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

APPLICATIONS OF GOODNIGHT MIDSTREAM PERMIAN, LLC FOR APPROVAL OF SALTWATER DISPOSAL WELLS
LEA COUNTY, NEW MEXICO **CASE NOS. 23614-23617**

APPLICATION OF GOODNIGHT MIDSTREAM PERMIAN, LLC TO AMEND ORDER NO. R-22026/SWD-2403 TO INCREASE THE APPROVED INJECTION RATE IN ITS ANDRE DAWSON SWD #1
LEA COUNTY, NEW MEXICO **CASE NOS. 23775**

APPLICATIONS OF EMPIRE NEW MEXICO LLC TO REVOKE INJECTION AUTHORITY,
LEA COUNTY, NEW MEXICO **CASE NOS. 24018-24020, 24025**

APPLICATION OF GOODNIGHT MIDSTREAM PERMIAN, LLC FOR APPROVAL OF A SALTWATER DISPOSAL WELL
LEA COUNTY, NEW MEXICO **CASE NO.24123**
ORDER NO. 22869-A

GOODNIGHT MIDSTREAM PERMIAN LLC'S MEMORANDUM OF LEGAL ISSUES FOR CLOSING

Goodnight Midstream Permian, LLC ("Goodnight") (OGRID No. 372311) through undersigned counsel hereby files it legal memorandum in support of its Proposed Findings of Fact and Conclusions of Law, which are being filed contemporaneously herewith.

Section 1: The SADR should be excluded from the EMSU and EMSU Special Pool

The San Andres should be excluded from the Eunice Monument South Unit (the "EMSU") and its special pool because the Commission lacked authority to include the San Andres in the EMSU and its pool when it created the unit for any one of the following four independent reasons. *First*, the Commission does not have authority to unitize an aquifer. *Second*, the Commission does not have authority to unitize geologically separate formations that are not "a pool or part of a pool." *Third*, the Commission does not have authority to include the San Andres in the EMSU because it was included specifically as a water source for waterflood operations, not as a source of oil or gas production, and has never been reasonably defined by development. *Fourth*, the Commission has a continuing obligation under statute to review Order Nos. R-7765 and R-7767, as amended, to determine whether further orders are necessary, including to cure legal defects.

A. The Commission has never had authority to unitize an aquifer.

The Commission "is a creature of statute, expressly defined, limited and empowered by the laws creating it," which means its authority is prescribed by law. *Cont'l Oil Co. v. Oil Conservation Comm'n*, 1962-NMSC-062, ¶ 11, 373 P.2d 809. Under the Statutory Unitization Act, NMSA 1978, § 70-7-1 *et seq*. (the "Act"), the Commission is authorized only to issue orders providing for unitization and unit operation "of a pool or part of a pool." *Id.* § 70-7-7. A pool is defined as "an underground reservoir containing a common accumulation of crude petroleum oil or natural gas or both." *Id*. at § 70-7-4(A). A pool "is synonymous with common source of supply" and with a "common reservoir" of crude petroleum oil or natural gas or both. *Id*. Moreover, the pool or portion thereof involved in an application for statutory unitization must have been shown to be "reasonably defined by development." § 70-7-5(B); *see infra* Section C.

The Act does not authorize the Commission to unitize formations or reservoirs that are not a "pool or part of [a] pool." *Id*. § 70-7-7. In particular, the Act does not vest the Commission with authority to unitize non-hydrocarbon bearing formations, such as aquifers. An aquifer is not an oil and gas property, does not give rise to claims under the correlative rights doctrine, and is not subject to statutory unitization. *Id.* § 70-2-33(H) (providing that "correlative rights" are applicable only to oil and gas rights). As a non-hydrocarbon-bearing aquifer, the San Andres does not qualify for inclusion in a "pool." *See* Ex. 1, NMAC 19.27.26 (Office of State Engineer Rule declaring lands within the EMSU to be within the Capitan Underground Water Basin). Unitization of an aquifer, geologically distinct from a pool, is not "reasonably necessary" to protect the correlative rights of owners with an interest in the oil and gas minerals. NMSA 1978, § 70-2-11(A). As important, because the San Andres, as an aquifer, has never been "reasonably defined by development[,]" the Commission lacked statutory authority to unitize it or include it within the definition of a pool. *Id*. at § 70-7-5(B).

As an aquifer, the San Andres is not subject to unitization by the Commission for any purpose. *See* Ex. 1. Under the New Mexico Constitution, unappropriated groundwater within the state belongs to the public. *See* N.M. Const. Art. XVI, § 2; *see also McBee v. Reynolds*, 1965-NMSC-007, ¶14, 399 P.2d 110 (confirming that "waters of underground streams, channels, artesian basins, reservoirs and lakes, the boundaries of which may be reasonably ascertained, are public" and "included within the term 'water' as used in Art. XVI, §§ 1-3, of our Constitution."). Interpreting the Act to authorize unitization of the San Andres aquifer that has not been reasonably defined by development forecloses appropriation and use of the San Andres aquifer by the public and facially conflicts with the New Mexico Constitution. *See* NMSA 1978 § 70-7-1. To avoid conflict over management and control of subsurface resources, the Legislature limited the

Commission's authority under the Act to unitizing oil and gas pools that have been reasonably defined by development. The Commission has no authority to unitize a public source of groundwater.

B. The Commission has never had authority to include the San Andres in a unit with the Grayburg and Penrose formations because the San Andres is a distinct reservoir that is geologically separate from those overlying formations and not part of the same pool or reservoir.

The Commission lacked authority to include the San Andres in the EMSU unitized interval because the San Andres formation is a functionally distinct reservoir that is geologically separate from the Grayburg and Penrose formations and, therefore, does not meet the statutory definition of "a pool or part of a pool." NMSA 1978, § 70-7-7; *see supra* Section 1.A. A pool is defined as "an underground reservoir containing a common accumulation of crude petroleum oil or natural gas or both" that "is completely separate from any other zone in the structure." *Id*. § 70-7-4(A); *see also* § 70-2-33(B). The San Andres is not part of the same pool as the Grayburg and Penrose formations. The water-bearing San Andres lies below, and is geologically and functionally separate from, the oil-producing zones of the Grayburg and Penrose formations and acts as a distinct and separate reservoir. The lower limit of the oil-producing zone, or "oil column," is within the Grayburg formation between about -325 feet subsea and -350 feet subsea, whereas the upper limit of the San Andres is even deeper. Not only is the San Andres deeper than the lower limit of oil production, but the San Andres has long been known to be a distinct reservoir that is geologically and functionally separate from the oil-bearing Grayburg.

This physical and functional separation between the two formations, with the San Andres being the water source for waterflood operations in the Grayburg and Penrose formations and the zone for disposal of produced water, was foundational to Gulf's operational plan in the 1980s and later EMSU operators. It enabled Gulf and its successors to extract **hundreds of millions of**

barrels of water from the San Andres for make-up water to enact waterflood operations in the Grayburg and Penrose (oil reservoirs of the EMSU) to build the pressure needed to conduct the enhanced oil recovery operations in the EMSU oil reservoirs. If the San Andres and Grayburg formations were not geologically and functionally distinct, and did not act as separate reservoirs, withdrawal from the San Andres reservoir for waterflood operations in the Grayburg would not have been possible. Geologic separation is further proven by the fact that the Grayburg has been successfully re-pressurized and enhanced oil recovery operations have taken place in that reservoir for nearly four decades. Although this geologic separation supports EMSU operations, including the San Andres in the unitized interval contravened the Commission's statutory authority. As separate geologic formations, and reservoirs, they are not "an underground reservoir containing a common accumulation of crude petroleum oil or natural gas or both" that **together** are "completely separate from any other zone in the structure." *Id.* § 70-7-4(A); *see also* § 70-2-33(B). Since the San Andres and Grayburg and Penrose are not **together** a pool or part of **the same** pool, the Commission lacked authority to include the San Andres in the unitized interval with the overlying Grayburg and Penrose formations. *Id*. § 70-7-7(A).

Simply stated: the San Andres is a separate reservoir from the Grayburg/Penrose and cannot be deemed to be part of a pool or part of the same pool. This conclusion is confirmed by the long, well-documented, and vastly disparate production histories within the EMSU between the San Andres—having produced more than 350 million barrels of water with no depletion and no documented oil production, and having received approximately 450 million barrels of produced water through disposal largely on vacuum with a de minimis increase in pressure—and the

Grayburg/Penrose, which at the very same time produced about 150 million barrels of oil[1] with substantial depletion and pressure drawdown. The San Andres and Grayburg are unmistakably separate formations and distinct reservoirs.

C. The Commission lacked authority to include the San Andres in the EMSU because it is not reasonably defined by development, and it would not yield more production than primary recovery alone.

With respect to the San Andres, two other requirements for unitization under the Act have never been established. To include a pool or part of a pool within a secondary recovery unit, the Act requires both that the area to be included within the unit (1) be reasonably defined by development and (2) that the proposed unitization of the pool or part of a pool will substantially increase recovery beyond the amount of hydrocarbons that would be recovered by primary recovery alone.

To be considered "reasonably defined by development," the proposed pool must have a history of primary recovery of oil and/or gas. NMSA 1978, §§ 70-7-1 & 70-7-5(B); *see also* 6 Williams & Meyers, OIL AND GAS LAW, § 913.8 ("Only so much of a common source of supply as has been defined and determined to be productive of oil and gas by actual drilling operations may be so included within the unit area.").[2] The San Andres in the EMSU is not "reasonably defined by development" because it has never produced any reported volumes of oil and/or gas through primary recovery. Previous operators conducted two well tests, at most, that were **abandoned after generating less than 10 barrels of oil and more than 7,000 barrels of water**,

[1] *See* W. West, Dir. Testimony, Empire Exhibit I, ¶ 39; J. Wheeler, Dir. Testimony, Empire Exhibit A, ¶ 11.

[2] Industry standard similarly defines the phrase "reasonably defined by development," as the area or acreage "that can reasonably be considered to be **economically productive of secondary reserves** in the reservoir that is being unitized." H. Philip Whitworth, Jr., *Onshoring Pooling and Unitization*, 1997 ROCKY MT. MIN. L. INST., 5F-26 (discussing statutory requirements for fieldwide unitization in Texas) (emphasis added).

which demonstrates that the San Andres in the EMSU is not a commercial source of oil or gas production. Empire's own expert, William West, confirmed that there has never been any reported production of hydrocarbons from the San Andres in the EMSU. *See* Self-Affirmed Statement of William West at ¶ A.6 ("No wells have produced from the San Andres at EMSU"); *id.* at Ex. I-4 ("no production was made from the San Andres interval")[3]; *see also* Ex. 2, EMSU Secondary Recovery Unit Royalty Owners Overview at 3 (describing the San Andres as a "non-productive" formation). Without a history of primary hydrocarbon recovery, inclusion of the San Andres formation in the EMSU violated the express language and purpose of the Act. This cannot be disputed and remains true today.

Including the San Andres in the Unit was also improper at the time the Commission approved Order No. R-7765 for a separate and independent reason: incorporating the non-hydrocarbon-producing aquifer would not yield more recovery than primary recovery alone. Under the Act, statutory unitization is **not for exploration or primary recovery**; it is for increasing the oil and gas recovery **after primary recovery**. *See* NMSA § 70-7-1 (explaining that unitization is for "any type of operation that will substantially increase the recovery of oil above the amount that would be recovered by primary recovery alone").

The initial Unit Operator, Gulf Oil, never intended to produce oil from the San Andres. *See* Ex. 3, November 7-8, 1984, Commission Hearing Transcript at 53:23-54:2 (explaining that the unit interval was defined to target the "entire oil column in the Grayburg," not the San Andres). Gulf Oil merely sought to include the San Andres as an aquifer in the Unit as a source of water supply for its waterflood operations. *See* Ex. 4, Technical Committee Report, April 1, 1983, at 29 ("The total water requirement will be provided by . . . make-up water provided by nine San Andres

[3] Exhibit I-4 is an attachment to William West's testimony.

supply wells."); Ex. 5, Meeting Minutes of EMSU Technical Committee and Working Interest Owners' Committee at 28 ("The bottom of the interval must be the base of the San Andres formations to include the area's most prolific water production zone"). Such inclusion was improper because the San Andres itself did not—and could not—contribute to increased hydrocarbon production. Indeed, it is undisputed there was not and has never been reported oil or gas production, let alone commercial production, from the San Andres in the EMSU. *See* Self-Affirmed Statement of William West, at ¶ A.6. The Commission lacked authority to include the San Andres in the EMSU unitized interval because it was not shown that it would substantially increase recovery of oil and gas from the San Andres beyond the amount of hydrocarbons that would be recovered by primary recovery alone.

D. The Commission retained jurisdiction to fix its error.

In the Order establishing the EMSU, the Commission retained jurisdiction "for the entry of such further orders as the Commission may deem necessary. *See* Ex. 6, Order No. R-7765 at 11. The Commission also has a continuing obligation under statute to "reclassify wells and pools" and to "redetermine the limits" of any pool from time to time, as may be necessary. NMSA 1978, §§ 70-2-12(B)(11) & (12). Given its continuing jurisdiction and statutory obligations, the Commission is required to review Order Nos. R-7765 and 7767 to determine if further orders are necessary. Here, further orders are necessary to cure the legal defect the Commission caused by erroneously including the San Andres aquifer in the EMSU and its special pool even though the aquifer (1) has never been reasonably defined by development; (2) is a geologically and functionally distinct reservoir from the Grayburg and Penrose reservoirs above; and (3) even though such inclusion at the time would not increase production from the San Andres.

Section Two: Requirements to Show Prohibited Waste

New Mexico's comprehensive oil and gas conservation law requires the Commission to regulate the production of oil and gas to prevent waste.

The law prohibiting waste states: "The production or handling of crude petroleum oil or natural gas of any type or in any form, or the handling of products thereof, **in such manner or under such conditions or in such amounts as to constitute or result in waste is each hereby prohibited**." NMSA 1978, § 70-2-2 (emphasis added).[4] The law unambiguously prohibits the production or handling of oil and gas "in such manner," "under such conditions," or "in such amounts" that constitute waste or result in waste. *Id*. The prohibition of waste does not, however, precisely define the manner, conditions, and amounts of oil and gas production that constitute or result in waste.

A leading oil and gas treatise, Williams and Meyers, candidly explained that the term "waste" is "too broad and has too many meanings for a one- or two-sentence definition." Williams & Meyers, *supra* at 6; *see also* Ex. 7, Joseph A. Schremmer, *Regulating Natural Gas Venting and Flaring as Waste: A Review of the New Mexico Approach*, 20 OIL, GAS & ENERGY LAW INTELLIGENCE LAW JOURNAL, 11 (2022) (describing the precise definition of waste under the New Mexico Oil and Gas Act as "elusive"). In New Mexico, the statutory definition of "waste" lists multiple categories of waste and is more than 500 words long. *See* Ex. 8, NMSA 1978, § 70-2-3.

New Mexico's Statutory Unitization Act defines "waste" to include "*both economic* and physical waste resulting, or that could reasonably be expected to result, from the development and

[4] The law was enacted "for the purpose of the prevention of waste of oil and gas resources, the encouragement of the conversation of oil and gas deposits, and the protection of the correlative rights of individual owners in a common source of supply and the administration thereof." *Humble Oil & Refining Co. v United States*, 198 F.2d 753, 755 (10th Cir. 1952).

operation separately of tracts that can best be developed and operated as a unit." NMSA 1978, § 70-7-4(C) (emphasis added). The definition of waste encompasses not only physical waste of oil and gas but also economic waste. First, the Act specifies that both "underground waste" and "surface waste" are to be defined and used as those words are generally understood "**in the oil and gas business**." *Id*. §§ 70-2-3 (A-B) (emphasis added); *see also* § 70-7-4(C) (expressly incorporating economics in the definition of waste). Second, the Act defines waste as being the production of oil or gas "in excess of the reasonable market demand," a definition that necessarily contemplates economic factors and impact. *Id*. § 70-2-3(C). According to the New Mexico Court of Appeals, the Oil and Gas Act "vests the Oil Conservation Division with the duty to make whatever rules, regulations, and orders that are necessary to carry out the provisions of the Oil and Gas Act, and in so doing, 'the division shall give due consideration to the economic factors involved.'" *Earthworks' Oil & Gas Accountability Project v. N.M. Oil Conservation Comm'n*, 2016-NMCA-055, ¶ 27, 374 P.3d 710 (quoting Section 70-2-19(C)). In affirming the Commission's consideration of economic factors in promulgating a rule, the Court of Appeals continued, "the Oil Conservation Division must allocate oil production efficiently and economically and must 'consider the economic loss caused by the drilling of unnecessary wells[.]'" *Id.* (quoting Section 70-2-17(B)).

Given the definition of "waste" is broad and multi-faceted, we look to common law and administrative orders to understand how courts and the Commission delineate permissible production from impermissible waste. The common law history of waste "illuminates that implicit in the concept's definition is a sort of cost-benefit analysis." Schremmer, *supra* at 11.

A. *Oil and gas must be recoverable to constitute or result in waste*.

Under the plain language of the Act, and consistent with the Commission's long-standing administrative construction, crude petroleum oil or natural gas must be recoverable to constitute waste. The definition of "underground waste" explicitly limits waste to "the total quantity of crude petroleum oil or natural gas **ultimately recovered**." NMSA 1978, § 70-2-3 (emphasis added). It follows that oil or gas that cannot be recovered is not waste if it is not produced. *See* Williams & Meyers, *supra*, at "W Terms" (defining "waste" as "the loss of oil or gas that could have been recovered and put to use.").[5]

Courts have similarly required that oil and gas be shown to be recoverable to be considered waste. *See Kuykendall v. Corporation Comm'n*, 1981 OK 105, ¶ 12, 634 P.2d 711 (considering the "practicable recoverability of minerals" in determining whether its order created waste); *Big Piney Oil & Gas Co. v. Wyoming Oil & Gas Conservation Comm'n*, 715 P.2d 557, 562 (Wyo. 1986) (affirming a Commission order that shut in certain wells, in part, because it prevented waste caused by oil migrating into the gas cap and rendering it unrecoverable). If oil and gas is not practicably recoverable, operating in a manner that does not recover such oil or gas does not violate the Act and does not constitute prohibited waste.

The Commission has had many opportunities to decide whether an application will create waste and has repeatedly highlighted the recoverability of hydrocarbons in its analysis. For example, in Case No. 12905, the Commission considered an application for a permit to dispose of produced water in the San Andres and Glorieta formations. *See* Ex. 9, Order No. R-11855-B, at

[5] The Statutory Unitization Act also incorporates the concept that unavoidable loss is not waste. Orders providing for unitization must include an allocation of "all the oil and gas that is produced from the unit area and is saved, **being the production that is not used in the conduct of operations on the unit area or not unavoidably lost**." NMSA § 70-7-7(C) (emphasis added).

