>Overriding Royalty and Percentage</u>	<u>Working Interest and Percentage</u>
31.	<u>T. 24 N., R. 6 W.</u> Sec. 25: All Sec. 26: All Sec. 27: All Sec. 34: All	2560	Federal 078925  5-1-48	U.S. - All	A. Fasken	*A. Fasken 2-1/2%	Option to Superior Oil Company - All
32.	<u>T. 24 N., R. 6 W.</u> Sec. 3: Lots, 1,2,3,4 Sec. 4: Lots, 1,2,3,4 Sec. 5: Lots 1,2,3,4 Sec. 6: Lots 1,2,3,4	149.15	Federal 078957  2-1-48	U.S. - All	Roseller Busby	*C. B. Yarbrough 2-1/2%	Option to Superior Oil Company - All
33.	<u>T. 24 N., R. 7 W.</u> Sec. 7: S $\frac{1}{2}$	320	Federal 078559 3-1-48	U.S. - All	Southern Union Gas Company	Richard H. Ernest 5%	Southern Union Gas Company - All
34.	<u>T. 24 N., R. 7 W.</u> Sec. 7: N $\frac{1}{2}$	320	Federal 078974  2-1-48	U.S. - All	Francis J. Donahue, Adm'r. - 1/4 int. H. A. McIntosh - 1/4 int. Robert M. Miller-1/4 int. A. L. Pahl - 1/4 int.	None	Francis J. Donahue, Adm'r. - 1/4 int. H. A. McIntosh, 1/4 int. Robert M. Miller, 1/4 int. A. L. Pahl, 1/4 int.
35.	<u>T. 25 N., R. 7 W.</u> Sec. 34: All Sec. 35: All	1280	Federal 078987 4-1-48	U.S. - All	Claude A. Teel	Richard R. Zanotti & Anise Bellamah, 2/3 of 5% Betty Payne and Thomas G. Payne 1/3 of 5%	Claude A. Teel - All
36.	<u>T. 25 N., R. 6 W.</u> Sec. 21: W $\frac{1}{2}$ , S $\frac{1}{2}$ SE $\frac{1}{4}$ Sec. 28: N $\frac{1}{2}$	720	Federal 079071 7-1-48	U.S. - All	New Mexico Natural Gas Company	Mildred D. Olle 5% (?)	New Mexico Natural Gas Company - All

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37.	T. 25 N., R. 6 W. Sec. 22: SW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 27: N $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 28: SW $\frac{1}{4}$	320	Federal 079071-A  7-1-48	U.S. - All	A. G. Hill	Mildred D. Ollie - 5% 1% to Leo R. Manning when production exceeds 15 bbls. or 500,000 cu. ft. of gas	A. G. Hill - All
38.	T. 24 N., R. 6 W. Sec. 10: S $\frac{1}{2}$ , N $\frac{1}{2}$ N $\frac{1}{2}$ Sec. 13: NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 14: N $\frac{1}{2}$ Sec. 18: N $\frac{1}{4}$ Sec. 23: S $\frac{1}{2}$ Sec. 24: All Sec. 35: S $\frac{1}{2}$ N $\frac{1}{2}$ , NW $\frac{1}{4}$ NW $\frac{1}{4}$	2319.02	Federal 079086  10-1-51	U.S. - All	W. Edward Lee - 17/128 Isadore Roosth - 1/4 E. B. Germany - 1/4 Rudco Oil & Gas Co. - 1/4 S. Otto Craft - 7/128 Leo R. Manning - 1/16	As to Sec. 13: NW $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 14: N $\frac{1}{2}$ , Sec. 23: S $\frac{1}{2}$ , Sec. 24: All, Sec. 35: S $\frac{1}{2}$ N $\frac{1}{2}$ , NW $\frac{1}{4}$ NW $\frac{1}{4}$ # E. H. Stone, 5/8 of 1% 3 1/8% Nancy Cutler # 125/512 of 1% - P. E. Davant # 195/512 of 1% - R. A. Johnston # B. W. Wooley, 5/8 of 1% As to Sec. 10: N $\frac{1}{2}$ N $\frac{1}{2}$ , S $\frac{1}{2}$ Sec. 18: N $\frac{1}{2}$ Nancy Cutler - 5%	W. Edward Lee - 17/128 Isadore Roosth - 1/4 E. B. Germany - 1/4 Rudco Oil & Gas Co. - 1/4 S. Otto Craft - 7/128 Leo R. Manning - 1/16
39.	T. 25 N., R. 6 W. Sec. 23: SE $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 26: E $\frac{1}{2}$ , E $\frac{1}{2}$ W $\frac{1}{2}$ Sec. 28: W $\frac{1}{2}$ SE $\frac{1}{4}$ Sec. 35: E $\frac{1}{2}$ , N $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$ , S $\frac{1}{2}$ SW $\frac{1}{4}$	1120	Federal 079139  12-1-51	U.S. - All	# Helen Fields Harkins	Ewel H. Stone 5/8 of 1% B. W. Wooley 5/8 of 1%	Helen Fields Harkins - All
40.	T. 25 N., R. 6 W. Sec. 25: All	640	Federal 079171 5-1-48	U.S. - All	Levi A. Hughes	None	Levi A. Hughes - All