¶ 3. An operator opposed the application, arguing that the proposed injection operations would create waste due to "the **potential productivity** of the San Andres and Glorieta formations." *Id*. at ¶ 14 (emphasis added). After hearing testimony that the injection formations contained "some hydrocarbons," the Commission granted the application and permitted the proposed SWD operations, in part, because the testimony revealed that the "relative permeability of the rock and the [high] water saturation make it extremely unlikely that any of the hydrocarbons could move to a well bore and be recovered." *Id*. at ¶ 15. The Commission noted that the party opposing the application "failed to produce any evidence supporting its apparent assertion that either the San Andres or the Glorieta will produce oil or gas," and concluded, "[i]t thus appears that the Glorieta and San Andres are wet and will not produce commercial quantities of oil or gas in the vicinity of the proposed injection well." *Id*. at ¶¶ 16-17. Where an applicant for disposal operations produces evidence that the geological characteristics of a potentially impacted formation make hydrocarbons unrecoverable, and the opposing party fails to produce evidence to the contrary, the Commission has granted the application and permitted injection operations. *Id*. at ¶¶ 15-16 and ¶ 27. Thus, oil or gas that is unrecoverable is not considered waste.

In two of the examples above, the Commission also considered economic conditions surrounding the proposed operations and whether such operations would create waste in an economic context. In Case No. 12905, the Commission found that a proposed disposal well would not impede a yet-to-be-drilled production well because the proposed production zones "will not produce **commercial quantities** of oil or gas." *See* Ex. 9, at ¶ 17 (emphasis added). In the *Kuykendall* case, the Oklahoma Supreme Court considered whether changing economic conditions altered the feasibility of development. *See Kuykendall*, 1981 OK 105, ¶ 17. In considering the formation of the EMSU itself, the Commission included a cost-benefit analysis in the Unit Order.

See Ex. 6 ("EMSU Unit Order"). As required, the Commission considered the **investment costs, operations costs, and net profitability** before finding that the proposed secondary recovery operations "will not exceed the estimated value of the additional oil and gas . . . plus a reasonable profit." *Id*. at 4, ¶ 20-22; *see also* NMSA 1978, § 70-7-6(A)(3).

B. To constitute waste, the oil and gas must be produced in sufficient quantities to be commercial.

The Act also prohibits companies from producing or handling oil or gas "in such amounts as to constitute waste." NMSA 1978, § 70-2-2. This means that the loss of small volumes of oil and gas that are not commercial does not necessarily constitute waste when such volumes could not be produced for a profit. *See* § 70-2-3(C). Similarly, the definitions of underground waste prohibit the "excessive" dissipation or loss without beneficial use. *Id*. §§ 70-2-3 (A) & (B). For example, a small volume of gas that is lost during transportation via pipelines or that falls out in the treatment process are not considered "waste" when the amount lost is insignificant or when such losses are necessary. *See, e.g.*, 19.15.28.8.B(2) NMAC (identifying activities that are exempted from the natural gas gathering "waste rule" that either result in a de minimis loss of gas or are necessary as part of normal operations).

Similarly, the Commission does not consider saltwater disposal to cause "waste" where such liquids are disposed into reservoirs that are not proven to be capable of producing in paying quantities. *See* NMSA 1978, § 70-2-12(B)(4); *see infra*, Section 4 (for a discussion of Empire's burden of proof). In Case No. 15059, for instance, the Division determined that its authority to prevent waste does not extend to formations that are not proven to be capable of producing commercial amounts of oil or gas. *See* Ex. 10, Order No. R-13889. In considering whether to approve a SWD well over the objection of an oil and gas operator, the Division explained, "under Section 70-2-12(B)(4) NMSA Laws of 1978, the Division is required to prevent the drowning by

water any stratum or part thereof **capable of producing oil and gas in paying quantities** and to prevent the premature and irregular encroachment of water or any other kind of water encroachment, that reduces or tends to reduce the **total ultimate recovery** of crude petroleum oil or gas from any pool. Under the Oil and Gas Act, the Division's authority to prevent 'the drowning by water any stratum' **does not extend into formations that are not the targeted hydrocarbon reservoirs or pools**." Ex. 10, at ¶ 7 (emphases added). The Division's analysis and decision to permit the SWD well shows that no waste occurs if hydrocarbons are not shown to be recoverable in paying quantities (i.e., quantities that are commercial or economic) from the target reservoir. *Id*. at 6, ¶ 4 ("If significant hydrocarbon shows indicate the potential for the permitted interval to be classified as a stratum capable of producing hydrocarbons in paying quantities, then this disposal order shall be terminated *ipso facto* under Section 70-2-12.B(4) NMSA Laws of 1978."). Notably, the Division required the operator to notify it of "significant hydrocarbon shows" and stated that its order would be terminated if "significant hydrocarbon shows" indicate the permitted interval is "capable of producing in paying quantities." *Id*. The Division did not say its order shall be terminated if the hydrocarbon shows indicate a small amount. The volumes must be significant to be commercially economic.

For at least 40 years, whether the injection interval targeted by a proposed disposal well contains commercial amounts of oil and gas production has been integral to the Commission's conservation considerations regarding waste. In 1984, the Commission authorized a SWD well, in part, because "no commercial oil and gas production has been found in the 'C' or 'D' zones in the immediate area of the said proposed disposal well." Ex. 11, Order No. R-7637 at 2, ¶ 4. The Commission further found that "the disposal of produced water into the proposed disposal interval will not cause the premature drowning by water of any zone capable of producing commercial

quantities of oil and gas in the area." *Id*. at ¶ 6. Similarly, in 2014 the Division considered an opposed application for approval to convert a stripper well to a SWD well. The party opposing the application argued that the Division should not allow the applicant to convert a well to a SWD well because it was capable of producing in paying quantities. *See* Ex. 12, Order No. R-13922. The Division nevertheless concluded that "the well is truly a stripper well, and the cost of producing the well to abandonment will be greater than the revenues generated [by authorizing the proposed disposal injection]." *Id*. at ¶12. The Division continued, "[t]he evidence submitted by the Applicant also demonstrates that if the well is not converted to a salt water disposal well, the cost of disposing the Bone Spring water from these new wells will be great." *Id*. at ¶13; *see also* Ex. 13, Order No. R-13958 at 2, ¶¶5(h) & 7 (ordering that a stripper well be converted to a SWD well because the "[stripper] well is uneconomic to produce" and "therefore [the operator] has the right to use the well for other beneficial purposes"). Thus, the Division balanced the competing interests the potential loss of a small volume of oil and gas, which was nevertheless being produced in paying quantities, against the more substantial economic benefit of supporting new offsetting production. It determined that approving the proposed disposal operations weighed more favorably in the interest of prevention of waste and, overall, prevented waste. Accordingly, the Division granted the application.

These examples demonstrate that a loss of small volumes of oil and gas does not constitute or result in waste where the target formation is not capable of producing in paying quantities or the quantities of oil and gas are not commercially or economically producible. But even where oil and gas are capable of being produced in paying quantities, disposal should be approved where it will result in a greater economic benefit and an overall prevention of waste by supporting offsetting production.

Thus, to determine whether the production or handling of oil and gas will be done "in such manner," "under such conditions," or "in such amounts" that constitute waste or result in waste, the Commission considers whether oil and gas is practicably recoverable, both in terms of physical and economic limitations.

Section Three: Requirements to Show Impairment of Correlative Rights

In addition to preventing waste, the Commission is required to protect correlative rights. NMSA 1978, § 70-2-11. The term "correlative rights" is defined as:

> The opportunity afforded, as far as it is practicable to do so, to the owner of each property in a pool to produce without waste the owner's just and equitable share of the oil or gas in the pool, being an amount, so far as can be **practicably determined**, and so far as can be **practicably obtained without waste**, substantially in the proportion that the **quantity of recoverable oil or gas or both under the property bears to the total recoverable oil or gas or both in the pool**, and for the purpose to use the owner's just and equitable share of the reservoir energy.

Id. § 70-2-33(H). As an initial matter, correlative rights apply to oil and gas interests. A person asserting correlative rights must show they are an owner of property in an oil and/or gas pool. *Id*. When parties own oil and gas interests in the same pool, the "correlative right is having the opportunity to produce, not having a guaranteed share of production. Once the state has afforded that opportunity, it has protected the correlative rights of a party; it need not ensure a share of production to a party." Williams & Meyers, *supra* § 204 (quotation omitted and emphasis added). Correlative rights can be summarized as "(1) an opportunity to produce, (2) only insofar as it is **practicable** to do so, (3) **without waste**, (4) a proportion, (5) insofar as it can be **practically determined** and obtained **without waste**, (6) of the gas in the pool." *Cont'l Oil Co.,* 1962-NMSC-062, ¶ 27 (emphases added).

Before correlative rights may be effectively protected, the Commission must make certain basic findings. *See id.* The four most salient findings "**without which the correlative rights of**

the various owners cannot be ascertained," are: "(1) the amount of recoverable gas under each producer's tract; (2) the total amount of recoverable gas in the pool; (3) the proportion that (1) bears to (2); and (4) what portion of the arrived at proportion can be recovered without waste[6]." *Id*. ¶ 12. "**That the extent of the correlative rights must first be determined before the commission can act to protect them is manifest.**" *Id*. Once the extent of an owner's correlative rights are determined that owner's will have an opportunity to produce their proportionate share of the pool.

Determining the extent of correlative rights is a threshold issue that precedes the Commission's ability to protect those rights, but such determination must be practicable. *See* NMSA, § 70-2-33(H) (defining correlative rights as the opportunity afforded to owners in a pool "so far as it is practicable to do so" to recover an amount of oil and gas "so far as can be practicably determined" and "practicably obtained"). To "comply with the mandate of the statute," Empire must establish, "so far as can be practicably determined," that there is a "**certain amount**" of oil in the pool, a "**certain amount**" of oil within the EMSU, and that "a **determined amount**" of oil "could be produced and obtained without waste." *Cont'l Oil Co.,* 1962-NMSC-062, ¶ 28 (emphasis added).

When waste does not occur, correlative rights are often un-impaired, and both the Commission and Division have issued orders supporting such a position.[7]

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[6] Illustrative of this requirement, in Case No. 15159 the Division granted an application for a SWD well, despite contentions that the existing well was still producing in paying quantities, because "the cost of producing the well to abandonment [would] be greater than the revenues generated." Ex. 12, ¶ 12.

[7] For example, in Case No. 8234, the Commission found that when "no commercial oil and gas production has been found in the 'C' or 'D' zones in the immediate area of the said proposed disposal well" there was no waste, nor was there any impairment on correlative rights. Ex. 11 at 2, ¶ 4. The same goes for the Division's ruling in Case No. 15159 when it made more economic

Section Four: Evidentiary Burden for Administrative Applicants

Empire acquired the EMSU in 2021 (37 years after its creation) to conduct tertiary recovery operations in the unit and now seeks to prevent Goodnight's permitted salt water disposal operations nearby. To that end, Empire filed four Applications to Revoke Injection Authority under four orders, which authorized Goodnight to operate multiple SWD wells in the EMSU (the "Orders"). As the applicant, Empire bears the burden of proof to show that Goodnight's existing permits to operate SWD wells must be revoked. *See Duke City Lumber Co. v. N.M. Envt'l. Improvement Bd.*, 1980-NMCA-160, ¶ 4, 622 P.2d 709 (explaining the common-law rule that a moving party bears the burden of proof). To satisfy its burden, Empire must make the following showings:

A. Empire Must Show Changed Circumstances Supported by New Evidence

The Commission's power to regulate oil and gas production to prevent waste and protect correlative rights is "a continuing one and its orders are subject to change or modification where conditions have changed materially, new and unforeseen problems arise or mistakes are discovered." 1 Bruce M. Kramer & Patrick H. Martin, THE LAW OF POOLING AND UNITIZATION, § 14.02 (3d ed. 2025) (citation omitted). Typically, a unit order may not be modified or revoked "unless there is a change of circumstances, such as new evidence becoming available regarding geologic and engineering conditions of the reservoir or common source of supply." *Id*. Orders can be modified "when it is shown that modification is necessary in order to conserve oil or gas or bring about a fair and equitable production of the oil or gas." *Id.*

---

sense to convert a stripper well to a SWD well, the Division concluded that the SWD well would prevent waste, and there would be no impairment of correlative rights. Ex. 12, ¶ 18.

If, however, the Commission lacks new information, changing an order without supporting evidence is tantamount to the Commission changing its mind about a point it already decided. According to Bruce Kramer and Patrick Martin,

> If the existing order is binding, it is binding on the agency as well as the parties. It is a derogation of the rights of a party under an order to change the order without there being some basis for the change. **Just as parties cannot collaterally attack an order of an agency in a judicial proceeding that is not a proper review of the order, so too must an agency refrain from setting aside an order without a basis founded in changed conditions or changed knowledge of conditions.** Otherwise, the agency would be collaterally attacking its own order or acting arbitrarily.

Id. (emphasis added).

B. Empire must show it has correlative rights and that those rights are impaired by Goodnight's operations.

Empire must establish that it has correlative rights to be protected. To make this showing, Empire must provide evidence of the total quantity, as well as its share, of recoverable hydrocarbons. If Empire can establish that it has correlative rights, it must prove that Goodnight's activity impairs those rights, namely by hindering Empire's opportunity to recover the purported residual hydrocarbons.[8]

For the Commission to analyze any alleged impact to Empire's correlative rights, Empire must provide evidence of the volume of recoverable hydrocarbons that lies beneath the entire pool, the volume of recoverable hydrocarbons that lies specifically beneath the EMSU, and the volume of recoverable hydrocarbons that make up Empire's own "just and equitable" share. These findings, even "insofar as can be practically determined," are necessary for the Commission to protect correlative rights. *See Cont'l Oil Co.,* 1962-NMSC-062, ¶¶ 16, 20. In other words, before the analysis shifts to Goodnight's role in Empire's claims, Empire must adduce legally-sufficient

[8] *See* Section 3, *supra*, for the substantive requirements to show correlative rights.

evidence quantifying the recoverable, residual hydrocarbons that Empire alleges it will capture from the purported residual oil zone.

If Empire adduces evidence establishing its correlative rights, it must next prove that Goodnight's activity impairs those rights. To show impairment, Empire must show its opportunity to recover residual hydrocarbons has been prevented by Goodnight's operations.

C. Empire must show its share of hydrocarbons can be recovered without waste.

If Empire can adduce evidence of its just and equitable share of recoverable hydrocarbons, it must then evidence what portion of its share can be recovered **without waste**. *Id*. Because waste has both a physical and economic component, Empire's recovery must be practicable.[9]

Practically speaking, "the usual explanation given by the courts enjoining . . . wasteful conduct is that each landowner has correlative rights at common law in the oil and gas or in the producing formation and that wasteful conduct of one landowner which injures the correlative rights of another may be enjoined." Williams & Meyers, *supra*, § 204. In application, the Commission utilizes its power to protect correlative rights in situations where landowners (or operators) have competing rights and/or interests in the same resource. It makes sense then that the Commission should use its power to ensure that all parties are given their fair opportunity to capture what each has a right to produce. But in this instance, Empire is looking to expand the application of that power. Empire is asking the Commission to revoke its own pre-existing orders on the speculative grounds that Goodnight's operations will impact Empire's opportunity to possibly recover an uncertain volume of alleged residual hydrocarbons, but also the quantity of such hypothetical recovery. That does not amount to the legally required proof of impairment to correlative rights.

[9] *See* Section 2, *supra*, for a more thorough analysis of the Act's use of the term "waste."

SECTION 5: Nothing in the EMSU Unit Order, Agreement, or Operating Agreement prohibits Operation or Approval of Existing or Future SWDs

The Commission's order approving the EMSU authorized a 14,189.84-acre unit to be created for statutory unitization pursuant to the Statutory Unitization Act. *See* Ex. 6 ("EMSU Unit Order"). The EMSU Unit Order authorized the applicant to "institute a **secondary recovery project** for the recovery of oil and all associated and constituent liquid or liquified hydrocarbons within the unit area." EMSU Unit Order at 9, ¶ 4 (emphasis added). The "unitized formation" is limited to "the entire oil column under the unit area permitting the efficient and effective recovery of **secondary oil therefrom**." *Id*. at 3, ¶ 10 (emphasis added). The "unitized formation" means the Grayburg and Penrose formations because the secondary oil column is limited to those formations only. *See* Ex. 3, at Tr. Vol. 1, 52:6-7; 53:1-4, & Vol. 2, 224:22-25 (explaining that the oil column in the Unit area is in the Grayburg and Penrose formations). The unit operator proposed a waterflood project to conduct the secondary recovery operations and identified the San Andres as the water source for the waterflood. *See* EMSU Unit Order at 3, ¶ 14 (explaining the proposed waterflood operations); *see also* Ex. 3, at 214:23-215:4 (identifying the San Andres as the "primary source of injection water"). The EMSU Unit Order does not authorize other forms of recovery beyond what secondary waterflood operations can recover, which effectively limits EMSU production operations to the Grayburg/Penrose waterflood producing interval.[10]

Accordingly, nothing in the EMSU Unit Order prohibited pre-existing salt-water disposal operations within the San Andres portion of the EMSU's unitized interval, nor did it prohibit the

[10] This does not preclude Empire or other mineral interest owners and/or operators from developing additional minerals in the San Andres, but they cannot do so under the existing Unit order because there has been no primary production, and the Commission never approved carbon dioxide injection in the Unit order. If Empire desires to develop additional minerals in the San Andres, it must do so under a voluntary agreement or by force pooling a spacing unit, because such development would be exploratory and not authorized under the Statutory Unitization Act.

Commission from approving future applications for disposal operations within the EMSU's portion of the San Andres. Indeed, the Division previously found that the "Unit Order does not specifically prohibit, or even address, potential injection operations within the Unit Area." Ex. 14, Order on Motion to Dismiss, Case No. 22626, at 2, ¶ 8. The Division continued, "[t]he existence of a Unit, established under the Statutory Unitization Act, does not, by itself, prohibit the operation of a disposal well within the Unit." *Id*. at ¶ 9. The Division's findings could not be clearer: the Unit Order does not address, much less prohibit, Goodnight's SWD injection operations within the Unit Area.

Similarly to the Unit Order, neither the Unit Operating Agreement nor the Unit Agreement prohibit SWD injection operations within the Unit Area. In fact, the Unit Operating Agreement specifically states that the drilling of any well for injection, saltwater disposal or for any other Unit purpose is a decision that remains exclusively with the Working Interest Owners, not the Unit Operator. *See* Ex. 15, Unit Operating Agreement, ¶ 3.2.2. This provision demonstrates that the original parties to these agreements contemplated the drilling of SWD wells and specifically set them apart from the Operator's rights to operate the unit. *Id*.

SECTION 6: Section 10 of the EMSU Unit Agreement

The Unit Agreement for the EMSU (the "Unit Agreement") provides the general framework governing operations within the unit. It specifies which lands are within the Unit Area, how production and royalties will be allocated to royalty and working interest owners, and addresses other operational details.