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41.	T. 25 N., R. 6 W. Sec. 4: Lots 2 and 4, SW $\frac{1}{4}$ NW $\frac{1}{4}$ , W $\frac{1}{2}$ SW $\frac{1}{4}$ Sec. 9: S $\frac{1}{2}$ , S $\frac{1}{4}$ N $\frac{1}{2}$ , NW $\frac{1}{4}$ NW $\frac{1}{4}$ NE $\frac{1}{4}$ NE $\frac{1}{4}$ Sec. 23: N $\frac{1}{2}$ NE $\frac{1}{4}$ , S $\frac{1}{2}$ SE $\frac{1}{4}$ Sec. 24: E $\frac{1}{2}$ , E $\frac{1}{4}$ W $\frac{1}{2}$ , NW $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ SW $\frac{1}{4}$ 1481.31		Federal 079177  7-1-48	U.S. - All	A. G. Hill	Harold Fields - 5%	A. G. Hill - All
42.	T. 24 N., R. 6 W. Sec. 29: N $\frac{1}{2}$ NE $\frac{1}{4}$ , S $\frac{1}{2}$ NW $\frac{1}{4}$ E $\frac{1}{2}$ SE $\frac{1}{4}$	240	Federal 079428 5-1-48	U.S. - All	Claude A. Teel	Jose E. Armijo Carl W. Ilfeld, 3%	Claude A. Teel - All
43.	T. 24 N., R. 7 W. Sec. 1: SE $\frac{1}{4}$ SW $\frac{1}{4}$ , S $\frac{1}{2}$ SE $\frac{1}{4}$	120	Federal 079915 9-1-48	U.S. - All	Hal C. Peck	*Hal C. Peck 2-1/2%	Option to Superior Oil Company - All
44.	T. 25 N., R. 6 W. Sec. 21: E $\frac{1}{2}$ NE $\frac{1}{4}$ Sec. 22: S $\frac{1}{2}$ N $\frac{1}{2}$ , SE $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ NW $\frac{1}{4}$ SW $\frac{1}{4}$ Sec. 23: W $\frac{1}{2}$ W $\frac{1}{2}$ , NE $\frac{1}{4}$ NW $\frac{1}{4}$ Sec. 26: W $\frac{1}{2}$ W $\frac{1}{2}$ Sec. 27: E $\frac{1}{2}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$ Sec. 34: N $\frac{1}{2}$ , SW $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$ , SE $\frac{1}{4}$ SE $\frac{1}{4}$ 1920		Federal 080136  5-1-48	U.S. - All	*Jackie Campbell	Ralph A. Johnston - 195/512 of 1% Phil E. Devant - 125/512 of 1%	Jackie Campbell - All
45.	T. 24 N., R. 7 W. Sec. 24: E $\frac{1}{2}$ , SW $\frac{1}{4}$	480	Federal 080202 7-1-48	U.S. - All	H. F. Pettigrew	None	H. F. Pettigrew - All

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46.	T. 24 N., R. 6 W. Sec. 1: All Sec. 13: S $\frac{1}{2}$ E $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NW $\frac{1}{4}$	1125.40	Federal 080594 9-1-51	U.S. - All	Hazel Bolack	None	Hazel Bolack - All
47.	T. 24 N., R. 6 W. Sec. 35: S $\frac{1}{2}$	320	Federal 081325 7-1-49	U.S. - All	Hazel Bolack	None	Hazel Bolack - All
48.	T. 24 N., R. 7 W. Sec. 11: All Sec. 12: NW $\frac{1}{4}$	800	Federal 03010 5-1-48	U.S. - All	G. B. Cree	Fay A. Dashko 1-1/4% W. R. Childers 1-1/4% T. H. McElvain & Forrest B. Miller - 2% Hilda First, Lorraine Miller & Walter C. Miller - 1/2 of 1%	G. B. Cree - All
49.	T. 24 N., R. 7 W. Sec. 8: All	640	Federal 03414 4-1-48	U.S. - All	Mitchell A. Whitley	Dick Zachry, 3%	Southern Union Gas Co. - All
50.	T. 24 N., R. 7 W. Sec. 6: E $\frac{1}{2}$ , SW $\frac{1}{4}$	493.94	Federal 04108 4-1-48	U.S. - All	Byrd Oil Company 1/8 Neal Neece - 7/8	Dacresa Corporation 2.8166% Brookhaven Oil 2.1834%	Byrd Oil Company - 1/8 Neal Neece - 7/8
Total Acreage (Federal)		62,109.63					

## STATE LEASES

<u>Tract No.</u>	<u>Description of Land</u>	<u>Number of Acres</u>	<u>Application or Serial No. and Expiration Date of Lease</u>	<u>Basic Royalty and Percentage</u>	<u>Lessee of Record</u>	<u>Overriding Royalty and Percentage</u>	<u>Working Interest and Percentage</u>
51.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 32: SE<math>\frac{1}{4}</math>NW<math>\frac{1}{4}</math></u>	40	B-11171 A-45 4-11-54	State of New Mexico - All	Harry Duffe	None	Harry Duffe - All
52. & 54.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 32: S<math>\frac{1}{2}</math>NE<math>\frac{1}{4}</math>, NW<math>\frac{1}{4}</math>SE<math>\frac{1}{4}</math>, S<math>\frac{1}{2}</math>SE<math>\frac{1}{4}</math></u>	200	E-6549 9-18-62	State of New Mexico - All	R. W. Warner	None	R. W. Warner - All
53.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 32: NE<math>\frac{1}{4}</math>SE<math>\frac{1}{4}</math></u>	40	E-6525 10-9-62	State of New Mexico - All	Herman Ziffren	None	Herman Ziffren - All
55.	<u>T. 25 N., R. 6 W.</u> <u>Sec. 2: W<math>\frac{1}{2}</math>NW<math>\frac{1}{4}</math>, SW<math>\frac{1}{4}</math></u> <u>Sec. 32: E<math>\frac{1}{2}</math></u> <u>Sec. 36: NE<math>\frac{1}{4}</math></u>	720.51	E-291 A-3 5-2-55	State of New Mexico - All	Southern Petroleum Exploration, Inc.	None	Southern Petroleum Exploration, Inc. - All
56.	<u>T. 25 N., R. 6 W.</u> <u>Sec. 2: SE<math>\frac{1}{4}</math></u> <u>Sec. 32: NW<math>\frac{1}{4}</math></u> <u>Sec. 36: S<math>\frac{1}{2}</math>SE<math>\frac{1}{4}</math></u>	400	E-291 A-5 5-2-55	State of New Mexico - All	Malco Refineries, Inc.	None	Malco Refineries, Inc. - All
57.	<u>T. 25 N., R. 6 W.</u> <u>Sec. 16: All</u> <u>Sec. 23: SW<math>\frac{1}{4}</math>NE<math>\frac{1}{4}</math>, SE<math>\frac{1}{4}</math>NW<math>\frac{1}{4}</math>, NE<math>\frac{1}{4}</math>SW<math>\frac{1}{4}</math>, NW<math>\frac{1}{4}</math>SE<math>\frac{1}{4}</math></u> <u>Sec. 32: SW<math>\frac{1}{4}</math></u> <u>Sec. 36: W<math>\frac{1}{2}</math>, N<math>\frac{1}{2}</math>SE<math>\frac{1}{4}</math></u>	1360	E-291 A-7 5-2-55	State of New Mexico - All	Francis L. Harvey	None	Francis L. Harvey - All

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58.	<u>T. 25 N., R. 6 W.</u> <u>Sec. 2: NE<math>\frac{1}{4}</math></u>	160.85	E-291 A-22 5-2-55	State of New Mexico - All	R. E. Beamon	Francis L. Harvey, 5%	R. E. Beamon - All
59.	<u>T. 25 N., R. 6 W.</u> <u>Sec. 2: E<math>\frac{1}{2}</math>NW<math>\frac{1}{4}</math></u>	80.48	E-291 A-24 5-2-55	State of New Mexico - All	R. E. Beamon	None	R. E. Beamon - All
60.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 2: Lots 1, 2, 3, 4,</u> <u>S<math>\frac{1}{2}</math>NE<math>\frac{1}{4}</math>, SE<math>\frac{1}{4}</math>NW<math>\frac{1}{4}</math></u> <u>Sec. 36: N<math>\frac{1}{2}</math>NW<math>\frac{1}{4}</math>, SE<math>\frac{1}{4}</math>NW<math>\frac{1}{4}</math></u>	400.64	E-505 A-5 8-21-55	State of New Mexico - All	Three States Natural Gas Company	K. F. Moore 2%	Three States Natural Gas Company - All
61.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 36: S<math>\frac{1}{2}</math>, NE<math>\frac{1}{4}</math>, SW<math>\frac{1}{4}</math>NW<math>\frac{1}{4}</math></u> <u>T. 24 N., R. 7 W.</u> <u>Sec. 2: Lots 5, 6, 7, 8,</u> <u>9<math>\frac{1}{4}</math> 10, 11 and 12,</u> <u>S<math>\frac{1}{2}</math></u>	1160	E-809 A-10 4-6-56	State of New Mexico - All	Albuquerque Associated Oil Company	Clyde B. Gartner 2% B.M.T. Corporation \$50,000 out of 1% Gordon Rhoads - 2%	Albuquerque Associated Oil Company
62.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 2: All</u> <u>Sec. 16: All</u> <u>Sec. 32: All</u> <u>Sec. 35: N<math>\frac{1}{2}</math>NE<math>\frac{1}{4}</math>, NE<math>\frac{1}{4}</math>NW<math>\frac{1}{4}</math></u> <u>Sec. 36: All</u>	2723.38	E-1207 A-1 2-12-57	State of New Mexico - All	The National Cooperative Refinery Association	None	The National Cooperative Refinery Association - All

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63.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 2: S<math>\frac{1}{2}</math>, SW<math>\frac{1}{4}</math>NW<math>\frac{1}{4}</math></u> <u>Sec. 16: All</u>	1000	E-2877 A-1  8-24-59	State of New Mexico - All	Clyde B. Gartner	R. Benton Ross and Francis L. Harvey 1% O. J. Holder - 1%	Clyde B. Gartner - All
64.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 32: SW<math>\frac{1}{4}</math></u>	160	E-5253 5-22-61	State of New Mexico - All	Mrs. Grace Hoxsey	None	Mrs. Grace Hoxsey - All
65.	<u>T. 24 N., R. 7 W.</u> <u>Sec. 2: Lots 1,2,3,4</u>	26.60	E-5615 9-25-61	State of New Mexico - All	Mabel H. Manning	None	Mabel H. Manning - All
66.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 32: NW<math>\frac{1}{4}</math>NE<math>\frac{1}{4}</math></u>	40	E-5805 A-3 12-10-61	State of New Mexico - All	Thomas W. Scott	None	Thomas W. Scott - All
67.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 32: NE<math>\frac{1}{2}</math>NW<math>\frac{1}{4}</math></u>	80	E-6147 A-12 4-14-62	State of New Mexico - All	Mrs. John F. Kautz	None	Mrs. John F. Kautz - All
68.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 32: SW<math>\frac{1}{4}</math>NW<math>\frac{1}{4}</math></u>	40	E-6234 A-13 5-27-62	State of New Mexico - All	Dr. C. Gordon Christie	None	Dr. C. Gordon Christie - All
68A.	<u>T. 25 N., R. 7 W.</u> <u>Sec. 32: NE<math>\frac{1}{4}</math>NE<math>\frac{1}{4}</math></u>	40	E-6234 A-5 5-27-62	State of New Mexico - All	Laura T. Kruse	None	Laura T. Kruse
<u>Total Acres (State)</u>		8,672.46					