Section 10 of the Unit Agreement defines the Unit Operator's rights and obligations. *See* Ex. 16, Unit Agreement, § 10. This section establishes that, **with respect to the other working interest owners who are parties to the Unit Agreement**, the Unit Operator has the **exclusive**

right to prospect for, produce, allocate and distribute oil and gas produced from the unit area. This exclusive right applies to the Unit Operator and all other parties to the Unit Agreement; it does not, however, affect the rights or obligations of any non-parties. Its purpose is to establish that working interest owners who are parties to the Unit Agreement have delegated their executory/operational rights to the Unit Operator so only the Unit Operator has those powers and obligations within the Unit Area **as between the parties to Unit Agreement**. It does not preclude third-party activities within the Unit Area that do not otherwise cause waste or impair correlative rights. Section 10 also does not grant new, additional, or expanded rights to the Unit Operator that did not already exist under the individual leaseholds that were contributed to the Unit. All oil and gas leases that were contributed to the Unit define the underlying oil and gas mineral rights. Those leasehold rights remain in full force and effect and are modified only if they conflict with statutory provisions. According to the Law of Pooling and Unitization treatise, "existing contracts are to be amended or modified only to the extent necessary to conform to the applicable statutory provisions, the [Commission's] order, or the Unit Operating Agreement. In all other respects, preexisting contracts remain in full force and effect." Kramer & Martin, *supra*, § 13.08; *see also Buchholz v. Burlington Res. Oil & Gas Co. LP*, 2008 ND 173, ¶ 20 ("[P]rior contracts are amended or modified by the order creating the unit only when there is an actual conflict between their provisions and modification is necessary to prevent waste or the denial of correlative rights.").

To further understand Section 10, we analyze each sentence:

> **Sentence 1**: "Except as otherwise specifically provided herein, the exclusive right, privilege and duty of exercising any and **all rights of the parties hereto** including surface rights 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."

The first sentence of Section 10 delegates to the Unit Operator all rights individually held by the parties to the Unit Agreement. These rights and obligations are "exclusive" to the Unit Operator

vis-à-vis the other parties to the Unit Agreement, because it precludes any of the other working interest owners from exercising those rights that previously belonged to them under their individual leasehold instruments. *See* Kramer & Martin, *supra*, § 19.04 (3d ed. 2025) (explaining that "the exclusive appointment of the operator negates *joint* control") (emphasis in original). Such delegation of power gives the Unit Operator sole authority to develop and operate the EMSU on behalf of all parties who contributed oil and gas interests to the EMSU without risk of interference from conflicting operations conducted by the other working interest owners. In other words, this provision confirms that the Unit Operator acts as a proxy to exercise any rights separately held by the interest owners within the Unit. According to the Williams & Meyers treatise, this provision is similar to customary provisions in pooling and unitization agreements that give the Unit Operator the right "to make use of the surface of the affected premises." *See* Williams & Meyers, *supra*, § 921.14.

This provision does not—and cannot—preclude others who may have a valid and legal right to make use of the surface or subsurface within the EMSU from doing so. Moreover, where there is a potential conflict over property rights or competing uses between mineral interest owners and other interest owners that does not implicate waste or impact correlative rights, the courts, not the Commission, have jurisdiction to adjudicate the rights as between the parties and their competing interests. *See Harvey E. Yates Co. v. Cimarex Energy Co.*, No. 12-587, 2014 U.S. Dist. LEXIS 183891, at *38 (D.N.M. Mar. 5, 2014); *see also Snyder Ranches, Inc. v. Oil Conservation Comm'n*, 1990-NMSC-090, ¶ 8, 798 P.2d 587.

> **Sentence 2**: "Upon request, 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**."

The second sentence simply explains that the Unit Operator's rights, privileges, and obligations are defined by the Unit Agreement and the parties' oil and gas leases that were contributed to the Unit. To determine the Unit Operator's rights, a party may review the "evidence of title to said rights," which means the Unit's underlying oil and gas leases. This makes clear that the "rights, privileges and obligations of the Unit Operator" are derived solely from the underlying leasehold instruments.

> **Sentence 3**: "**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."

The third sentence in Section 10 clarifies that delegating the rights, privileges, and obligations to the Unit Operator does not transfer any right to title in lands, leases, or operating agreements that the parties contributed to the EMSU. Each party retains their individual right to title in the lands or leases they contributed; they merely authorize the Unit Operator to operate the EMSU on their behalf. This provision is similar to provisions identified in Williams & Meyers that are designed to negate any cross-conveyance of title in pooling and unitization agreements. *See* Williams & Meyers, *supra*, § 921.6 ("Customary provisions of pooling and unitization agreements: Titles unaffected").

Section 10 delegates to the Unit Operator the exclusive right to work, so that Unit Operations are uniform. Section 10 does not exclude surface owners' right to work within the unit, nor does it reduce their right to use their own property rights.

* * *

If the Commission determines that Empire has not proffered sufficient evidence to demonstrate Goodnight's SWD operations are causing waste or impairing Empire's correlative rights, the Commission should preserve the status quo and reject Empire's request to revoke

Goodnight's SWD authorization. In that circumstance, the Commission retains its jurisdiction over these matters and all disposal operations in and around the EMSU because it has a continuing duty to prevent waste and protect correlative rights. If or when Empire obtains objective, engineering-based data or evidence showing that an economically recoverable ROZ exists and/or that Goodnight's disposal injection is causing waste or impairing correlative rights, the Commission has the authority—and obligation—to revisit the issue to consider new evidence or data. *See* NMSA 1978, § 70-7-3 (The Division "is vested with jurisdiction, power and authority and it shall be its duty to make and enforce such orders and do such things as may be necessary or proper to carry out and effectuate the purposes of the Statutory Unitization Act."); *see also* Kramer & Martin, *supra*, § 14.03 (explaining that commissions retain jurisdiction to, *inter alia*, interpret commission orders and determine whether its orders have been violated). An adverse ruling against Empire in this matter due to a lack of evidence therefore does not necessarily foreclose Empire or the Commission from re-evaluating the issue in the future.

Respectfully submitted,

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EXHIBIT 1

This rule was filed as State Engineer Rule 66-1, Article 7-4.

TITLE 19 NATURAL RESOURCES AND WILDLIFE
CHAPTER 27 UNDERGROUND WATER
PART 26 CAPITAN UNDERGROUND WATER BASIN

19.27.26.1 ISSUING AGENCY: Office of State Engineer.
[Recompiled 12/31/01]

19.27.26.2 SCOPE: [RESERVED]
[Recompiled 12/31/01]

19.27.26.3 STATUTORY AUTHORITY: Adopted pursuant to the authority of Sections 72-2-8, 72-2-12 and 72-13-4, New Mexico Statutes Annotated, 1978.
[Recompiled 12/31/01]

19.27.26.4 DURATION: [Permanent]
[Recompiled 12/31/01]

19.27.26.5 EFFECTIVE DATE: November 1, 1966
[Recompiled 12/31/01]

19.27.26.6 OBJECTIVE: This Rule is formulated for the purpose of carrying out the provisions of the statutes governing underground waters and describing the present extent of all declared underground water basins in New Mexico.
[Recompiled 12/31/01]

19.27.26.7 DEFINITIONS: [RESERVED]
[Recompiled 12/31/01]

19.27.26.8 CAPITAN BASIN:

A. The lands declared within the Capitan Basin on September 28, 1965, are as follows:

TOWNSHIP	RANGE	SECTIONS
18 S.	29 E.	19 thru 36
18 S.	30 E.	19 thru 36
18 S.	31 E.	All
18 S.	32 E.	All
18 S.	33 E.	3 thru 11, 13 thru 36
18 S.	34 E.	29 thru 32
19 S.	28 E.	All
19 S.	29 E.	All
19 S.	30 E.	All
19 S.	31 E.	All
19 S.	32 E.	All
19 S.	33 E.	All
19 S.	34 E.	4 thru 9, 15 thru 36
20 S.	28 E.	All
20 S.	29 E.	All
20 S.	30 E.	All
20 S.	31 E.	All
20 S.	32 E.	All
20 S.	33 E.	All
20 S.	34 E.	All
21 S.	28 E.	All
21 S.	29 E.	1 thru 6
21 S.	30 E.	1 thru 6
21 S.	31 E.	1 thru 15
21 S.	32 E.	1 thru 18, 22 thru 27, 34 thru 36
21 S.	33 E.	All
21 S.	34 E.	All
21 S.	35 E.	All
21 S.	36 E.	All
21 S.	37 E.	All

21 S.	38 E.	All**
22 S.	33 E.	1 thru 18, 22 thru 27, 34 thru 36
22 S.	34 E.	All
22 S.	35 E.	All
22 S.	36 E.	All
22 S.	37 E.	All
22 S.	38 E.	All**
23 S.	34 E.	1 thru 18, 22 thru 27, 34 thru 36
23 S.	35 E.	All
23 S.	36 E.	All
23 S.	37 E.	All
23 S.	38 E.	All**
24 S.	35 E.	All
24 S.	36 E.	All
24 S.	37 E.	All
24 S.	38 E.	All**
25 S.	35 E.	1 thru 3, 10 thru 15
25 S.	36 E.	All
25 S.	37 E.	All
25 S.	38 E.	All**
26 S.	36 E.	1 thru 6, N 1/2 7, N 1/2 8, N 1/2 9, NW 1/4 & E 1/2 10, 11 thru 14, E 1/2 15, E 1/2 22, 23 thru 26, E 1/2 27, E 1/2 34*, 35*, 36*
26 S.	37 E.	1 thru 30, 31 thru 36*
26 S.	38 E.	All**

*Fractional Sections. **All townships involving Range 38 East are fractional townships.

B. [TOWNSHIP AND RANGE MAP: See 7-4.1 Capitan Basin, PDF File 19.027.0026.8-Capitan.]
[SE 66-1, Article 7-4; Recompiled 12/31/01]

HISTORY OF 19.27.26 NMAC:
Pre-NMAC History: The material in this Part was derived from that previously filed with the State Records Center and Archives:
SE 66-1, Rules and Regulations Governing Drilling of Wells and Appropriation and Use of Ground Water in New Mexico 1966, originally filed with the Supreme Court Law Library 11/1/66. Filed with the State Records Center 6/27/91.

History of Repealed Material: [RESERVED]

EXHIBIT 2

EUNICE MONUMENT SOUTH SECONDARY RECOVERY UNIT

(Royalty Owners Overview)
LEA COUNTY, NEW MEXICO

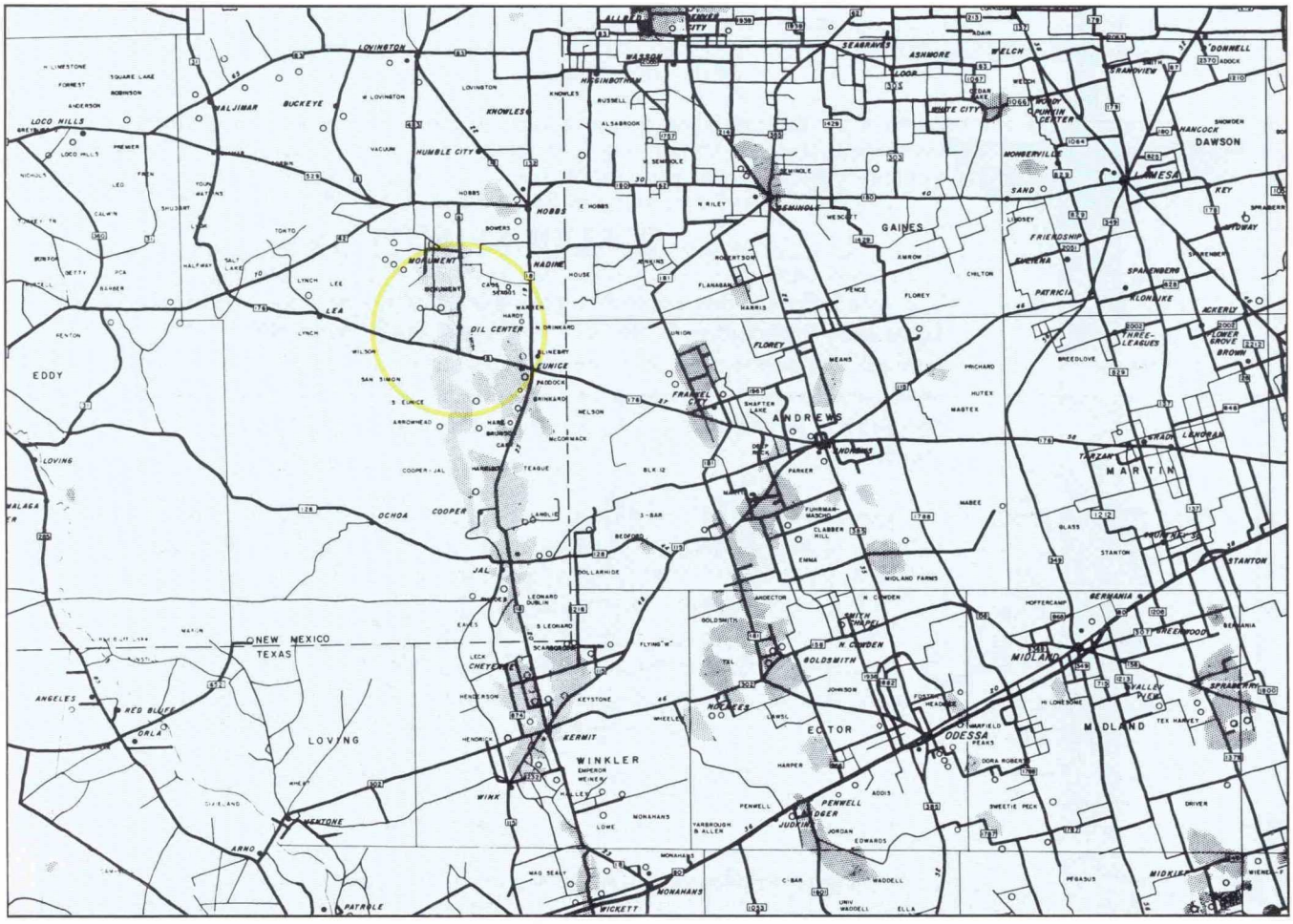
INTRODUCTION

The Proposed Eunice Monument South Secondary Recovery Unit in Lea County, New Mexico, encircles the Town of Oil Center, is approximately four miles south of the Town of Monument, and is fifteen miles southwest of the City of Hobbs. The unit area covers 14,190 acres in Townships 20 and 21 South, Ranges 36 and 37 East, New Mexico Principal Meridian, and includes all or portions of 24 sections of land. At its longest and widest portions, the unit area is six miles by five and one-fourth miles.

The field was discovered March 21, 1929 with the completion of the Continental Lockhart "B-31" well in Section 31, Township 21 South, Range 36 East, N.M.P.M., Lea County, New Mexico. Following discovery, the field was designated as the Eunice (Queen-Penrose, Grayburg and San Andres geological formations) Pool. In 1953, the Eunice Pool was separated into the Eumont Gas Pool and Eunice Monument Oil Pool.

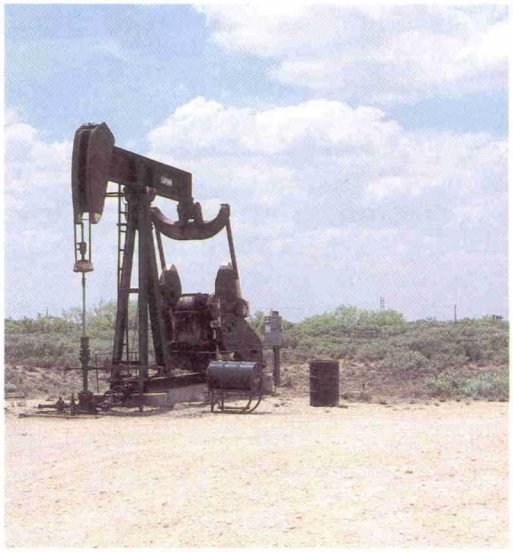
The oil field was developed on 40-acre spacing with the majority of wells being drilled and completed during the three-year period from 1934 through 1937. Peak oil production from the collective wells occurred in May of 1937 when the monthly production was 791,800 barrels of oil, or 25,542 barrels per day.

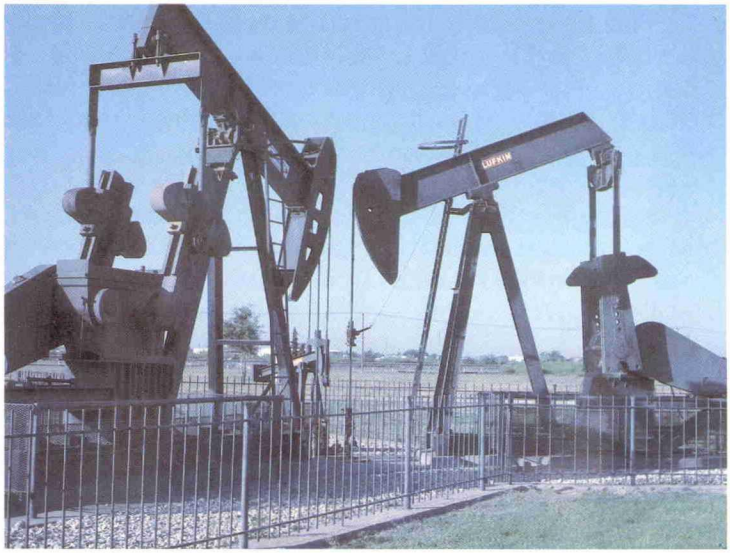
Since May of 1937, oil production within the unit has steadily declined. Twenty-three companies have drilled and completed 344 oil wells, but because of production decline, only 200 oil wells are active. The remaining wells have been temporarily abandoned, plugged, or recompleted in other zones. The oil production is now approximately 60,000 barrels of oil per month, or 7½% of the peak (1937) monthly production.

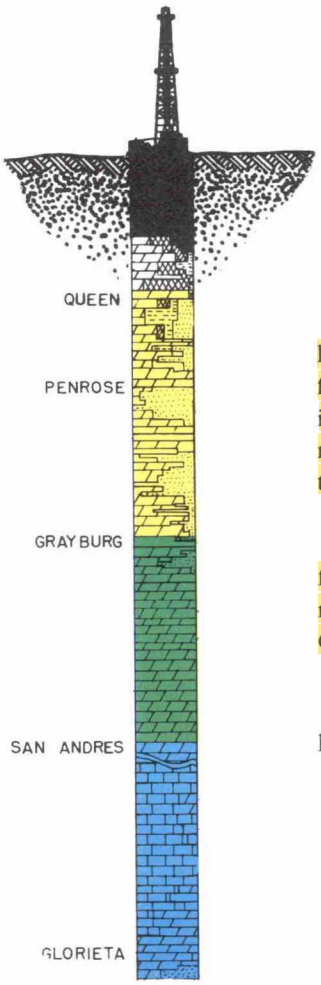


HOW CAN WE EXTEND THE LIFE OF THIS FIELD — 1929 TO _____

As with all oil fields, production has declined with time. In 1979, the Working Interest Owners (companies operating the wells and paying the maintenance costs) began a series of meetings and engineering studies to attempt to extend the productive life of this field by recovering oil that can never be produced with the present method of operation and existing facilities.