FEE LAND

Tract No.	Description of Land	Number of Acres	Application or Serial No. and Expiration Date of Lease	Basic Royalty and Percentage	Lessee of Record	Overriding Royalty and Percentage	Working Interest and Percentage
69.	T. 25 N., R. 6 W. Sec. 4: $\text{NE}\frac{1}{4}\text{NW}\frac{1}{4}$ , $\text{SE}\frac{1}{4}\text{NW}\frac{1}{4}$ $\text{S}\frac{1}{2}\text{NE}\frac{1}{4}$ , $\text{E}\frac{1}{2}\text{SE}\frac{1}{4}$ , $\text{SW}\frac{1}{4}\text{SE}\frac{1}{4}$ Sec. 9: $\text{NW}\frac{1}{4}\text{NE}\frac{1}{4}$	320.65	8-11-60	Robert Truby et ux 1/8	Skelly Oil Company	C. A. McAdams et ux 5%	Skelly Oil Company - All
70.	T. 25 N., R. 6 W. Sec. 4: $\text{NW}\frac{1}{4}\text{SE}\frac{1}{4}$ , $\text{E}\frac{1}{2}\text{SW}\frac{1}{4}$ Sec. 9: $\text{NE}\frac{1}{4}\text{NW}\frac{1}{4}$	160	No Lease - Fee title as follows:	Thomas D. Burns, III - 1/6 Thomas D. Burns, Jr. - 1/2 Marie Louise Quarles - 1/6 Isabel Burns Barton - 1/6	Thomas D. Burns, III - 1/6 Thomas D. Burns, Jr. - 1/2 Marie Louise Quarles - 1/6 Isabel Burns Barton - 1/6		
71.	T. 25 N., R. 6 W. Sec. 5: $\text{NE}\frac{1}{4}$ , $\text{NE}\frac{1}{4}$	40.70	No Lease - Fee title as follows:	Thomas D. Burns, III - 1/6 Thomas D. Burns, Jr. - 1/2 Marie Louise Quarles - 1/6 Isabel Burns Barton - 1/6	Thomas D. Burns, III - 1/6 Thomas D. Burns, Jr. - 1/2 Marie Louise Quarles - 1/6 Isabel Burns Barton - 1/6		
72.	T. 25 N., R. 6 W. Sec. 15: $\text{S}\frac{1}{2}\text{SW}\frac{1}{4}$ Sec. 22: $\text{N}\frac{1}{2}\text{NW}\frac{1}{4}$	160	No Lease - Fee title as follows:	Mr. and Mrs. Mark Elkins - 10% of all oil and gas Edward T. Dudgey, Successor Trustee - 90% of all oil and gas			
73.	T. 25 N., R. 6 W. Sec. 21: $\text{W}\frac{1}{2}\text{NE}\frac{1}{4}$ , $\text{N}\frac{1}{2}\text{SE}\frac{1}{4}$	160	No Lease - Fee title as follows:	Mr. and Mrs. Mark Elkins - 10% of all oil and gas Edward T. Dudgey, Successor Trustee - 90% of all oil and gas			
74.	T. 25 N., R. 6 W. Sec. 23: $\text{SE}\frac{1}{4}\text{NE}\frac{1}{4}$ , $\text{NE}\frac{1}{4}\text{SE}\frac{1}{4}$ Sec. 24: $\text{SW}\frac{1}{4}\text{NW}\frac{1}{4}$ , $\text{NW}\frac{1}{4}\text{SW}\frac{1}{4}$	160	No Lease - Fee title as follows:	Mr. and Mrs. Mark Elkins - 10% of all oil and gas Edward T. Dudgey, Successor Trustee - 65% of all oil and gas Mr. and Mrs. Loren Wilcox - 25% of all oil and gas			
75.	T. 25 N., R. 6 W. Sec. 27: $\text{W}\frac{1}{2}\text{SW}\frac{1}{4}$ Sec. 28: $\text{E}\frac{1}{2}\text{SE}\frac{1}{4}$	160	No Lease - Fee title as follows:	Frank Bond & Son, Inc.			