WATER INJECTION

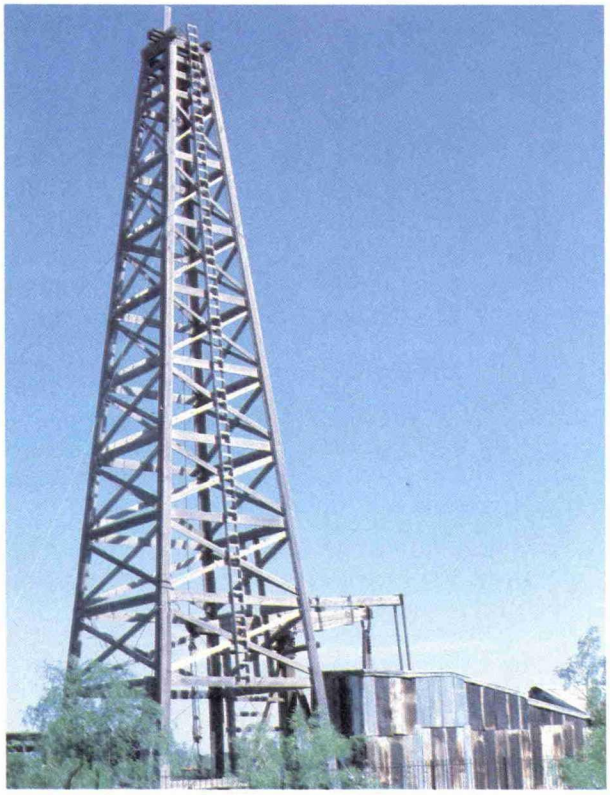
After the various company geologists and engineers completed their laboratory and reservoir studies, they concluded that a unit should be formed to inject water into the oil producing formations to force oil trapped in the rocks to the pumping units of the producing wells. This method of recovery is being successfully employed in many of the older oil fields in the area

For this proposed unit, salt water from the non-productive San Andres formation, supplemented by the reinjection of produced water, was recommended for pressurized injection into the oil producing portions of the Grayburg and Lower Penrose formations.

To understand the benefits of water injection, a brief discussion of primary and secondary recovery is helpful.

PRIMARY RECOVERY

Water, oil and gas existed under high temperature and high pressure when the first well was drilled into the oil producing formations. Because of the high gas pressure, the Continental Lockhart "B-31" well was a true gusher when it was drilled in 1929. The oil, along with some water and gas, was pushed out the well bore by the pressure of the gas. As more wells were drilled, the pressure decreased and pumps had to be installed on the wells.



With the decreased reservoir pressure, a large amount of oil was trapped in the pore spaces of the reservoir rocks. The diagram shown below represents the pore spaces in the reservoir at different times during the life of the field. The original condition of the reservoir at the time of discovery is shown in Figure (a), with only oil and water filling the pore spaces. It is seen that as oil is produced, gas bubbles, water, and the small pore spaces prevent recovery of 80% of the oil in place. At this point, as shown in Figure (b), a large amount of oil remains trapped in the reservoir.

SECONDARY RECOVERY

Two natural forces provide the energy necessary to move oil from the reservoir to a producing well. One is the expansion of the gas that is dissolved in the oil (solution gas drive) and the second is the movement of water which displaces the oil (water drive).

Generally speaking, a reservoir that has a water drive (natural or man-made) will yield significantly more oil than if subjected only to a solution gas drive. When it is determined that a reservoir is primarily producing by gas expansion, consideration is given to supplementing the solution gas drive with the injection of water to recover additional oil.

A water injection program, also referred to as secondary recovery, requires pressurized injection of water through selected wells into the oil-bearing reservoir. The injected water forces the oil to the surrounding producing wells where it is pumped to the surface. Following a water injection program, a large portion of the original oil is recovered as shown in Figure (c).

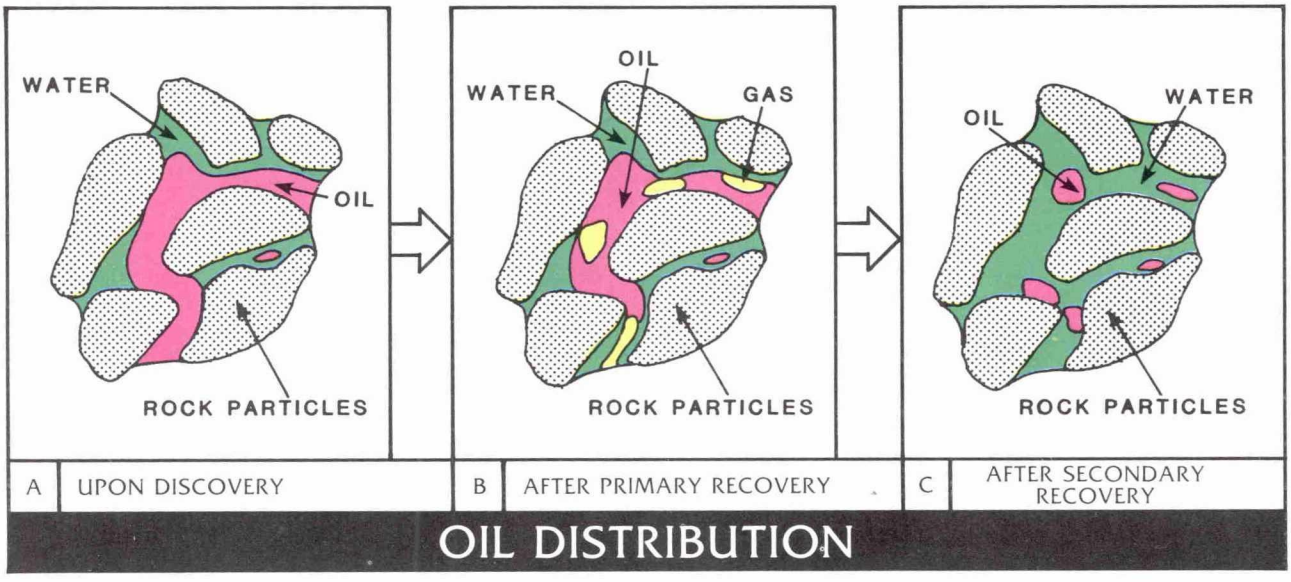


EXHIBIT 3

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

7 November 1984

COMMISSION HEARING

VOLUME I OF II VOLUMES

IN THE MATTER OF:

Application of Gulf Oil Corporation for statutory unitization, Lea County, New Mexico.	CASE 8397
Application of Gulf Oil Corporation for a waterflood project, Lea County, New Mexico.	CASE 8398
Application of Gulf Oil Corporation for pool extension and contraction, Lea County, New Mexico.	CASE 8399

BEFORE: Richard L. Stamets, Chairman
Commissioner Ed Kelley

TRANSCRIPT OF HEARING

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Santa Fe, New Mexico 87501

I N D E X

I N D E X CONT'D

hibit. That will be Exhibit Number Fourteen, and what is that, sir?

A Exhibit Fourteen is the structure top of the Grayburg map.

Q All right. Mr. Hoffman, does this structure map represent your geologic interpretation of the structure --

A Yes.

Q -- on top of the Grayburg?

A Yes, it does.

Q This is your work product?

A Yes, it is.

Q All right, sir. Would you describe for us what conclusions you made from examining the data and the information from the structure map?

A Yes. On the western and southern boundaries of the field the dark dashed line indicates the oil-water contact at a -325, and on the eastern, eastern edge of the field the Grayburg porosity pinches out, and on the northern --northern edge of the field, bounded by the Texaco Monument Unit.

Q All right, would you describe for us the lithology that you found in this area?

A Yes. It's a dolomite with intercrystalline porosity interspersed with some sands.

Q What does the oil/water contact determine for you as a geologist, Mr. Hoffman?

A It determines the lower limit of oil production in the area.

Q And when you talk about area, you're talking about the Grayburg-San Andres?

A Yes.

Q In your opinion does the oil/water contact generally conform to the unit boundary on the western and southern edges of the unit?

A Yes, it does.

Q Do you see as a geologist a reasonable geologic justification for the unit boundary as proposed by the working interest owners in this unit?

A Yes, I do.

Q All right, sir, and your next exhibit will be Exhibit Number Fifteen?

A Yes.

Q And what is that, sir?

A It is a structure map of the Penrose formation.

Q All right, we've looked at the structure on the lower end of the oil zone in the Grayburg and now we're going to look at the structure in the Penrose, which is above that.

A Yes.

Q All right. Is Exhibit Number Fifteen a structure map that you've also prepared?

A Yes, it is.

At the top of this summary is another number. It says "well" and as an example "14-4". That would indicate that it's cross section 14 and the well is at location number 4, and that is from the west.

The Penrose in this area, the lower part of the Penrose, the oil column in this area thins from the Grayburg up into the lower part of the Penrose. The middle Penrose is usually tight across the whole area except for the southern western edge of the field and this provides a pretty effective barrier between the oil column and the Penrose sand.

The Penrose sand is -- is that sand in the very top of the Penrose and generally found over the whole field.

On the western and southern edges of the field the sand, which is a dolomitic sand, changes into dolomite by a facies change or is cemented tight with dolomitic cement, with a corresponding loss of porosity and permeability along the edge of the unit.

Q All right, sir, when you look at Exhibit Number Eighteen, which is the line of cross section east to west on the southern portion of the unit, would you describe what you see in that cross section?

A Basically it's the same as you see -- basically it's the same as our cross section 14 as to tops and datums and it shows the same as cross section 14 (not clearly audible).

Q When you look at the oil column in the unit area, that is included generally in the Grayburg and the lower portion of the Penrose, is that correct?

A That's correct.

Q The upper portion of the Penrose is that sand that is gas productive.

A Yes, it is.

Q When you talked about the dense dolomites, are the dense dolomites between the oil column and the gas column?

A Yes, they are. The base of the sand is the top of the Penrose.

Q Within the Penrose section, then, there's a dolomite interval that separates the oil and the gas?

A Yes, sir, dolomite stringers, long sand stringers. The dolomite in the area is tight.

Q In your opinion is that an effective barrier between the oil and the gas in the area?

A Yes, it is, over most of the field.

Q All right, when we look at the top of the Grayburg and the base of the Penrose do we see any formational barrier between the top of the Grayburg and the base of the Penrose in the oil column?

A No, we don't.

Q Are you familiar with what Gulf proposes to use as the definition for the formation or the unit interval?

A Yes, that would be the entire oil column in the Grayburg.

Q When we're looking at a definition to use in the unitization process and you're trying to include the oil column, all right?

A Yes, sir.

Q What will that oil column consist of?

A That will consist of the Grayburg and San Andres formations and that portion of the oil column would extend to the base of the Penrose.

Q Do you see, based upon your study of the geology, a reasonable geologic justification for the proposed unitized interval vertically to include all of the oil column?

A Yes.

Q And will that definition exclude the gas column?

A Yes, it will.

Q When we look at your geology in terms of the horizontal boundary for the unit, do you have an opinion as a geologist as to whether or not that horizontal boundary has a reasonable geologic justification?

A Yes, it does. It runs between the oil-/water contact at -320 and the porosity pinchout on the eastern portion of the unit generally defines the unit boundary.

Q All right, sir. When we look at the type

that most of the wells here are classified as Eunice Monument oil wells, either historically or currently, except for Well No. 21-1, which is the far left well on your paper. It is a producing Eumont oil well and you can see that the productive interval is actually into the Penrose and up into the Queen.

Well 21-7, which is seven lines in from the western edge, is Shell's No. 1 Coleman A, which is a producing Eumont oil well, and you'll note that it was not drilled quite as deep as some of the other wells and the interval opened is basically right at the top of the Grayburg.

Well 21-10 is the No. 3 Cities Service State "C". That is a TA'd Eumont oil well which has been plugged back and is now a Eumont gas well.

What we discovered when we used the geological information and the completion interval information was that we had to come up with some possibilities for defining the vertical limits.

Looking first toward the lower limit that we might propose, we could see that the most appropriate limit would be the base of the San Andres because it is well below known production limits. It is the statutory base of the Eunice Monument Oil Pool, easily identifiable on electrical logs. It is the logical location for the lower limit.

For the upper limit, however, we began to consider a number of possibilities. Specifically, we de-

sales facilities, and things of that nature.

The Technical Committee has estimated that we would drill and equip nine water supply wells to handle the water injection requirements for the unit. You see the cost associated with those wells.

We'd estimated that we would drill and equip nineteen producers, sixteen injectors as replacements for P&A'd locations; possibly some vacant locations.

These are -- these cost estimates are shown in page one, also.

We believe that there will be a considerable remedial effort to be undertaken in the unit area on existing wellbores and that cost is roughly $10,000,000 worth of tangible equipment and $9,000,000 worth of intangible costs associated with that.

We anticipate coring a number of wells and we've included in the cost of coring and analyzing core on twenty wells to help us to gather reservoir data, and we anticipate as the flood begins to respond that we'll need to replace much of the existing equipment in the field and the item pumping and replacements is for that new equipment to upgrade the size of units.

You can see that the grand total here, which is a gross cost, is $60.6-million we expect to invest to get the unit installation.

Page two is a detail of those costs by year and we expect to spend the money which we've talked

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION
STATE LAND OFFICE BLDG.
SANTA FE, NEW MEXICO

8 November 1984

COMMISSION HEARING

VOLUME II OF II VOLUMES

IN THE MATTER OF:

Application of Gulf Oil Corporation for statutory unitization, Lea County, New Mexico.	CASE 8397
Application of Gulf Oil Corporation for a waterflood project, Lea County, New Mexico.	CASE 8398
Application of Gulf Oil Corporation for pool extension and contraction, Lea County, New Mexico.	CASE 8399

BEFORE: Richard L. Stamets, Chairman
Commissioner Ed Kelley

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the Oil Conservation Commission: Jeff Taylor
Attorney at Law
Legal Counsel to the Division
State Land Office Bldg.
Santa Fe, New Mexico 87501

Q In addition to distributing in this package of exhibits Exhibit Thirty-two, I've also distributed the next exhibit, which is 33-A.

A Yes, sir.

Q All right, would you identify that for us?

A It lists data on the proposed operation of the injection system for the waterflood project in the Eunice Monument South Unit.

Q All right, sir, would you describe for us what the proposed method of operation is for the unit?

A Okay. As shown on Exhibit Number Thirty-three-A, our average daily rates and maximum daily rates are 400 and 500 barrels of water per day, respectively. The system is going to be a closed system. The proposed average and maximum injection pressures will be 350 psi and 740 psi, respectively.

This will be until we can determine a fracture gradient and obtain proper approval from the OCD Director for possibly injecting at higher injection pressures.

To monitor and control the rates and pressures at the wellhead, our plans are to install pressure rate controllers on each injection well.

There are currently plans to drill approximately nine water supply wells to provide make-up water from the San Andres formation. This make-up water will be

used initially as the primary source of injection water and once we have the unit fully developed, we will be switching over to using produced water as our primary source of injection water.

Q Do you have any estimates now of the percentages between make-up water and produced water that will be used by the project?

A Not at this time. Our present plans are that initially we'll be using approximately 60,000 barrels of water per day for 133 injection wells.

Q And what is the source of produced water in the unit?

A It will be from the unitized intervals, the Grayburg formation, principally.

Q Do you anticipate that the maximum injection pressure at any individual injection well will be based upon the .2 psi per foot of depth gradient established as matter of practice by the Commission until you have other data available to justify a higher rate?

A Yes, sir, that's our plan.

Q All right, sir, it you'll turn to Exhibit Number Thirty-three-B, I believe, is the next one, and describe that one for us.

A Thirty-three-B is a water compatibility analysis performed on the make-up water and the produced water and it illustrates that there is no incompatibility evident by the mixing of these two waters.

ation. We can plug a lot of that into the computer to check you to see that -- on your reports -- to see that you're really following that. That's a lot of calculations for all of us to try and figure out what individual pressure limits are.

I'm wondering if it would be possible to establish groupings of pressures in this reservoir, say perhaps all the wells on the two sections on the west side would have the same pressure limit, and the three down in the middle, the same pressure limit, and so on, let's say, for the east side, so that we wouldn't have, what, 149 different pressures; we might have, say, five or six different pressure limits within the limits of the pool we would have to process.

A With the installation of those pressure rate controllers we'd be able to control pressures and rates on an individual injection well basis.

Where we may want a well to take -- take more water, inject more water into a well, it might require different pressures, other situations.

Q It's just a suggestion. We can look into it and if it works out, we'll try and do it.

A Okay, sir.

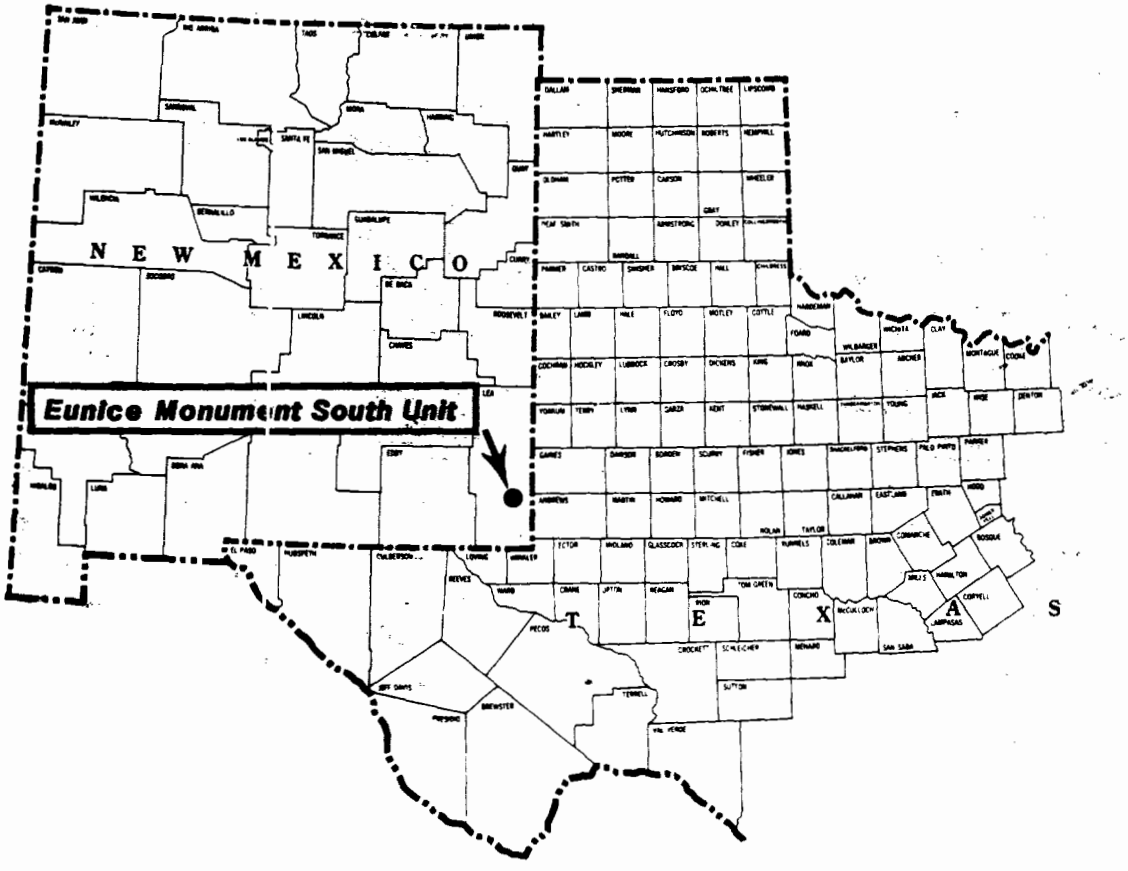
Q Now I understand that you will be injecting only into the Grayburg and the Penrose and not the San Andres, is that correct?

A That is correct.

EXHIBIT 4

PROPOSED EUNICE MONUMENT SOUTH UNIT

LEA COUNTY, NEW MEXICO



TECHNICAL COMMITTEE REPORT

APRIL 1983

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INTRODUCTION

This report summarizes a study of the feasibility of unitizing and waterflooding leases in the southern portion of the Eunice Monument oil pool, and fulfills the charges given to the Technical Committee in a meeting of the Working Interest Owners on May 10, 1979. As outlined in Figure 1, the proposed unit will include 14,280 acres which lie in Township 20 South, Ranges 36 and 37 East, and Township 21 South, Range 36 East, in Lea County, New Mexico. This waterflood will unitize all oil production from the lower Penrose, Grayburg, and San Andres formations within the vertical limits described in the Recommendations section of this report.

Twenty-three companies have current or historical operations within the proposed unit area. Table 1 is a summary of the 101 tracts comprising the unit.

CONCLUSIONS

1. Potential secondary reserves are present in sufficient quantity to justify unitizing properties in the southern portion of the Eunice Monument field to install a waterflood.

2. Secondary recovery factors of 48% and 18% were calculated for an optimum and minimum recovery cases, respectively. The optimum recovery case would produce 63.2 MM barrels of oil over a 30 year flood life, while the minimum recovery case would yield 23.7 MM barrels over the same time period.

3. The proposed unit is an economically attractive project. The optimum case yields a rate of return of 37.2% with a P/I ratio of 17.5, and the minimum case provides a rate of return of 23.4% with a P/I ratio of 5.

4. The proposed unit area contained an estimated OOIP of 671.5 MM STB. This solution gas drive reservoir has produced 119.8 MM barrels of oil to October 1, 1982, with ultimate primary production expected to reach 134.3 MM STB.

5. A total investment of approximately $62.5 MM will be required to install the surface facilities described in this report, drill and equip new wells to complete the waterflood pattern, perform the remedial work, install new pumping equipment, and obtain reservoir information.

RECOMMENDATIONS

1. The area within the southern portion of the Eunice Monument oil pool as outlined in Figure 1 of this report should be unitized.

2. The parameter table included as Table 8 on page 40 should be accepted as the basis for the Working Interest Owners to negotiate an equitable participation formula.

3. The vertical interval to be unitized should be described as follows:

   'The unitized interval shall include the formations from a lower limit defined by the base of the San Andres formation, to an upper limit defined by the top of the Grayburg formation or a -100 foot subsea datum, whichever is higher.'

4. A waterflood project should be initiated in the proposed unit area.

GEOLOGY

The proposed Eunice Monument South Unit, located in the southern portion of the Eunice Monument field, is situated on a NW-SE trending asymetrical anticline which lies along the northwestern edge of the Central Basin Platform. In this part of the field the oil producing formations are the Queen-Penrose and Grayburg, with the Grayburg being the major contributor to production (See Figures 3 and 4).

The Grayburg is a massive dolomite with thin stringers of sand interspersed within it. The majority of production probably comes from intercrystalline porosity within the dolomite. Overlaying the Grayburg is the Queen-Penrose. This section is composed of alternating layers of hard dolomite and sand stringers which are present over the entire anticline. The sands of the Queen-Penrose produce either oil or gas depending on their structural position on the anticline. Relative position and thickness of these formations are depicted on the Typelog shown in Figure 5.

Reports published during the early development of the field indicate that the gas-oil contact was believed to be -150 feet subsea, and the water-oil contact was believed to be -400 feet subsea. Our study of both field production data and individual well completion intervals indicates that the gas-oil contact is at approximately -100 feet subsea, and the oil-water contact is located at approximately -325 feet subsea. These contacts appear to be valid across the entire anticline and across formation boundaries. At this time there is insufficient data available to determine the degree of vertical reservoir communication.

Only 170 of the 344 proposed unit wells have logs, and the majority of these logs are of such poor quality that they are useless for technical interpretation. Most logs are uncompensated radioactivity and neutron logs, vintage 1955, or earlier,

The water injection plant and treating facilities will be located at the central battery site. Water will be transferred under pressure to the primary distribution headers located at each satellite battery site, then to secondary headers located in the field, each serving from three to five injection wells.

The total water requirement will be provided by reinjection of produced water, and from make-up water provided by nine San Andres supply wells. For this cost estimate, the assumption was made that new water supply wells would be drilled; however, there is a possibility that existing wellbores may be available which could be purchased and completed in the San Andres.

UNITIZED INTERVAL

During Technical Committee meetings in February and May of 1982, a major discussion item was the definition of the vertical interval to be unitized. A number of wells which are classified as Eunice Monument oil wells are actually producing from open hole completions exposing both the Eumont and Eunice Monument pools. In addition, many of the Eumont oil wells located along the western and southern edges of the proposed unit are producing from both pools.

An evaluation of the few available logs, cross-sections and production data indicates that the oil column within and adjacent to the unit is continuous from approximately -325 feet to -100 feet subsea, and includes oil being classified as both Eumont (Penrose and Queen) and Eunice Monument (Grayburg) production. Because of structural variations throughout the field, the upper limit of -100 feet subsea varies from mid-Grayburg in the eastern portion of the field to upper-Queen in the southwestern area of the field. In general, gas wells are completed above the -100 foot datum, and oil wells are completed below the -100 foot datum, regardless of their classification as Eumont or Eunice Monument wells. This is easily seen in the completion interval diagrams shown in Figures 98 through 106, and the geologic cross sections shown in Figures 107 and 108.

Originally the fact that many wells were open hole completions across the top of the Grayburg was of no consequence since the Eunice pool included both Queen and Grayburg formations. However, separation of the Eunice pool into the Eumont Gas Pool and Eunice Monument Oil Pool in the early 1950's created an accounting and classification problem for oil produced in the area. Because the oil wells were allowed to remain on production in their original completion status, a number of problems are evident which affect this unitization effort. First, there is no practical method

EXHIBIT 5

MEETING MINUTES
Eunice Monument South Unit
Technical Committee and
Working Interest Owners' Committee

May 10, 1979 - August 25, 1983

EXHIBIT NO. 21
Case No. 8399
November 7, 1984

During the discussion of the vertical interval to be unitized, Mr. Wheeler described the five alternatives which have been investigated by Gulf. The bottom of the interval must be the base of the San Andres formations to include the area's most prolific water production zone, however, the five alternatives for the top of the interval are as follows:

1. Top of the Grayburg Formation
2. Top of the Penrose Formation
3. An intermediate marker between the upper Penrose sand and lower Penrose carbonate section
4. A subsea datum
5. A combination of 1 and 4 (above)

Each alternative has advantages and disadvantages, however, after an extensive analysis of the cross sections from the Unit, Gulf engineers and geologists had concluded that the following vertical limit definition should be proposed to the Working Interest Owners: "The Unitized Interval shall include the formations from a lower limit defined by the base of the San Andres formation, to an upper limit defined by the top of the Grayburg formation or a -100 foot subsea datum, whichever is higher."

The significant advantages of this definition include the following:

1. Includes all known Eumont Oil and Eunice Monument Oil production in the Unit area
2. Excludes most gas well completions in the area
3. Minimizes the number of workovers required to prevent waterflooding non-unitized formations
4. Exposes the total oil productive interval in the Unit area to Waterflood operations

EXHIBIT 6

STATE OF NEW MEXICO
DEPARTMENT OF ENERGY AND MINERALS
OIL CONSERVATION COMMISSION

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

CASE No. 8397
Order No. R-7765

APPLICATION OF GULF OIL CORPORATION
FOR STATUTORY UNITIZATION, EUNICE
MONUMENT SOUTH UNIT, LEA COUNTY,
NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This case came on for hearing at 9:00 A.M. on November 7, 1984, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission".

NOW, on this 27th day of December, 1984, the Commission, a quorum having been present, having considered the testimony and the record and being otherwise fully advised in the premises:

FINDS THAT:

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

(2) The applicant, Gulf Oil Corporation (hereinafter called Gulf), seeks the statutory unitization, pursuant to the "Statutory Unitization Act," Sections 70-7-1 through 70-7-21, NMSA-1978, of 14,189.84 acres, more or less, being a portion of the Eunice Monument Pool, Lea County, New Mexico, as more specifically defined in Commission Case 8397, said portion to be known as the Eunice Monument South Unit; that applicant further seeks approval of the Unit Agreement and the Unit Operating Agreement which were submitted in evidence as Gulf's Exhibits Nos. 3 and 4.

(3) The proposed unit area should be designated the Eunice Monument South Unit Area, (hereinafter called unit) and the horizontal limits of said unit area should be comprised of the following described lands:

TOWNSHIP 20 SOUTH, RANGE 36 EAST, NMPM

Section 25: All
Section 36: All

TOWNSHIP 20 SOUTH, RANGE 37 EAST, NMPM

Section 30: S/2, S/2 N/2, NE/4 NW/4 and NW/4 NE/4
Section 31: All
Section 32: All

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM

Section 2: S/2 S/2
Section 3: Lots 3, 4, 5, 6, 11, 12, 13, and 14 and S/2
Section 4 through 11: All
Section 12: W/2 SW/4
Section 13: NW/4 NW/4
Section 14 through 18: All
Section 21: N/2 and N/2 S/2
Section 22: N/2 and N/2 S/2

(4) The subject Commission Case 8397 was consolidated for hearing with Commission Cases 8398 and 8399.

(5) Said unit has been approved by the Bureau of Land Management and the Commissioner of Public Lands of the State of New Mexico subject to the approval of statutory unitization by the Oil Conservation Commission.

(6) No interested party has opposed the horizontal limits of the said unit.

(7) The horizontal limits of said unit are reasonably defined by development and have a reasonable geologic relationship to the proposed unitized formations.

(8) The vertical limits of said unit should comprise that interval underlying the unit area, the vertical limits of which extend from an upper limit described at 100 feet below mean sea level or at the top of the Grayburg formation, whichever is higher, to a lower limit at the base of the San Andres formation; the geologic markers

having been previously found to occur at 3,666 feet and 5,283 feet, respectively, in Continental Oil Company's Meyer B-4 Well No. 23 (located at 660 feet from the South line and 1,980 feet from the East line of Section 4, Township 21 South, Range 36 East, Lea County, New Mexico) and as recorded on the Welex Acoustic Velocity Log taken on October 30, 1962, said log being measured from a kelly drive bushing elevation of 3,595 feet above sea level.

(9) The establishment of said vertical limits requires the amendment of the vertical limits of the Eumont Gas Pool and the Eunice Monument Pool under the unit area as is the subject of Commission Case 8399 and Order No. R-7767.

(10) The "unitized formation" will include the entire oil column under the unit area permitting the efficient and effective recovery of secondary oil therefrom.

(11) No interested party has objected to the vertical interval proposed to be unitized.

(12) The unit area contains 101 separate tracts owned by 41 different working interests.

(13) As of the date of the hearing, over 90 percent of working interest owners and royalty interest owners were effectively committed to the unit.

(14) Gulf proposes to institute a waterflood project for the secondary recovery of oil and associated gas, condensate, and all associated liquifiable hydrocarbons within and to be produced from the proposed unit area, all as shown in Commission Case 8398.

(15) A technical committee was formed by the owners within the proposed unit to evaluate aspects of unitization and operation of the proposed secondary recovery operation (waterflood).

(16) The technical committee concluded that the probable range of recovery from the proposed waterflood is from 25 percent to 100 percent of ultimate primary production.

(17) Said committee further concluded that based upon response to waterflooding in similar reservoirs, 48 percent of ultimate primary or 64.2 million barrels of additional (secondary) oil would be recovered by institution of the proposed waterflood.

(18) The unitized management, operation, and further development of the unit, as proposed, is reasonable and necessary to effectively and efficiently carry on secondary recovery operations and will substantially increase the ultimate recovery of oil and gas from the unitized formations.

(19) The proposed unitized method of operation as applied to the Unit Area is feasible and will result with reasonable probability in the increased recovery of substantially more oil from the unitized portion of the pool than would otherwise be recovered without unitization.

(20) The estimated additional investment costs of the proposed supplemental recovery operations are $60.6 million.

(21) The additional recovery to be derived from the proposed supplemental recovery operations will have a resultant net profitability over the aforesaid additional costs and after taxes of $1.186 billion with unitized water flooding versus $226.7 million without unitized waterflooding.

(22) The estimated additional costs of the proposed operations (as described in Finding No. (18) above) will not exceed the estimated value of the additional oil and gas (as described in Finding No. (19) above) plus a reasonable profit.

(23) The applicant, the designated unit operator, pursuant to the Unit Agreement and the Unit Operating Agreement, has made a good faith effort to secure voluntary unitization within the unit area.

(24) Bruce Wilbanks and other interest owners in Unit Tract 55, have declined to voluntarily join the unit.

(25) Exxon Company, USA, (hereinafter "Exxon") has declined to voluntarily join the unit and has opposed the application of Gulf in this case on the basis that the participation formula contained in the Unit Agreement fails to give sufficient weight to the cumulative oil production and further that the method of providing a wellbore contribution incentive is not to Exxon's economic advantage.

(26) Exxon has a working interest of 4.86% of the unit which consists of 100% working interest in Unit Tracts 12, 37, 88, 90 and a 50% working interest in Unit Tract 89.

(27) The participation formula proposed allocates unit production to the various tracts in accordance with the following:

Tract Participation = 50% A/B + 40% C/D + 10% E/F

Where:

A = the tract cumulative oil production from the unitized formation as of September 30, 1982.

B = the unit total cumulative oil production from the unitized formation as of September 30, 1982.

C = the remaining primary oil reserves from the unitized formation for the tract, beginning October 1, 1982, as determined by the Technical Committee on February 25, 1983.

D = the remaining primary oil reserves from the unitized formation for all unit tracts, beginning October 1, 1982, as determined by the Technical Committee on February 25, 1983.

E = the amount of oil produced from the unitized formation by the tract from January 1, 1982, through September 30, 1982.

F = the amount of oil produced from the unitized formation by all unit tracts from January 1, 1982, through September 30, 1982.

(28) The proposed formula does not take into account calculations of estimated secondary production from each tract in that insufficient cores, well logs, and reservoir data are not available to make such calculations.

(29) The proposed formula does give substantial weight to remaining primary reserves in that such reserves can be measured, that the owners of such reserves have agreed to the terms and conditions of the unit and will be deferring income therefrom to support the costs and risks of implementing secondary recovery operations in the unit.

(30) The proposed allocation formula does give owners without remaining primary reserves or with very low volumes of remaining primary reserves, such as Exxon, a disproportionately large share of the income from the production of remaining primary production during the early life of the project.

(31) During unit negotiations, a cutoff date must be established in order to make necessary calculations of the allocation of unit costs and benefits.

(32) The adoption of the September 30, 1982, date in the subject case was necessary for such calculations and is not unreasonable.

(33) Giving consideration to the lack of technical data for estimates of secondary recovery, the reallocation of primary production in the early life of the unit, the greater risk being accepted by the owners of remaining primary reserves and the reasonableness of the September 30, 1982, cutoff date; the proposed participation formula will allocate unit production on a fair, reasonable, and equitable basis during the period that the estimated 64.2 million barrels of secondary oil is produced.

(34) During said period, it is expected that the unit operator will develop reservoir data from cores, well logs, tests and production which might be used to better allocate production to the unit during any period of recovery of secondary and tertiary oil in excess of 64.2 million barrels.

(35) The proposed formula should not apply to the allocation of secondary or tertiary oil production in excess of a total of 64.2 million barrels.

(36) Before distributing the proceeds from production of such oil in excess of 64.2 million barrels, the unit operator should be required to appear and demonstrate that the formula approved by this order continues to allocate proceeds from unit operations in a fair and equitable manner or, in the alternative, present a new allocation formula prepared on the basis of new and/or enhanced reservoir data which new formula better allocates said proceeds.

(37) Gulf proposed a Wellbore Assessment Method in the Unit Operating Agreement as an incentive to encourage the working interest owners in the unit to contribute the maximum number of existing useable wellbores to the unit.

(38) This assessment method, though not common, is used in other unit agreements.

(39) Any proration unit within the unit which is to participate in the proposed waterflood operation must have a wellbore useable for production or injection in the unitized interval.

(40) It is not unreasonable to penalize the owners of proration units upon which there is no such wellbore and upon which the unit operator must drill a well.

(41) The proposed method of wellbore assessment is fair and reasonable.

(42) Exxon admits that each of its tracts is still reasonably profitable should the Commission approve the participation formula and the wellbore assessment method proposed by Gulf as unit operator.

(43) Unitization and the adoption of the proposed unitized method of operation will benefit the working interest owners and royalty owners of the oil and gas rights within the unit area.

(44) The Eunice Monument South Unit Agreement and Unit Operating Agreement provide for unitization and unit operation of the unit area upon terms and conditions that are fair, reasonable and equitable and which include:

(a) an allocation to the separately owned tracts in the unit area of all oil and gas that is produced from the unit area and which is saved, being the production that is not used in the conduct of unit operations or not unavoidably lost;

(b) a provision for the credits and charges to be made in the adjustment among the owners in the unit area for their respective investments in wells, tanks, pumps, machinery, materials and equipment contributed to the unit operations;

(c) a provision governing how the costs of unit operations, including capital investments, shall be determined and charged to the separately owned tracts and how said costs shall be paid, including a provision providing when, how, and by whom, the unit production allocated to an owner who does not pay his share of the costs of unit operations shall be charged to such owners, of the interest of such owners, and how his interest may be sold and the proceeds applied to the payment of his costs;

(d) a provision for carrying any working interest owner on a limited, carried or net-profits basis, payable out of production, upon such terms and conditions which are just and reasonable, and which allow an appropriate charge for interest for such service payable out of production, upon such terms and conditions

determined by the Commission to be just and reasonable, and allowing an appropriate charge for interest for such service payable out of such owner's share of production, providing that any nonconsenting working interest owner being so carried shall be deemed to have relinquished to the unit operator all of his operating rights and working interests in and to the unit until his share of the costs, service charge and interest are repaid to the Unit Operator;

(e) a provision designating the unit operator and providing for the supervision and conduct of the unit operations, including the selection, removal or substitution of an operator from among the working interest owners to conduct the unit operations;

(f) a provision for a voting procedure for the decision of matters to be decided by the working interest owners in respect to which each working interest owner shall have a voting interest equal to his unit participation; and

(g) the time when the unit operation shall commence and the manner in which, and the circumstances under which, the operations shall terminate and for the settlement of accounts upon such termination;

(45) The statutory unitization of the Eunice Monument South Unit Area is in conformity with the above findings, and will prevent waste and protect the correlative rights of all owners of interest within the proposed unit area, and should be approved.

IT IS THEREFORE ORDERED THAT:

(1) The Eunice Monument South Unit Area, comprising 14, 189.84 acres, more or less, in the Eunice Monument Oil Pool, as amended by Order R-7767, Lea County, New Mexico, is hereby approved effective December 1, 1984, for statutory unitization pursuant to the Statutory Unitization Act, Sections 70-7-1 through 70-7-21 NMSA 1978.

(2) The lands included within the Eunice Monument South Unit Area shall comprise:

TOWNSHIP 20 SOUTH, RANGE 26 EAST, NMPM

Section 25: All
Section 36: All

TOWNSHIP 20 SOUTH, RANGE 37 EAST, NMPM

Section 30: S/2, S/2 N/2, NE/4 NW/4, and NW/4 NE/4
Section 31: All
Section 32: All

TOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPM

Section 2: S/2 S/2
Section 3: Lots 3, 4, 5, 6, 11, 12, 13, and 14 and S/2
Section 4 through 11: All
Section 12: W/2 SW/4
Section 13: NW/4 NW/4
Sections 14 through 18: All
Section 21: N/2 and N/2 S/2
Section 22: N/2 and N/2 S/2

and that the above described lands shall be designated as the Eunice Monument South Unit Area.