<u>Tract No.</u>	<u>Description of Land</u>	<u>Number of Acres</u>	<u>Application or Serial No. and Expiration Date of Lease</u>	<u>Basic Royalty and Percentage</u>	<u>Lessee of Record</u>	<u>Overriding Royalty and Percentage</u>	<u>Working Interest and Percentage</u>
76.	<u>T. 25 N., R. 6 W.</u> <u>Sec. 34: NE<math>\frac{1}{4}</math>SE<math>\frac{1}{4}</math></u> <u>Sec. 35: N<math>\frac{1}{2}</math>SW<math>\frac{1}{4}</math>, SE<math>\frac{1}{4}</math>NW<math>\frac{1}{4}</math></u>	160	No Lease - Fee title as follows:		Mr. and Mrs. Mark Elkins - 10% of all oil and gas Edward T. Dудay, Successor Trustee - 65% of all oil and gas Mr. and Mrs. Loren Wilcox - 25% of all oil and gas		
77.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 7: All</u>	637.90	No Lease - Fee title as follows:		Mr. and Mrs. Mark Elkins - 10% of all oil and gas Edward T. Dудay, Successor Trustee - 65% of all oil and gas Mr. and Mrs. Loren Wilcox - 25% of all oil and gas		
78.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 10: S<math>\frac{1}{2}</math>N<math>\frac{1}{2}</math></u>	160	No Lease - Fee title as follows:		Mr. and Mrs. Mark Elkins - 10% of all oil and gas Edward T. Dудay, Successor Trustee - 90% of all oil and gas		
79.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 12: S<math>\frac{1}{2}</math>SE<math>\frac{1}{4}</math></u> <u>Sec. 13: E<math>\frac{1}{2}</math>NE<math>\frac{1}{4}</math></u>	160	No Lease - Fee title as follows:		Mr. and Mrs. Mark Elkins - 10% of all oil and gas Edward T. Dудay, Successor Trustee - 90% of all oil and gas		
80.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 15: S<math>\frac{1}{2}</math>NE<math>\frac{1}{4}</math>, N<math>\frac{1}{2}</math>SE<math>\frac{1}{4}</math></u>	160	No Lease - Fee title as follows:		Mr. and Mrs. Mark Elkins - 10% of all oil and gas Edward T. Dудay, Successor Trustee - 65% of all oil and gas Mr. and Mrs. Loren Wilcox - 25% of all oil and gas		
81.	<u>T. 24 N., R. 6 W.</u> <u>Sec. 22: NE<math>\frac{1}{4}</math></u>	160	No Lease - Fee title as follows:		Mr. and Mrs. Mark Elkins - 10% of all oil and gas Edward T. Dудay, Successor Trustee - 65% of all oil and gas Mr. and Mrs. Loren Wilcox - 25% of all oil and gas		
<u>Total Acres</u> <u>(Fee)</u>		<u>2,599.25</u>					

# Assignment to this person of record - not yet approved

\* Subject to Pooling Agreement and Conveyance dated May 13, 1950, recorded in Volume 7, Pages 550 to 552 of the records of the County Clerk and Recorder in and for Rio Arriba County, New Mexico, by the terms which these owners of override have pooled their interests in these lands with other lands owned by Ralph Lowe (Santa Fe 078923), Tom Sealy (Santa Fe 078870), J. Bay Robertson (Santa Fe 078868), Alberta Sloan (Santa Fe 078867), Katherine B. Yarbrough (Santa Fe 078865), Josie Fay Peck (Santa Fe 078866), Wesley T. House (Santa Fe 078924), and Murrey Fasken (Santa Fe 078869). Subsequent to the date of said Pooling Agreement and Conveyance the following assignments are of record in said county: Rosellen Busby (Santa Fe 078957) to C. B. Yarbrough; C. C. Hightower (Santa Fe 078879) to Anna Lou Home; Katherine B. Yarbrough (Santa Fe 078885) to Anna Lou Home; Katherine B. Yarbrough (Santa Fe 078865) to W. H. Sloan; Josie Fay Peck (Santa Fe 078866) to J. G. Brown, H. L. Anderson, and J. Ralph Stewart.



1964 MAR 24 AM 8:46 Devils Fork Gallup Field

Electric Log and Core Analysis Study

Scope: A study was made of the E-S Induction, Gamma Ray-Sonic, and Gamma-Ray Density Logs in the Devils Fork Gallup Field as compared to core analyses in an effort to in general arrive at the most accurate method of appraising wells on which core analyses were not available, and to specifically appraise the Canyon Largo Unit #128 and #132 wells as to secondary reserves.

General Geology: The Devils Fork Gallup Field produces from the Marye Zone of the Gallup Formation. The producing section consists most commonly of a fairly clean permeable sand with an average thickness of about 10 feet resting on a rather tight sand of comparable thickness. Core analysis indicates no reservoir separation between the two sands, but correlation of core data and log data give positive evidence that they must be treated as separate zones with different properties for the purpose of log analysis.

The generally accepted geologic theory is that most San Juan Basin Gallup Sands are deposited on topographic lows of unconformities. Perhaps the difference in the upper and lower Devils Fork sands is due to an unconformity.

Core Analyses and Reservoir Properties: Conventional core analysis data are available on a large number of Devils Fork Gallup Wells. These data were classified as to capillary pressure properties into four groups as per Exhibit No. 1. On this chart porosities were plotted against connate water saturations. Data were divided into four groups representing different qualities of reservoir rock. Assuming a capillary relationship of  $K^{1/2} = 250 \frac{\phi}{S_w}$  the three lines separating the four groups correspond to permeabilities of 0.23 md. between groups 1 and 2, 1.0 md. between groups 2 and 3, and 4.3 md. between groups 3 and 4.