(3) The vertical limits of said unit shall comprise that interval underlying the unit area, the vertical limits of which extend from an upper limit described as 100 feet below mean sea level or at the top of the Grayburg formation, whichever is higher, to a lower limit at the base of the San Andres formation; the geologic markers having been previously found to occur at 3,666 feet and 5,283 feet, respectively, in Continental Oil Company's Meyer B-4 Well No. 23 (located at 660 feet from the South line and 1,980 feet from the East line of Section 4, Township 21 South, Range 36 East, Lea County, New Mexico) and as recorded on the Welex Acoustic Velocity Log taken on October 30, 1962, said log being measured from a kelly drive bushing elevation of 3,595 feet above sea level.

(4) The applicant is hereby authorized to institute a secondary recovery project for the recovery of oil and all associated and constituent liquid or liquified hydrocarbons within the unit area, pursuant to the provisions set forth in Commission Order No. R-7766.

(5) The Eunice Monument South Unit Agreement and the Eunice Monument South Unit Operating Agreement presented by the applicant as Exhibits 3 and 4, respectively, in this case are hereby incorporated by reference into this order.

(6) The Eunice Monument South Unit Agreement and the Eunice Monument Unit Operating Agreement provide for

unitization and unit operation of the subject portion of the Eunice Monument Pool upon terms and conditions that are fair, reasonable and equitable and include:

an allocation to the separately owned tracts in in the unit area of all the oil and gas that is produced from the unit area and is saved, being the production that is not used in the conduct of operations on the unit area or not unavoidably lost;

a provision for the credits and charges to be made in the adjustment among the owners in the unit area for their respective investments in wells, tanks, pumps, machinery, materials and equipment contributed to the unit operations;

a provision for governing how the costs of unit operations including capital investments shall be determined and charged to the separately owned tracts and how said costs shall be paid including a provision providing when, how, and by whom the unit production allocated to an owner who does not pay the share of the costs of unit operations charged to such owner, or in the interest of such owner, may be sold and the proceeds applied to the payment of such costs;

a provision for carrying any working interest owner on a limited, carried or net-profits basis, payable out of production, upon such terms and conditions determined by the Commission to be just and reasonable, and allowing an appropriate charge for interest for such service payable out of such owner's share of production, provided that any non-consenting working interest owner being so carried shall be deemed to have relinquished to the unit operator all of its operating rights and working interest in and to the unit until his share of the costs, service charge and interest are repaid to the unit operator;

a provision designating the unit operator and providing for the supervision and conduct of the unit operations, including the selection, removal or substitution of an operator from among the working interest owners to conduct the unit operations;

a provision for voting procedure for the decision of matters to be decided by the working interest owners in respect to which each working interest owner shall have a voting interest equal to its unit participation; and

the time when the unit operation shall commence and the manner in which, and the circumstances under which, the operations shall terminate and for the settlement of accounts upon such termination;

and are therefore hereby adopted.

(7) This order shall not become effective unless and until the appropriate ratification provisions of Section 70-7-8 NMSA, 1978 Compilation, are complied with.

(8) If the persons owning the required percentage of interest in the unit area as set out in Section 70-7-8 NMSA, 1978 Compilation, do not approve the plan for unit operations within a period of six months from the date of entry of this order, this order shall cease to be of further force and effect and shall be revoked by the Commission, unless the Commission shall extend the time for ratification for good cause shown.

(9) When the persons owning the required percentage of interest in the unit area have approved the plan for unit operations, the interests of all persons in the unit are unitized whether or not such persons have approved the plan of unitization in writing.

(10) Prior to distribution of the proceeds from secondary and tertiary production in excess of 64.2 million barrels, the operator shall appear at a hearing and demonstrate that the formula approved by this order continues to allocate the proceeds from unit production in a fair and equitable manner or, in the alternative, present for approval a new formula prepared on the basis of new or enhanced reservoir data which new formula better allocates said proceeds.

(11) Jurisdiction of cause is retained for the entry of such further orders as the Commission may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

Jim Baca, Member

Ed Kelley, Member

R. L. Stamets, Chairman
and Secretary

S E A L

EXHIBIT 7

3-2022

Regulating Natural Gas Venting and Flaring as Waste: A Review of the New Mexico Approach

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Regulating Natural Gas Venting and Flaring as Waste: A Review of the New Mexico Approach

Joseph A. Schremmer[*]

Abstract

This essay interrogates the regulation of routine venting and flaring of natural gas as a source of prohibited "waste," using New Mexico's recently adopted Waste Rule as an example. It begins with a survey of both the environmental and economic benefits to be achieved by limiting or eliminating venting and flaring and the direct and indirect costs of doing so, including the forgone opportunity to produce crude oil. Then the essay explains the common law and statutory definitions of "waste" to demonstrate that the concept implicates a balancing of the costs and benefits of any given production practice to determine whether it is justified or wasteful. Finally, the essay applies existing law to routine venting and flaring of associated gas in the Permian Basin, which the Waste Rule has effectively banned. The result of this analysis is that the Waste Rule prohibits some venting and flaring that would not necessarily constitute waste under existing law. In conclusion, the essay argues that waste is the wrong legal rubric for efforts to reduce or eliminate methane emissions from oil and gas operations and that policymakers should instead seek legal means that are better aligned with their true purpose: fighting climate change.

Introduction

As efforts to address concerns about climate change grow, one greenhouse gas in particular is receiving increasing scrutiny: methane. Accordingly, many aspects of the upstream and downstream oil and gas industry—the largest industrial emitter of methane—are coming under new and tightened regulation, and none more so than the routine venting and flaring of natural gas. Regulating this practice, however, is more complex than might meet the eye.

What is so complex about regulating venting and flaring of natural gas that it should warrant a special issue of the *Oil, Gas, and Energy Law Intelligence*? As a policy matter, the difficulty comes, as it often does, in balancing the benefits to be achieved by greater regulation with its costs, both of which may be considerable. As a legal matter, the difficult question is how to achieve any given policy. One tantalizingly straightforward legal mechanism to limit or eliminate routine venting and flaring, which New Mexico's regulators have embraced, is to prohibit them as a source of "waste" of natural gas. As with the policy question, determining what legally constitutes "waste," and thus when it may legally be prohibited, turns on an implicit cost–benefit analysis of sorts.[1] Thus, when waste is the rubric for limiting routing venting and flaring, the policy and legal questions converge on the same question: do the benefits of the limitation justify its costs?

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[1] This characterization of legal "waste" is drawn generally from Tara K. Righetti & Joseph A. Schremmer, *Waste and the Governance of Private and Public Property*, 93 U. COLO. L. REV. __ (forthcoming 2022). The concept of "waste" is discussed in depth *infra* in Part III.A.

This essay critically examines New Mexico's recent effort to virtually eliminate routine natural gas venting and flaring within its borders under the theory that it constitutes prohibited "waste." New Mexico is a useful subject for examination because of the scale of its oil and gas industry, as well as the enormity of its natural gas industry, which vents and flares about 36 billion cubic feet (worth over $270 million, in 2018 alone[2]), and the creativity and ambition of its regulators in addressing the problem.

Part I opens this essay with a survey of the problem of natural gas venting and flaring, focusing on the benefits and costs of regulating the practice in the Permian Basin in New Mexico. Part II then dissects New Mexico's regulatory response, which approaches the problem of natural gas emissions obliquely from two angles. First by limiting the emission of air pollutants that are regulated by the Clean Air Act and are associated with natural gas production, namely volatile organic compounds and nitrogen oxides. Second, and most importantly for present purposes, by prohibiting venting and flaring in all but a small number of circumstances as a means of preventing "waste" of natural gas resources. Part III evaluates and ultimately questions the use of the legal concept of waste as the rationale for eliminating venting and flaring.

I. The Benefits and Costs of Regulating Venting and Flaring

In discussing the benefits and costs of regulating routine venting and flaring, it must be remembered that the *benefits* of limiting the practices are also the *costs* of not limiting them, and vice versa. The costs to society of methane emissions from oil and gas production and transportation—and thus the benefits of regulating them—fall into two general categories: environmental and economic. The costs of regulating oil and gas emissions from venting and flaring, on the other side of the coin, include both the direct costs of designing, implementing, enforcing, and complying with the regulation and the indirect, opportunity costs associated with limiting the emissions, namely the loss of otherwise producible oil and gas reserves.

A. The Benefits

1. Environmental Benefits

The benefits of limiting natural gas venting and flaring fall into two general categories: environmental and economic.[3] On the environmental side, the chief concern about venting and flaring is that they emit methane and carbon dioxide, respectively. Both are greenhouses gasses that contribute to climate change, with methane being the more potent, but shorter-lasting of the two.[4]

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[2] *See New Analysis Reveals Persistent Methane Problem*, *New Mexico Oil & Gas Data*, EDF (Nov. 2020), https://www.edf.org/nm-oil-gas/.

[3] Kim Talus & Cheri R. Hasz, *Economic Waste and Environmental Problems: Natural Gas Flaring in Texas*, *in* DECARBONISATION AND THE ENERGY INDUSTRY: LAW, POLICY AND REGULATION IN LOW-CARBON ENERGY MARKETS 107 (Tade Oyewunmi, et al., eds. 2020).

[4] *See* EPA, Overview of Greenhouse Gases: Methane Emissions, https://www.epa.gov/ghgemissions/overview-greenhouse-gases; Daniel Raimi, *The Shale Revolution and Climate Change*, RESOURCES FOR THE FUTURE (Jan. 31, 2018), https://media.rff.org/documents/RFF-IB-18-01.pdf.

Venting natural gas refers to releasing it directly into the atmosphere. Because natural gas consists primarily of methane, venting emits a large proportion of this greenhouse gas.[5] Flaring, on the other hand, is the burning of natural gas at the wellhead. Because it combusts natural gas, flaring converts it from methane into carbon dioxide before emitting it into the atmosphere. Flaring also tends to emit carbon monoxide, sulphur dioxide, nitrogen oxides, and other compounds.[6]

The incidence of venting and flaring in New Mexico has risen significantly in recent years along with growth of oil and gas production in the state. According to the New Mexico Governor's office, "oil and gas production growth in New Mexico Permian Basin resulted in an 18% increase in venting and flaring volumes during the first seven months of 2018 compared to 2017."[7] This growth has occurred primarily in the part of the Permian Basin known as the Delaware Basin, which straddles west Texas and southeastern New Mexico. In recent years, the Delaware Basin has been the premier oil and gas play in the United States, as well as one of the largest sources of vented and flared natural gas in the country.[8]

A recent statewide survey of methane emissions conducted by the Environmental Defense Fund (EDF) estimated that upstream oil and gas sites in New Mexico release more than 1.1 million metric tons of methane per year—significantly greater than EPA had previously estimated.[9] EDF explains that "this has the same short-term climate impact as 25 coal plants or 21 million automobiles."[10] These releases are from not only venting and flaring, but also equipment leaks and ordinary oil and gas production processes. Consequently, efforts to reduce venting and flaring, as well as emissions of natural gas from other upstream and midstream equipment and processes, are considered to have a significant climate benefit.[11]

2. Economic Benefits

Limiting venting, flaring, and leaking of natural gas is said to produce the economic benefit of conserving the natural gas for beneficial use. This argument is particularly potent in New Mexico, where the state not only collects taxes on sales of natural gas production, but also receives substantial royalties on natural gas produced and sold from its vast land holdings across the state. The Governor's office has estimated that "emissions, venting, flaring, and leaks of natural gas by New Mexico's oil and gas industry results in the waste of an important source of domestic energy to the tune of an estimated $244 million per year."[12] That amounts to a loss of state tax and royalty revenue of roughly $43 million annually.[13] The potential financial benefits to the state of eliminating venting and flaring are apparent.

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[5] Talus & Hasz, *supra* note 3, at 107.
[6] *Id.*
[7] N.M. Exec. Order No. 2019-003 (Jan. 29, 2019).
[8] Ian Palmer, *Profit and Loss from Flaring of Natural Gas in Permian Basin Wells of New Mexico*, FORBES (Jan. 29, 2019), https://www.forbes.com/sites/ianpalmer/2021/01/29/profit-and-loss-from-flaring-of-natural-gas-in-permian-basin-wells-of-new-mexico/?sh=63f766db78bf.
[9] EDF, *supra* note 2.
[10] *Id.*
[11] *See* N.M. Exec. Order No. 2019-003 (Jan. 29, 2019).
[12] *Id.*
[13] EDF, *supra* note 2. These taxes include on each sale of oil and natural gas a conservation tax of $0.19, an oil and gas emergency school tax, and an oil and gas ad valorem production tax, and on the processing of natural gas a natural

B. The Costs

1. Direct Costs

Just as there are significant benefits to regulating venting and flaring of natural gas, so too are there many costs. The costs can be distilled into two categories as well: direct costs and indirect, or opportunity costs. The direct costs include the costs to design and administer the regulation itself, including monitoring and enforcing the requirements. These are not insignificant. The ozone-precursor rules drafted by the New Mexico Environment Department[14] alone cost more than 15,000 hours of staff time and $1 million in contract support from outside scientists and researchers merely to draft.[15]

Direct costs also include the compliance costs incurred by the regulated community. While no economic analysis of the costs of compliance with New Mexico's recent regulations has been published, the Environmental Protection Agency recently published a thoroughgoing examination of the costs of complying with the methane emissions standards imposed on upstream and midstream oil and gas operators under Subpart OOOOa of the Clean Air Act.[16] The agency estimated the repeal of the methane emissions standards to save the oil and gas industry, nationwide, $17 to $19 million per year in compliance costs.[17]

2. Indirect Costs

The indirect, or opportunity costs of limiting methane emissions from oil and gas operations—particularly by prohibiting most venting and flaring—are harder to estimate and potentially much greater than the direct costs. To see why, it is important to understand the reasons venting and flaring have increased so substantially in recent years.

Beginning in the mid-2000s, oil and gas companies developed horizontal drilling and hydraulic fracturing technology capable of exploiting previously unproducible impermeable or "tight" geologic formations. After the technology had been refined in various such "unconventional" plays in Texas and elsewhere, developers' attention turned to the massive Permian Basin.[18] The Permian had produced from conventional, vertical wells for decades, but the Delaware Basin contained a number of tight formations that had not yet been exploited. In the rush to produce oil from the Delaware Basin using these unconventional techniques, a huge amount of associated natural gas was produced as a byproduct of the oil, which was the developer's target. The pipeline infrastructure that had been built to transport Permian Basin gas to market from vertical wells

gas processor's tax. *See* Anne Kolesnikoff & Cassarah Brown, *State Oil and Gas Severance Taxes*, NAT'L CONF. STATE LEGISLATURES (Sept. 6, 2018), https://www.ncsl.org/research/energy/oil-and-gas-severance-taxes.aspx.

[14] *See infra* Part II.A.

[15] N.M. ENVIRONMENT DEP'T, OZONE PRECURSOR RULE FACT SHEET (May 2021), https://www.env.nm.gov/wp-content/uploads/2021/05/2021-05-06-Ozone-precursor-rule-factsheet-FINAL.pdf.

[16] ENVT'L PROT. AGENCY, REGULATORY IMPACT ANALYSIS FOR THE PROPOSED OIL AND NATURAL GAS SECTOR: EMISSIONS STANDARDS FOR NEW, RECONSTRUCTED, AND MODIFIED SOURCES REVIEW (Aug. 2019).

[17] *See generally id.*; 84 Fed. Reg. 50,244, 50,278 (Sept. 24, 2019).

[18] 2 ERNEST E. SMITH & JACQUELINE LANG WEAVER, TEXAS LAW OF OIL AND GAS § 10.6(A)(3) (2021).

could not accommodate this associated gas flowing in massive volumes from new horizontal wells.[19] There are simply not enough gas pipelines in the Permian Basin to take all of the associated gas.

The dearth of pipeline capacity has coincided with a period of historically low natural gas prices, which also resulted from the enormous amount of natural gas brought online by horizontal wells in the United States. Spot prices for natural gas in the Permian Basin have been especially low and have often turned negative, such that producers are sometimes required under their contracts to *pay* to "sell" their gas.[20] Because most of the gas produced in the basin comes intermingled with oil production, it is not possible to produce one without the other. Thus, the combination of too few pipeline connections and low-to-negative spot prices has forced large numbers of producers in the Delaware Basin to a choice. For those fortunate to have a pipeline connection, they may vent or flare their associated gas, sell it (maybe at a loss), or shut-in their oil wells. For those without a pipeline connection the choice is even simpler; they must vent or flare their associated gas or shut-in their oil wells.

For these reasons, forbidding venting and flaring of natural gas in New Mexico may come at the dear cost of foregoing oil production. Viewed from a climate-change perspective, this result may not be troubling. However, the economic costs to the state of lost oil production may be high, as the market price for oil is considerably higher than for natural gas,[21] and could, conceivably, even outstrip the revenues lost from venting and flaring. Certainly, a venting and flaring prohibition may incentivize construction of new pipeline capacity in the region, ameliorating or even eliminating the potential for lost production.

Whether any of these offsetting costs and benefits will come to fruition in practice will be an empirical question; but the potential remains that tight control of venting and flaring could curtail not only of emissions of methane, but also production of oil.

II. New Mexico's Approach to Eliminating Routine Venting and Flaring

In January 2019, New Mexico Governor Michelle Lujan Grisham issued Executive Order 2019-003 to require the state's Energy, Minerals and Natural Resources Department (EMNRD), which houses the Oil Conservation Division (OCD) and Oil Conservation Commission (OCC), and the New Mexico Environment Department (NMED) to "jointly develop a statewide, enforceable regulatory framework to secure reductions in oil and gas sector methane emissions and to prevent waste from new and existing sources and enact such rules as soon as practicable."[22] The four-page order focuses extensively on the harms of climate change and methane and carbon dioxide's contribution to it, and notes that "efforts to reduce methane emissions throughout New Mexico will have a significant climate benefit as well as prevent the waste of energy resources."[23]

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[19] *Id.*

[20] *See Texas Waha Natgas Prices Drop to Negative on Weak Demand*, REUTERS (Oct. 19, 2020), https://www.reuters.com/article/us-usa-natgas-texas/texas-waha-natgas-prices-drop-to-negative-on-weak-demand-idUSKBN2741L2.

[21] *See Crude Oil vs Natural Gas—10 Year Daily Chart*, MACROTRENDS (last visited June 2, 2021), https://www.macrotrends.net/2500/crude-oil-vs-natural-gas-chart.

[22] N.M. Exec. Order No. 2019-003 (Jan. 29, 2019).

[23] *Id.*

Accordingly, NMED has drafted regulations to limit the emissions of ozone-precursor compounds from upstream and midstream natural gas operations and OCD has adopted final regulations limiting venting and flaring of natural gas at wells and from natural gas gathering systems. These regulations do not target methane or carbon dioxide directly. Rather, they limit the emission of substances produced in conjunction with methane. NMED's draft ozone-precursor rule is projected to reduce methane emissions by 851 pounds annually,[24] and OCD has promoted its venting and flaring regulations as providing the "co-benefit of reducing methane emissions in the oil and gas sector."[25] The regulations justify these limitations on the basis of protecting air quality from oil and gas contamination and preventing waste of natural gas, respectively, rather than on the basis of preventing or mitigating climate change.