It was assumed for the purpose of the study that only the rock with analyzed permeabilities in excess of 1 millidarcy would effectively contribute to production. Based on core analysis from ten wells ( NCRA-State #3 and 4 and C.L.U. #121, 122, 124, 126, 127, 129, 130, and 131) the following empirical relationships were derived:

	<u>Group 1</u>	<u>Group 2</u>	<u>Group 3</u>	<u>Group 4</u>
Total Samples	83	22	31	77
% above 1 md.	2.4	9.1	38.7	91.0
Avg. Permeability, md.	0.36	2.14	2.03	19.26

Gamma Ray Sonic Log: Prior to relating the Gamma Ray Sonic log to core analysis, it was necessary to reduce all logs to a common calibration. It was found that the C.L.U. #125 and C.L.U. #132 logs represented an average calibration and all sonic transit times were corrected to this calibration by correlating with a sepio or film. Appreciable differences in calibration were found on some logs.

Core analyses were available on three wells with sonic logs (NCRA-State #3, NCRA-State #4, and New Mexico Federal O#1). Based upon correlations between cores and logs on these wells it was found that the sand below the unconformity(?) has a matrix velocity of 17,200 feet per second (assuming a fluid velocity of 5300) and the sand above the unconformity(?) has a matrix velocity of from 18,250 ft/sec. in the New Mexico Federal O#1 to 19,000 ft./sec. in the NCRA-State #4 with an estimated average of 18,600 ft./sec. (also assuming a fluid velocity of 5300 ft./sec.). These relationships are plotted as Exhibit #2.

In both sands attempts were made to find velocities for different gamma-ray values, but there was apparently no relationship.

Gamma-Ray Density Logs: All Density Logs were reduced to a common calibration. The Canyon Largo Unit #124 and #127 wells seemed to represent an average calibration.

Core Analyses were available on four wells with Schlumberger Density Logs ( C.L.U. #124 #127, #130, and #131) After correcting readings for calibration and mud cake, resulting counts per second were converted to bulk density values and plotted against core analysis porosity on Exhibit No. 3. The resulting average relationship coincides with a grain density of 2.672 and a fluid density of 0.506. There appeared to be no difference in relationship above and below the unconformity.

E-S Induction Logs: The Induction Log directly measures conductivity of the rock, resistivity values being mechanically calculated reciprocal values. For high conductivity

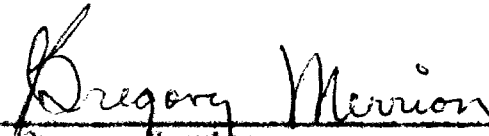
and low resistivity, a small error in calibration is insignificant, but as resistivity passes 100 ohm-meters a small error in conductivity calibration results in an appreciable error in indicated resistivity.

Induction Logs in the Devils Fork Field exhibited a good deal of variation in calibration, the C.L.U. #131 representing an extreme miscalibration. The average calibration was represented by the C.L.U. #127 and #132 wells.

After correcting calibrations and comparing core analysis porosities and water saturations with induction log readings, it was found that it is necessary to use an apparent water resistivity of 0.03 below the unconformity and 0.075 above the unconformity in order to duplicate core analysis water saturations.

Specific Log Analyses: Based on the relationships set forth in Exhibits 1, 2 and 3 and water resistivities of 0.03 below and 0.075 above the unconformity, the C.L.U. #128 and C.L.U. #132 logs were analyzed as per Attachment Nos. 1 and 2.

Conclusion: Abundant core data has permitted excellent correlations with logs. The methods used in analyzing the two logs is the most accurate available and should result in a very reliable analysis. Indications are that while the Canyon Largo Unit #128 has more total permeable capacity, this capacity is concentrated primarily in a two-foot interval, and the floodable oil in the sand section is less than what is present in the Canyon Largo Unit #132.

  
J. Gregory Mervion

Canyon Largo Unit No. 128

Log Correlation - Density Log reads 2 feet high to Induction Log. (Depths referred to are Induction Log.)

Log Calibration - Density Log reads 15 CPS low to average calibration.  
 Induction Log Conductivity reads 4 millimhos/m. low to average calibration.

Depth	Indicated CPS	Corrected for Calibration	Mud Cake	Corrected for MC	Bulk Density	Porosity	Induction Resistivity	Conductivity	Corrected Conductivity	Corrected Resistivity	Apparent R <sub>w</sub>	Water Saturation	Sand Quality
5820-22	510	525	0	525	2.457	10.0	75	13.33	17.33	58	0.075	36	2
5822-24	640	655	1/16	635	2.383	13.3	175	5.71	9.71	103	0.075	20	4
5824-26	560	575	1/16	560	2.432	11.1	175	5.71	9.71	103	0.075	24	3
5826-28	525	540	0	540	2.446	10.5	80	12.50	16.50	61	0.075	33	2
5828-32	425	440	0	440	2.525	6.8	45	22.22	26.22	38	0.030	41	1

## UNCONFORMITY

Sand Quality 4. 2 feet - Avg Porosity 13.3, Avg Sw = 20

Probable Net Porosity ft 2 x .91 x 13.3  
 Probable Net HC - Porosity ft 24.21 x 0.8  
 Probable Permeability feet 2 x 19.26

Net  
ft.  
24.21

Net HC  
ft.  
19.37

Net  
Md. ft.  
38.56

Sand Quality 3. 2 feet - Avg Porosity 11.1, Avg Sw = 24

Probable Net Porosity feet 2 x .387 x 11.1 =  
 Probable Net HC Porosity ft 8.59 x .76  
 Probable Permeability feet 2.03 x 2

8.56

6.53

4.06

Sand Quality 2. 4 feet - Avg Porosity 10.25, Avg Sw = 34.5

Probable Net Porosity feet 4 x .091 x 10.25  
 Probable Net HC Porosity ft 3.73 x 655  
 Probable Net Permeability ft 2.14 x 4

3.73

2.44

8.56

Sand Quality 1. 4 feet - Avg Porosity 6.8, Avg Sw = 30

Probable Net Porosity feet 4 x .024 x 6.8  
 Probable Net HC Porosity ft 0.65 x 0.7  
 Probable Permeability ft 0.36 x 4

0.65

0.45

1.44

Total

37.18

28.79

52.62

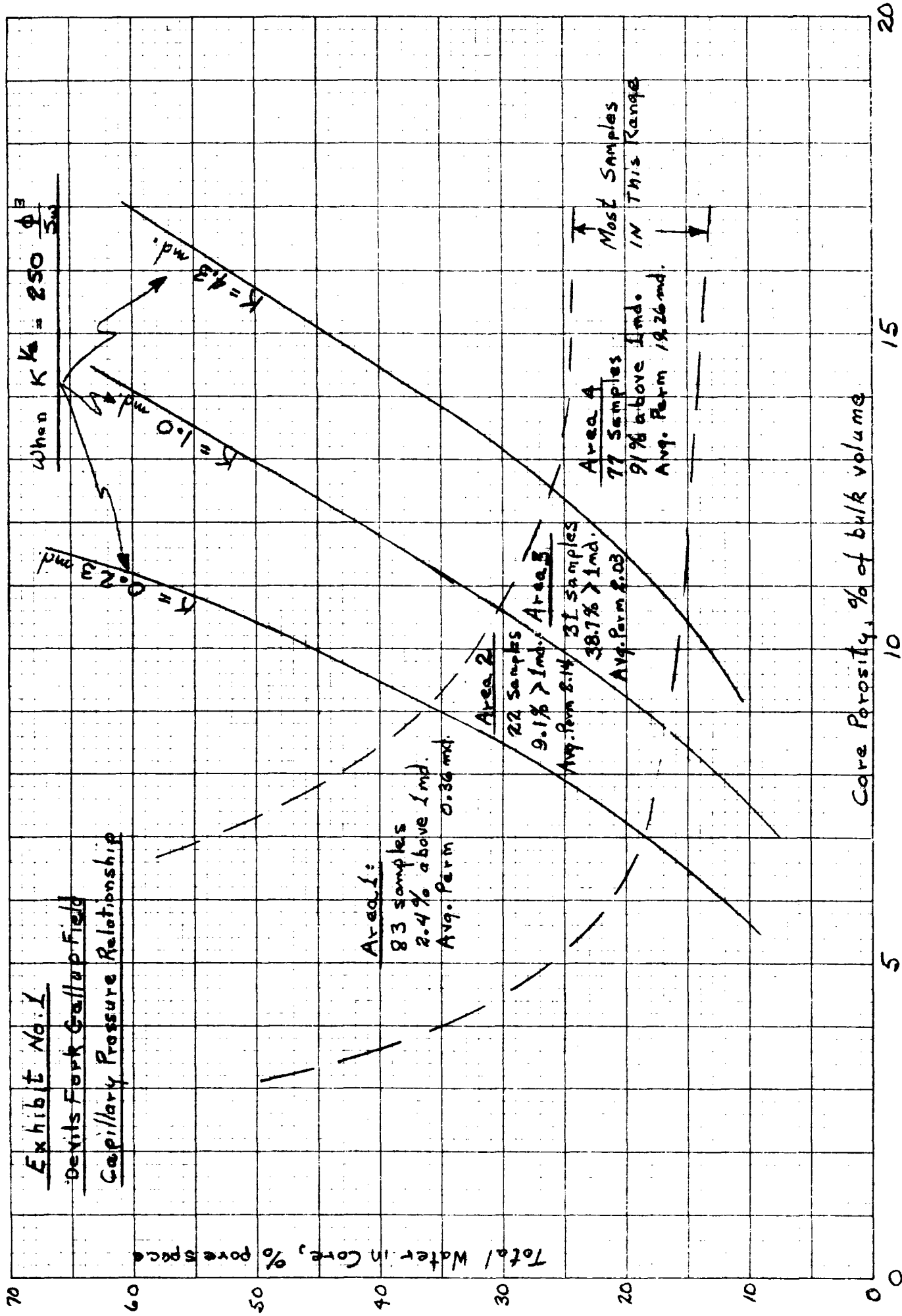
For AnalysisCanyon Largo Unit No. 132

Log Correlation - Induction Log reads 1 foot high to Sonic Log (Depths are Induction Depths).

Log Calibration - Sonic represents average calibration. Induction represents average calibration.