The following sections outline the NMED and OCD regulations in turn to demonstrate New Mexico's two-pronged approach to limiting methane emissions.

A. Regulating Methane Emissions as a Source of Ground-Level Ozone Pollution

Under the New Mexico Air Quality Control Act, the Environmental Improvement Board (EIB) is authorized and obligated "to adopt a plan, including regulations, to control emissions of oxides of nitrogen [NO_x] and volatile organic compounds [VOCs] to provide for attainment and maintenance of" the National Ambient Air Quality Standards (NAAQS) established by the United States Environmental Protection Agency under the federal Clean Air Act for ground-level ozone. EIB's authority to do so extends only to those areas of the state where ozone concentrations exceed 95% of the NAAQS.[26] The EIB may adopt standards of performance for sources of emissions for which no federal performance standard has been adopted, as well as performance standards that are more stringent than federal standards.[27]

Pursuant to this statutory authority, NMED has drafted proposed regulations to establish emissions standards for VOCs and NO_x for oil and gas production, processing, and transportation sources.[28] As of this writing, EIB has not yet voted to adopt the emissions standards, but that vote is expected imminently.[29] In general, the proposed ozone-precursor rules are similar to the new source performance standards adopted by EPA under the Clean Air Act for newly constructed and modified natural gas wells at Subpart OOOO.[30] NMED's rules would apply only in areas that exceed 95% of the NAAQs for ozone,[31] which would include oil and gas operations in New

[24] Hannah Grover, *NMED Releases Ozone Precursor Rules*, N.M. POLITICAL REP'T (May 7, 2021), https://nmpoliticalreport.com/2021/05/07/nmed-releases-ozone-precursor-rules/.
[25] N.M. ENERGY, MINERALS & NATURAL RESOURCES DEP'T, SUMMARY AND FAQS OF OCD'S NATURAL GAS WASTE RULE (last visited June 1, 2021), http://www.emnrd.state.nm.us/ADMIN/documents/FinalMethaneRuleOneSheeter.pdf
[26] N.M. STAT. ANN. § 74-2-5.3(A).
[27] *Id*. § 74-2-5.3(B).
[28] N.M. ADMIN. CODE § 20.2.50 (proposed May 6, 2021).
[29] Grover, *supra* note 23.
[30] *See* 40 C.F.R. Part 60; *see also* Colin G. Harris & Ivan L. London, *There's Something in the Air: New and Evolving Air Quality Regulations Impacting Oil and Gas Development*, 58 ROCKY MTN. MIN. L. INST. 6-1, § 6.04[1] (2012).
[31] N.M. ADMIN. CODE §§ 20.2.50.2, .111(A) (proposed).

Mexico's largest producing counties, including Eddy and Lea (in the Delaware Basin) and San Juan (in the San Juan Basin).

The rules are technical and extensive. As the focus of this essay is on the regulation of venting and flaring as a source of waste, rather than as a source of air pollution, this summary of the rule's contents will be short. In general, the rules cover 13 categories components and processes: engines and turbines, control devices, equipment leaks and fugitive emissions, natural gas well liquid unloading, glycol dehydrators, heaters, hydrocarbon liquid transfers, pre-launching and receiving, pneumatic controllers and pumps, storage vessels, well workovers, and produced water management units. For each source category, the rules impose performance standards for controlling emissions from the source. Most of the rules do not require any particular means or technology to achieve the standards. Additionally, the rules impose monitoring, recordkeeping, and reporting requirements for each source, as well as repair requirements for equipment leaks and fugitive emissions. Relaxed rules apply to defined Small Business Facilities, which are those facilities operated by companies employing fewer than ten individuals and generating less than $250,000 in gross annual revenues.[32]

B. Regulating Venting and Flaring as Waste of Natural Gas

To complement the indirect methane-reducing effects of the ozone-precursor rules, OCD has adopted final regulations limiting venting and flaring of natural gas. Under the New Mexico Oil and Gas Act, "The production or handling of crude petroleum oil or natural gas of any type or in any form . . . in such manner or under such conditions or in such amounts as to constitute or result in *waste* is each hereby prohibited."[33] The Act empowers OCD and OCC "to make and enforce rules, regulations, and orders, and do whatever may be reasonably necessary to carry out the purpose of this act," including to prevent waste.[34] In addition to preventing waste, OCD is duty-bound to protect oil and gas owners and operators' correlative rights.[35]

Exercising this authority, effective May 25, 2021, the OCC adopted final regulations—dubbed the "Waste Rule"—stringently limiting routine venting and flaring natural gas.[36] The Waste Rule consists of five principal parts: (1) a venting and flaring prohibition with exemptions; (2) performance and inspection standards; (3) obligations to quantify and report venting and flaring; (4) statewide natural gas capture requirements; and (5) a natural gas management plan requirement for new and recompleted wells. Each will be discussed briefly in turn.

1. The Venting and Flaring Prohibition and Exemptions

The heart of the Waste Rule is its prohibition on "[v]enting or flaring of natural gas during drilling, completion, or production operations that constitutes waste"[37] Virtually identical terms apply to

[32] *Id.* §§ 20.2.50.125, .7(OO) (proposed).
[33] N.M. STAT. ANN. § 70-2-2 (emphasis added).
[34] *Id.* § 70-2-11.
[35] *Id.*
[36] N.M. ADMIN. CODE §§ 19.15.7, .18–.19, .27–.28
[37] *Id.* § 19.15.27.8(A).

the operation of natural gas gathering systems.[38] The rule also requires operators to flare rather than vent wherever safe and feasible.

This blanket prohibition contains certain exemptions.[39] First, during drilling operations an operator may flare natural gas if it is technically feasible in lieu of capturing it and may vent natural gas "to avoid a risk of an immediate and substantial adverse impact on safety, public health, or the environment."[40] Second, during completion or recompletion operations an operator may flare during the initial flowback stage, as well as during separation flowback if capturing and routing the natural gas to a beneficial use would "pose a risk to safe operation or personnel safety."[41] Following completion, an operator may flare for up to 60 days if the natural gas does not meet pipeline quality specifications, conditioned on the operator's providing the pipeline specifications and periodic gas analyses to OCD upon request.[42]

And third, during production operations an operator may vent or flare in a variety of narrow situations, including (1) during emergencies and malfunctions; (2) to unload or clean-up liquid holdup in a well to atmospheric pressure (under certain conditions); (3) during the first 12 months of production from an exploratory well under certain conditions (which may be extended by OCD for good cause shown); and (4) during certain routine operations such as tank gauging and sampling, liquids loading, repair and maintenance activities, equipment testing, production testing lasting less than 24 hours, commissioning of pipelines and equipment, and during the normal operation of various components such as storage tanks, dehydration units and amine treatment units, compressors and compressor engines and turbines, and connectors like valves and flanges; and (5) when natural gas does not meet gathering pipeline specifications provided the operator analyzes gas samples twice weekly and routes the gas to a pipeline as soon as it meets specifications.[43] The exemptions do not appear to include venting or flaring due to the lack of a pipeline connection or a market for the gas.

The rationale for certain of these exemptions is clear. For example, it is obviously not worth the costs to life and limb to forbid venting and flaring even when it would risk causing or exacerbating an emergency. While the rationale for most of the other exemptions may not be so clear, they nonetheless evince a tacit cost–benefit analysis. For instance, it is not prohibited waste to operate the many essential components that tend to emit small amounts of natural gas, like compressors, or to undertake certain necessary actions, like opening the thief hatch of a tank to gauge it, that emit small amounts of natural gas in the process. These emissions are generally small and unavoidable in the normal course of gas production, and hence their elimination is not cost justified.

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[38] *Id.* § 19.15.28.8(A).
[39] In the case of natural gas gathering systems, venting or flaring is exempt from the Waste Rule's prohibition during emergencies and malfunctions, pigging and purging, commissioning of pipelines and equipment, repair and maintenance, gauging and sampling tanks, liquids loading, and during the normal operation of typical pipeline components, including pneumatic controllers and pumps, dehydration and amine treatment units, compressors, valves and flanges, and storage tanks. *Id.*§ 19.15.27.8(D)(4).
[40] *Id.* § 19.15.28.8(B)(1), (2).
[41] *Id.*§ 19.15.27.8(C)(1)–(2).
[42] *Id.*§ 19.15.27.8(C)(3).
[43] *Id.*§ 19.15.27.8(D)(4).

Moreover, flaring is permitted for a year or more when an operator completes an "exploratory" well. This exemption seems to acknowledge that exploring for new pools of oil and gas would be impossible under an absolute prohibition on venting and flaring and that the benefits of eliminating venting and flaring from such wells do not justify the costs in terms of lost opportunities for exploration.[44] The presence of these exemptions demonstrates that the question of when venting and flaring constitutes prohibited waste depends, at least implicitly, on a weighing of the venting or flaring's benefits with its costs.

2. Performance and Inspection Standards

The Waste Rule further imposes what it labels as "performance standards." The performance standards obligate operators to "design completion and production separation equipment and storage tanks for maximum anticipated throughput and pressure to minimize waste," to "take all reasonable actions to prevent and minimize leaks and releases of natural gas from a natural gas gathering system and . . . implement an operations plan to minimize the waste of natural gas for each non-contiguous natural gas gathering system," and generally to design new facilities to minimize waste.[45] The standards also require operators to conduct periodic "AVO," or audio, visual, olfactory, inspections of all components at a wellsite or of a gathering system for natural gas leaks.[46] Operators are to maintain records of each AVO inspection for at least five years, which are subject to OCD inspection.

3. Quantifying and Reporting Venting and Flaring

The next two parts of the Waste Rule are closely related to one another. The rule requires operators to measure (for wells drilled after the effective date of the rule) or estimate using a method that is independently verifiable (for existing wells) the volume of natural gas that it vents, flares, or beneficially uses (*e.g.*, sells or re-routes to use as fuel gas on the lease) from its wells during drilling, completion, and production operations and from its natural gas systems.[47] Operators must then report all volumes of natural gas that were vented or flared at each well on a monthly basis,[48] which OCD will compile and publish on its website.[49]

4. Statewide Natural Gas Capture Requirements

Using the venting and flaring data submitted by operators during the fourth quarter of 2021 and the first quarter of 2022, OCD will calculate and publish on its website each operator's "baseline natural gas capture rate" for all of its wells and gathering systems in New Mexico.[50] Each year, starting on April 1, 2022, operators must increase the percentage of natural gas captured at their facilities across the state from this baseline rate by an amount sufficient to reach a capture rate of

[44] In fact, it may well constitute "underground waste" under the Oil and Gas Act's existing statutory definition to make it economically infeasible to produce new pools. *See infra* Part III.
[45] *Id.* §§ 19.15.27.8(E)(1)–(4), (7) (pertaining to wells), 19.15.28.8(C)(1), (6) (pertaining to gathering systems).
[46] *Id.* §§ 19.15.27.8(E)(5) (pertaining to wells), 19.15.28.8(C)(4) (pertaining to gather systems).
[47] *Id.* §§ 19.15.27.8(F) (pertaining to wells), 19.15.28.8(E) (pertaining to gathering systems).
[48] *Id.* §§ 19.15.27.8(G)(2) (pertaining to wells), 19.15.28.8(F)(2) (pertaining to gathering systems).
[49] *Id.* §§ 19.15.27.8(G)(3) (pertaining to wells), 19.15.28.8(F)(3) (pertaining to gathering systems).
[50] *Id.*

at least 98% by December 31, 2026.[51] Put differently, operators must reduce the annual volume of vented and flared natural gas at their facilities to the point where they lose no more than 2% of the gas they produce across the state by the end of 2026. The amount of annual progress an operator must make to achieve 98% capture by 2026 depends on its baseline rate of capture. Operators whose baseline capture rates are less than 60% must submit a plan to OCD to meet the minimum required annual capture percentage increase.[52]

Operators are required to submit reports certifying their compliance with the statewide capture requirement by February 28 of each year beginning in 2023.[53] In determining its compliance with the required annual increases in its capture rate, an operator may deduct from its volumes of vented or flared gas any leaks that it detected and repaired using approved advanced leak and repair monitoring (ALARM) technology that the operator voluntarily adopted.[54]

The statewide natural gas capture requirement is the most ambitious element of New Mexico's Waste Rule. No other jurisdiction in the United States limits natural gas emissions to 2% of production. While setting an extremely high standard for performance, the Waste Rule does not prescribe the means of achieving the standard. Operators are free to increase their natural gas capture rates from their current baselines using any effective means they can contrive. OCD touts this feature as providing flexibility and incentivizing innovation.[55]

5. Natural Gas Management Plans

The final component of the Waste Rule requires operators to file a natural gas management plan with each application for a permit to drill (APD) for a new or recompleted well after May 25, 2021. The plan is supposed to "describe the actions that the operator will take at each proposed well to meet its statewide natural gas capture requirements and to comply with" the Waste Rule.[56] Each plan must describe the "operational best practices that will be used to minimize venting and flaring during active and planned maintenance," as well as certify whether or not the operator will be able to connect the well to a natural gas gathering system in the general area with sufficient capacity to transport all of the gas the operator anticipates the well will produce.[57] If the operator determines it will not be able to connect to a gathering system by the commencement of production, it must either shut in the well until it obtains a market or submits a plan to OCD to store the natural gas or use it for a beneficial purpose on the lease.[58] OCD may deny any APD for which the operator fails to either certify that it will have a market for the gas or propose an adequate alternative use for the gas.[59]

Operators that are out of compliance with the statewide natural gas capture requirement must include additional information in its natural gas management plans. Specifically, such an operator

[51] *Id.* §§ 19.15.27.9(A) (pertaining to wells), 19.15.28.10(A) (pertaining to gathering systems).
[52] *Id.* §§ 19.15.27.9(A)(2) (pertaining to wells), 19.15.28.10(A)(2) (pertaining to gathering systems).
[53] *Id.* §§ 19.15.27.9(B) (pertaining to wells), 19.15.28.10(B) (pertaining to gathering systems).
[54] *Id.*; *Id.* §§ 19.15.27.7(A), 19.15.28.7(A) (defining "ALARM").
[55] *See, e.g.*, N.M. ENERGY, MINERALS & NATURAL RESOURCES DEP'T, *supra* note 24.
[56] N.M. ADMIN. CODE § 19.15.27.9(D)(1).
[57] *Id.* § 19.15.27.9(D)(1), (4).
[58] *Id.* § 19.15.27.9(D)(5).
[59] *Id.* § 19.15.27.9(D)(7).

must include the contact information for "the existing natural gas gathering system the operator has contracted or anticipates contracting with to gather the natural gas," as well as describe "the operator's plans for connecting the well to the natural gas gathering system."[60]

To summarize, the natural gas management plan requirement means that no new oil or gas well may be spud in New Mexico unless the operator certifies to OCD that it will be able to connect and sell all of the gas produced from such well to a natural gas gathering system in the general area or, instead, will put the gas to a suitable alternative beneficial use until a gas gathering system is available. Together with the other parts of the Waste Rule, this new requirement poses a potentially significant obstacle to oil production in the state. Under the rule, an operator must have a market or an alternative beneficial use for all gas associated with its oil production to continue producing the oil, which, as previously noted, is often impossible or cost-prohibitive in the Delaware Basin. Whether and when the elimination even of necessary venting and flaring is justified under New Mexico law as "waste" is the subject of Part III.

III. Evaluating the Waste Rationale

As explained, OCD is authorized by the New Mexico Oil and Gas Act to promulgate regulations to prevent "waste."[61] The precise definition of waste, and thus the extent of OCD's jurisdiction under the Act's waste-prevention mandate, can be elusive. The Act contains a specific statutory definition, as set forth in the below sections. Yet the legal concept of waste predates adoption of this or any other oil and gas conservation act. Waste of oil and gas resources was tortious at common law, and a brief review of the common law history of waste illuminates that implicit in the concept's definition is a sort of cost–benefit analysis. This Part reviews the concept of waste at common law and under the Oil and Gas Act and then attempts to apply the concept to determine whether and under what circumstances the routine venting and flaring prohibited under the Waste Rule truly constitutes "waste."

A. What Is "Waste"?

1. Waste at Common Law

As Tara Righetti and I have detailed elsewhere,[62] the prohibition against waste of commonly owned natural resources, such as oil and gas resources, originates at common law. Oil and gas reservoirs are semicommons, in which all owners whose land holdings overlay a portion of the reservoir have a co-equal, nonexcludable opportunity to produce a proportional amount of the oil or gas using a proportional amount of the reservoir energy to do so.[63] Reservoirs are inherently interconnected such that each owner's extractions from the reservoir affect the energy and reserves available to all other owners. As the United States Supreme Court acknowledged in the seminal 1900 waste case of *Ohio Oil Co. v. Indiana*, this physical reality gives rise to the potential that any

[60] *Id.* § 19.15.27.9(D)(2)(b).
[61] *See supra* Part II.B.
[62] Righetti & Schremmer, *supra* note 1.
[63] The classic statement of the fair opportunity principle is from Robert E. Hardwicke & M.K. Woodward, *Fair Share and the Small Tract in Texas*, 41 TEX. L. REV. 75, 93 (1962).

one of the owners could destroy all of the reservoir's energy and oil or gas contents and deprive all of the other owners of their chance to produce the reserves.[64]

The fair opportunity of every owner to produce a pro rata share of the reserves that the *Ohio Oil* court acknowledged has become known as the doctrine of correlative rights.[65] Each reservoir owner's property interest is relative (or correlative) and dependent on the other owners not to destroy or damage the reservoir or waste its energy or contents. What does it mean to "waste" a reservoir's energy or contents? It refers to the use of or extraction from a reservoir that fails to generate any benefits to offset the losses of energy and production caused by the activity; stated another way, waste is the reduction of the total net value of a reservoir to all its owners.[66]

Consider, for example, the famous waste case of *Elliff v. Texon Drilling Co.*, where Texon's well blew out and destroyed huge amounts of oil, gas, and distillate underneath Elliff's neighboring property.[67] The Supreme Court of Texas denied Texon's defense that under the rule of capture it would be entitled to capture the hydrocarbons under Elliff's property, so it should not be liable for destroying them. On the contrary, the court held that the "negligent waste and destruction of gas and distillate was neither a legitimate drainage of the minerals . . . nor a lawful or reasonable appropriation of them."[68]

Similarly, in another well-known case, *Louisville Gas Co. v. Kentucky Heating Co.*, the court enjoined a defendant from producing natural gas from a reservoir it shared with the plaintiff for the purpose of dissipating it into the air to spite the plaintiff, but under the pretense of manufacturing carbon black.[69] While the rule of capture would have privileged the defendant in producing the same quantity natural gas reserves,[70] the doctrine of waste prevented it from squandering them for no beneficial purpose (other than spite).