Depth	Interval Transit Time	Matrix Velocity	Porosity	Induction Resistivity	Apparent Pv	Water Saturation	Sand Quality
5733-35	68.5	18,600	10.9	33	0.075	44	2
5735-38	68.5	18,600	10.9	48	0.075	36	2
5738-40	70.5	18,600	12.4	45	0.075	33	3
<u>Unconformity</u>							
5740-42	73+	17,200	11.6	38	0.03	24	3
5742-46	73	17,200	11.4	40	0.03	24	3
5746-49	72	17,200	10.6	30	0.03	30	2
5749-51	71.5	17,200	10.3	45	0.03	25	3
5751-53	69	17,200	8.4	48	0.03	30	1

Sand Quality	3.	10 feet - Avg Porosity 11.4%, Avg Sv = 26%	Net Ø ft.	Net Ø ft.	Net M3. ft.
Probable Net Porosity feet of Pay 10 x 0.387 x 11.4					
Probable Net HC Porosity feet of Pay 10 x 0.387 x 11.4 x (1-26)					
Probable permeability - feet 2.03 x 10					
Sand Quality 2. 8 feet - Avg Porosity 10.8%, Avg Sv = 36%					
Probable Net Porosity feet of Pay 8 x 0.091 x 10.8					
Probable Net HC Porosity feet of pay 8 x 0.091 x 10.8 x (1-36)					
Probable Net Permeability - feet 2.14 x 8					
Sand Quality 1. 2 feet - Avg Porosity 8.4%, Avg Sv = 30%					
Probable Net Porosity feet of Pay 2 x .024 x 8.4					
Probable Net HC Porosity feet 2 x .024 x 8.4 x 0.7					
Probable Net Permeability - feet 2 x 0.36					
Total					59.38
					38.84
					38.14
					0.72
					17.12
					20.3
					5.03
					33.53



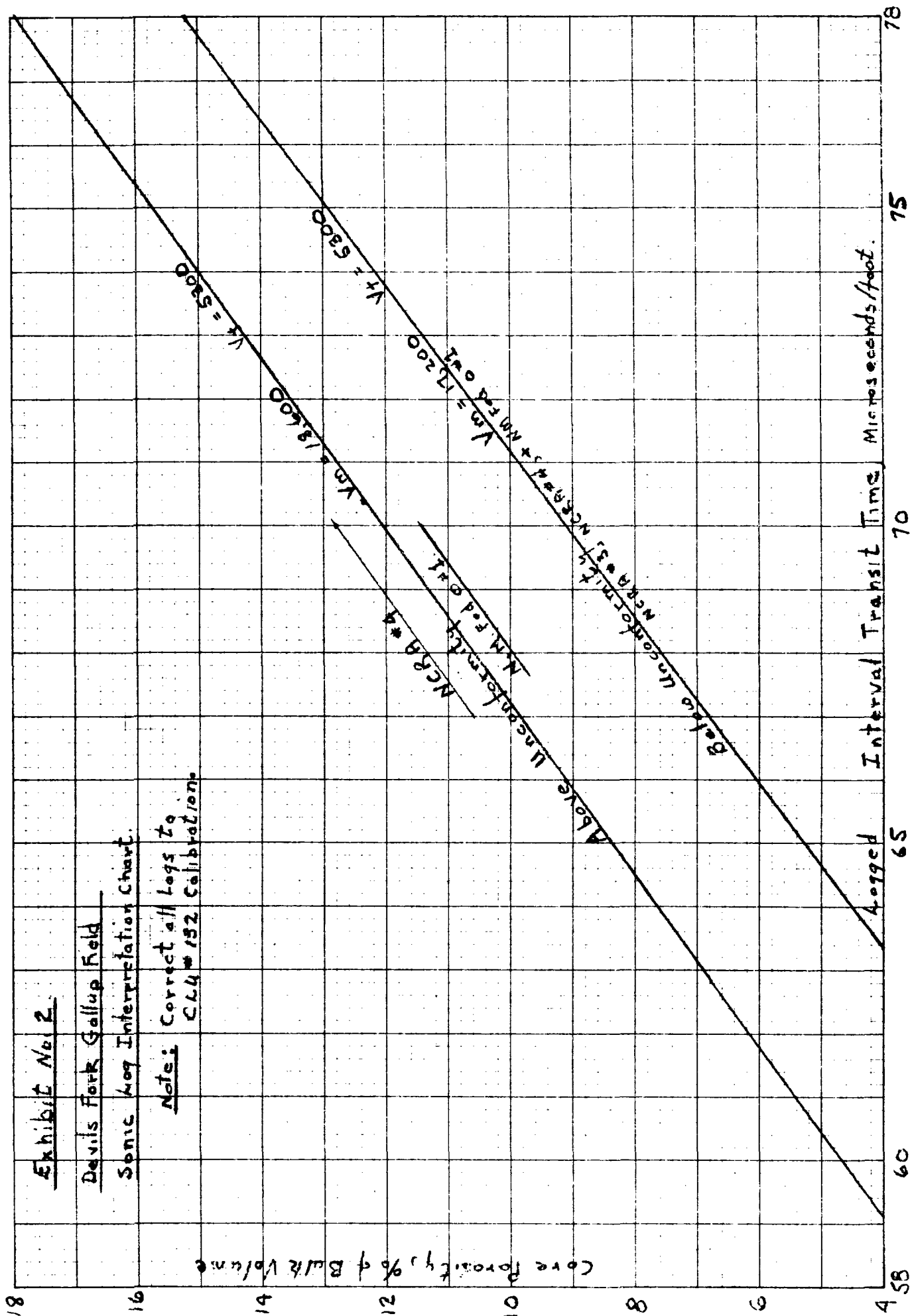


Exhibit No. 3

Devils Fork Gallup Field

Density Log Interpretation Chart

Notes: Correct all logs to  
CLU # 129 calibration.