Contrast *Elliff* and *Louisville Gas Co.* with *Corzelius v. Harrell*.[71] There the plaintiff sued defendant for waste because the defendant failed to extract valuable liquids from the natural gas it produced from a common reservoir before selling the gas. Although the court acknowledged that the defendant may have been leaving money on the table by not maximizing the value of its natural gas, it declined to find waste since the defendant was putting the gas to beneficial—albeit relatively low-value—use.[72]

Distilling these cases, waste at common law prohibits extractions from a reservoir that serve no useful purpose, such as the negligent destruction of reserves as in *Elliff* or the spiteful dissipation of natural gas as in *Louisville Gas Co.*, but does not require a producer to maximize the economic value of its production or the contents of the common reservoir. The doctrine considers both the

[64] 177 U.S. 190, 201 (1900).
[65] *See* Cowling v. Dept. of Nat. Resources, 830 P.2d 220, 225 (Utah 1991).
[66] Righetti & Schremmer, *supra* note 1.
[67] 210 S.W.2d 558 (Tex. 1948).
[68] *Id.* at 560.
[69] 77 S.W. 368 (Ky. 1903).
[70] *See* Kelly v. Ohio Oil Co., 49 NE 399, 401 (Ohio 1897) (holding that the rule of capture privileged the defendant to maliciously drain the oil from underneath the plaintiff's property).
[71] 179 S.W.2d 419 (Tex. App. 1944).
[72] *Id.* at 422.

costs of a defendant's extraction from the reservoir, *i.e.*, what it removes from the other owners' fair opportunity to produce the same reservoir, and the tangible benefits. Where the costs are offset by some benefit, such as where the defendant sells the production or uses it for on-lease operations like running an engine or compressor, the rule of capture privileges the defendant's extraction. Under the common law definition of waste, it does not matter how great the tangible benefit is or whether the defendant took steps to maximize its economic impact. All that matters is that the costs of the defendant's extraction from the common reservoir are not for nothing.

2. Waste Under the Oil and Gas Act

As in all oil and gas producing states, the common law of waste is largely displaced in New Mexico by the statutory definition. For present purposes, the relevant portions of the multi-faceted statutory definition pertain to "surface waste" and "underground waste." The New Mexico Oil and Gas Act defines "surface waste"

> as those words are generally understood in the oil and gas business, and in any event to embrace the *unnecessary or excessive surface loss or destruction without beneficial use, however caused, of natural gas* of any type or in any form or crude petroleum oil, or any product thereof, but including the loss or destruction, without beneficial use, resulting from evaporation, seepage, leakage or fire, especially such loss or destruction incident to or resulting from the manner of spacing, equipping, operating or producing, well or wells, or incident to or resulting from the use of inefficient storage or from the production of crude petroleum oil or natural gas in excess of the reasonable market demand[.][73]

The emphasized portion of the definition is entirely consistent with the concept of waste at common law. The needless destruction of natural gas at the surface of the earth for no beneficial use would, by definition, fail to generate any benefit or gain to offset the loss of the reserves to the other reservoir owners; this would constitute waste at common law as well as under the statutory definition.

At first blush, flaring natural gas appears to fit this definition, as it involves the destruction by burning of natural gas at the surface of the earth. Examined closely, however, it is not clear that flaring (or venting) would be *unnecessary or excessive* in every case. When, other than in emergencies, might venting or flaring of natural gas at the surface be necessary?

In addressing this question, consider the statutory definition of "underground waste"

> as those words are generally understood in the oil and gas business, and in any event to embrace *the inefficient, excessive or improper, use or dissipation of the reservoir energy, including gas energy* and water drive, of any pool, and the locating, spacing, drilling, equipping, operating or producing, of any well or wells *in a manner to reduce or tend to reduce the total quantity of crude petroleum oil* or natural gas *ultimately recovered from any pool*, and the use of inefficient underground storage of natural gas[.][74]

[73] *Id.* § 70-2-3(B) (emphasis added).
[74] N.M. STAT. ANN. § 70-2-3(A) (emphasis added).

Focusing on the emphasized portions of the definition, misuse of reservoir energy, which can include energy from associated natural gas, constitutes waste if it would tend to reduce the total quantity of crude oil ultimately recovered from the pool. Reading the definitions of surface and underground waste together reveals that the surface destruction of natural gas may, in some circumstances, be necessary—and thus not constitute surface waste—in order to avoid the commission of underground waste by stranding crude oil reserves.

This interpretation is fully consistent with the common law concept of waste. Where an operator flares associated natural gas as a means of producing oil reserves at efficient, not-excessive rates, the flaring is not purposeless. Rather, it serves the purpose of enabling oil production, which generates a benefit to offset the loss of natural gas and reservoir energy to the other owners. Thus, both at common law and under New Mexico's statutory definition, the benefits of producing otherwise unrecoverable oil reserves through venting or flaring natural gas (discussed earlier as the indirect *costs* of regulating venting and flaring[75]) may render the practice non-wasteful. The following section will further analyze under what circumstances this proposition may be true.

B. When Is Routine Venting and Flaring Waste (and When Is it Not)?

Consider how the Waste Rule interacts with the existing statutory and common law definitions of waste in three highly simplified paradigm cases: (1) where an operator produces oil and associated gas from a non-exploratory well and has a pipeline connection through which to market all the gas at sufficient prices to at least break even on the gas; (2) where an operator produces oil and associated gas from a non-exploratory well but lacks a pipeline connection or other market for the gas; and (3) where an operator produces oil and associated gas from a non-exploratory well and has a pipeline connection through which to market only part of the gas or has a market for all the gas at prices so low as to generate a loss by selling it. The Waste Rule would prohibit routine venting and flaring in each case; but would venting and flaring in each case necessarily constitute waste under the statutory and common law predating the Waste Rule?

In case 1, where the operator has a full and quality market for the associated gas, routine venting and flaring would clearly constitute surface waste under existing law, as it would serve no beneficial purpose to counterbalance the loss of gas from the reservoir. The Waste Rule's prohibition is entirely consistent with existing law in this case.

Case 2, where the operator lacks a market for the associated gas, presents the operator with a dilemma: produce the oil and vent or flare the gas, or do not produce the oil. The Waste Rule would prohibit the venting or flaring, forcing the operator to choose not to produce the oil. Yet, under the existing statutory waste definitions, venting or flaring in this situation may be necessary to avoid the underground waste of oil. This would be especially so if, as is the case presently, the oil is significantly more valuable than the associated gas. The Waste Rule would require the operator to be penny wise and pound foolish, contrary to preexisting definitions of waste.

[75] *See supra* Part I.B.2.

Case 3 presents the most complex situation. Two subcases must be distinguished. In subcase 3.A, where the operator has a partial market for the associated gas and at prices that do not render a loss from selling the gas, the operator may need to either vent or flare periodically or shut in periodically. Because it would be possible to shut in periodically while still producing and selling the oil and gas, albeit at curtailed rates, venting or flaring would not be necessary to avoid underground waste of oil and would likely constitute surface waste under existing law. The Waste Rule's prohibition would not change this result.

The analysis differs in subcase 3.B, where the operator's market (whether full or partial) is of such low quality that it would render a loss to the operator to sell the gas. If the magnitude of the loss is small and producing the oil is sufficiently profitable to make the well overall economic, venting or flaring would not be necessary to avoid underground waste of oil because the operator could sell the gas at a loss and still produce the oil economically. If, however, the magnitude of the loss on the gas is so great that it would render the well uneconomic even considering profits from the sale of oil, venting or flaring may be necessary to avoid the underground waste of oil. This venting or flaring would violate the Waste Rule, putting the Waste Rule at odds with the existing definitions of waste (as in case 2).

Thus, in situations resembling case 2 and subcase 3.A, the Waste Rule's categorical prohibition on routine venting and flaring as "waste" may exceed OCD's statutory authority to prevent waste as defined in the Oil and Gas Act. Moreover, the Waste Rule's application in these cases runs counter to the understanding of waste at common law, namely as an entirely purposeless dissipation of reservoir contents or energy.

Likewise, the Waste Rule's statewide capture requirement[76] and natural gas management plan requirement[77] may impose limitations on releases of natural gas that exceed OCD's authority to prevent waste under the Oil and Gas Act. The statewide capture requirement mandates annual reductions in releases of natural gas (through venting and flaring and otherwise), whether or not these releases constitute waste under existing law. Moreover, the natural gas management plan provisions could deny drilling permits to operators seeking to spud for oil without a natural gas market in hand, stranding oil reserves that cannot be produced without associated gas.

Such de facto bans on oil and gas extraction are "antagonistic" to the New Mexico Oil and Gas Act. In *Swepi, Ltd. P'ship v. Mora Cnty.*, the court held a county ordinance prohibiting the use of hydraulic fracturing void as against state law because it effectively banned new oil and gas production from tight formations and threatened to cause waste under the Oil and Gas Act.[78] Quoting extensively from Professor Alex Ritchie's argument in *On Local Fracking Bans: Policy and Preemption in New Mexico*,[79] the court found that (1) the Oil and Gas Act's regulation of waste necessarily implied that efficient production of oil and gas reserves is permitted under New Mexico law, and (2) that the ordinance's prohibition on hydraulic fracturing acted as a de facto

[76] *See supra* Part II.B.4.
[77] *See supra* Part II.B.5.
[78] 81 F. Supp. 3d. 1075, 1199–1201 (D.N.M. 2015).
[79] 54 NAT. RES. J. 255, 310–11 (2015).

ban on new production, which constituted waste by precluding the efficient production of reserves and additionally deprived affected owners of their correlative rights.[80]

As in *Swepi*, where the Waste Rule effectively prohibits oil production by banning a technique that is necessary to accomplish it, it would be contrary to the provisions of the Oil and Gas Act. By precluding the efficient production of oil reserves, the Rule may actually cause waste of those resources, rather than preventing it, and simultaneously destroy the correlative rights of the reservoir owners who are effectively denied the ability to extract the underlying oil.

Before completely condemning the Waste Rule, however, one would be wise to recall the Supreme Court case that recognized the existence at common law of waste and correlative rights. *Ohio Oil Co. v. Indiana* upheld against constitutional attack an Indiana statute categorically prohibiting the venting of natural gas from common reservoirs.[81] The case arose when the Indiana attorney general sued the defendant for violating the statute by venting associated gas from several producing oil wells in a common reservoir. The defendant asserted that the venting prohibition constituted a taking of its mineral property, alleging that the venting was necessary to produce its oil reserves. The Court found no taking of the plaintiff's mineral rights, holding that Indiana had the power to adopt the statute to protect correlative rights and prevent a common pool "from being taken by one of the common owners without regard to the enjoyment of the others."[82]

Ohio Oil Co. may be useful precedent for OCD in any constitutional challenge to the Waste Rule. There are, however, a number of circumstances that may distinguish *Ohio Oil Co.* from the present situation in the Permian Basin. The Indiana statute identified public safety and the avoidance of personal injury as an important ground for the venting prohibition;[83] the Waste Rule does not, and no such concerns seem to attend venting and flaring in the Permian Basin. The attorney general's petition against the defendant in *Ohio Oil Co.* made extensive allegations about the significance to surrounding municipalities and the local economy of the natural gas pool from which the defendant was producing oil and venting gas.[84] In the Permian Basin, in contrast, associated gas is largely a mere byproduct of oil production.

Moreover, the *Ohio Oil Co.* petition also alleged that the rate at which the defendant was venting gas threatened to water out the reservoir and irreparably destroy its potential to produce oil or gas.[85] Such inefficient or excessive dissipation of reservoir energy would constitute waste both at

[80] *Swepi*, 81 F. Supp. 3d at 1199–1201.
[81] 177 U.S. 190, 200 (1900). The relevant portion of the statute read as follows:

> Be it enacted by the General Assembly of the State of Indiana, That it shall be unlawful for any person, firm or corporation having possession or control of any natural gas or oil well, whether as a contractor, owner, lessee, agent or manager, to allow or permit the flow of gas or oil from any such well to escape into the open air, without being confined within such well or proper pipes or other safe receptacle, for a longer period than two (2) days next after gas or oil shall have been struck in such well. And thereafter all such gas or oil shall be safely and securely confined in such well, pipes or other safe and proper receptacles.

[82] *Id.* at 210.
[83] *Id.* at 200.
[84] *Id.*
[85] *Id.*

common law[86] and statutory definitions of underground waste.[87] Even in case 2 or subcase 3.A, discussed above, where the operator's routine venting and flaring is arguably necessary to avoid underground waste of oil, venting or flaring at excessive rates in a manner that destroys or threatens to destroy the reservoir would constitute prohibited waste.

Conclusion

Whether or not a court would find the Waste Rule to exceed OCD's statutory authority under the Oil and Gas Act, or to expand the definition of "waste" beyond its common law and statutory moorings, in any given case, it is submitted that categorically eliminating routine venting and flaring of natural gas under the rubric of waste prevention is problematic. Regulating venting and flaring as sources of waste necessarily implicates the cost–benefit framework of common law and statutory waste. The factors that complicate the policy question of whether it is worth it to eliminate venting and flaring also complicate the legal question of whether it is possible to do so under existing statutory definitions of waste.

This is not to say that methane emissions, including especially routine venting and flaring, are unproblematic or that they cannot be limited legally. Rather, while it may be a worthy goal, achieving methane emission limitations is not obviously a simple matter of promulgating regulations under existing statutes. The true purpose behind efforts to curtail methane emissions from oil and gas production is to fight climate change. Advocates and regulators might do well to align this policy goal with the legal means of achieving it, rather than rely on existing statutory pathways that are imperfectly suited to the purpose.

[86] *See* Manufacturers' Gas & Oil Co. v. Indiana Natural Gas & Oil Co., 57 N.E. 912, 915 (Ind. 1900) (holding that it constituted actionable waste to produce natural gas at such a rate as to destroy the common reservoir).
[87] *See* N.M. STAT. ANN. § 70-2-3(A) (defining underground waste).

EXHIBIT 8

N.M. Stat. Ann. § 70-2-3

*** Current through Chapters 1 through 49 and Chapters 51, 52, 55, 61, 67, and 131 of the 2025 regular session of the 57th Legislature. ***

Michie's ™ Annotated Statutes of New Mexico > Chapter 70 Oil and Gas (Arts. 1 — 13) > Article 2 Oil Conservation Commission; Division; Regulation of Wells (§§ 70-2-1 — 70-2-39)

70-2-3. Waste; definitions.

As used in this act the term "waste," in addition to its ordinary meaning, shall include:

A. "underground waste" as those words are generally understood in the oil and gas business, and in any event to embrace the inefficient, excessive or improper, use or dissipation of the reservoir energy, including gas energy and water drive, of any pool, and the locating, spacing, drilling, equipping, operating or producing, of any well or wells in a manner to reduce or tend to reduce the total quantity of crude petroleum oil or natural gas ultimately recovered from any pool, and the use of inefficient underground storage of natural gas;

B. "surface waste" as those words are generally understood in the oil and gas business, and in any event to embrace the unnecessary or excessive surface loss or destruction without beneficial use, however caused, of natural gas of any type or in any form or crude petroleum oil, or any product thereof, but including the loss or destruction, without beneficial use, resulting from evaporation, seepage, leakage or fire, especially such loss or destruction incident to or resulting from the manner of spacing, equipping, operating or producing, well or wells, or incident to or resulting from the use of inefficient storage or from the production of crude petroleum oil or natural gas in excess of the reasonable market demand;

C. the production of crude petroleum oil in this state in excess of the reasonable market demand for such crude petroleum oil. Such excess production causes or results in waste which is prohibited by this act. The words "reasonable market demand," as used herein with respect to crude petroleum oil, shall be construed to mean the demand for such crude petroleum oil for reasonable current requirements for current consumption and use within or outside the state, together with the demand for such amounts as are reasonably necessary for building up or maintaining reasonable storage reserves of crude petroleum oil or the products thereof, or both such crude petroleum oil and products;

D. the nonratable purchase or taking of crude petroleum oil in this state. Such nonratable taking and purchasing causes or results in waste, as defined in the Subsections A, B, C of this section and causes waste by violating Section 12(a) [70-2-16A NMSA 1978] of this act;

E. the production in this state of natural gas from any gas well or wells, or from any gas pool, in excess of the reasonable market demand from such source for natural gas of the type produced or in excess of the capacity of gas transportation facilities for such type of natural gas. The words "reasonable market demand," as used herein with respect to natural gas, shall be construed to mean the demand for natural gas for reasonable current requirements, for current consumption and for use within or outside the state, together with the demand for such amounts as are necessary for building up or maintaining reasonable storage reserves of natural gas or products thereof, or both such natural gas and products;

F. drilling or producing operations for oil or gas within any area containing commercial deposits of potash where such operations would have the effect unduly to reduce the total quantity of such commercial deposits of potash which may reasonably be recovered in commercial quantities or where

such operations would interfere unduly with the orderly commercial development of such potash deposits.

History

Laws 1935, ch. 72, § 2; 1941, ch. 166, § 1; 1941 Comp., § 69-203; Laws 1949, ch. 168, § 2; 1953 Comp., § 65-3-3; Laws 1965, ch. 58, § 1.

End of Document

EXHIBIT 9

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

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

CASE NO. 12905

THE APPLICATION OF PRONGHORN MANAGEMENT CORPORATION FOR APPROVAL OF A SALT WATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO.

ORDER NO. R-11855-B

ORDER OF THE OIL CONSERVATION COMMISSION

BY THE COMMISSION:

THIS MATTER came before the Oil Conservation Commission (hereinafter referred to as "the Commission") for evidentiary hearing on March 20, 2003 at Santa Fe, New Mexico on application of Pronghorn Management Corporation (hereinafter referred to as "Pronghorn"), *de novo*, opposed by DKD, L.L.C. (hereinafter referred to as "DKD"), and the Commission, having carefully considered the evidence, the pleadings and other materials submitted by the parties hereto, now, on this 15th day of May, 2003,

FINDS,

1. Notice has been given of the application and the hearing on this matter, and the Commission has jurisdiction of the parties and the subject matter herein.

2. This matter is before the Commission on application of Pronghorn for review *de novo*.

3. In this matter, Pronghorn seeks a permit pursuant to Rule 701 of the Rules and Regulations of the Oil Conservation Division, 19.15.9.701 NMAC (11-02-2000), to dispose of produced water into the San Andres and Glorieta formations. Pronghorn seeks to use the State "I" Well No. 2 (API No. 30-025-03735) for this purpose. Disposal is to be accomplished through 2 7/8 inch plastic-lined tubing set in a packer located at approximately 5,590 feet. DKD opposes the application on various grounds.

4. Before moving to the merits of the dispute, the subject of notice should be addressed. Notice was raised as an issue in the Oil Conservation Division's orders and the parties hereto presented evidence and testimony on the subject during the Division's proceeding (but not during the hearing *de novo*).

5. An operator desiring to inject produced water must apply for a permit and serve a copy of the application on the "owner of the surface of the land upon which each injection or disposal well is to be located" and "each leasehold operator within one-half mile of the well" proposed for injection. *See* 19.15.9.701(A) and (B) NMAC.

6. Pronghorn filed such an application for administrative approval of its proposed operation on April 5, 2002. On April 30, 2002 the Oil Conservation Division (hereinafter referred to as "the Division") issued Administrative Order No. SWD-836 and granted the application. Such applications may be approved administratively unless an objection to the order is filed within fifteen days of the date of application. *See* 19.15.9.701(C) NMAC. DKD objected to the application and advised the Division that it operates a well within one-half mile of the State "T" Well No. 2. DKD also advised the Division that it had not been provided notice of the administrative application as required by Form C-108 and Rule 701, 19.15.9.701(B)(2) NMAC. The Division advised Pronghorn by letter of July 9, 2002 that Order No. SWD-836 would be suspended pending the outcome of a hearing before a Division examiner. On September 5, 2002, the Division conducted a hearing on the matter. The failure to provide notice to DKD apparently formed the basis for the Division's suspension of Order No. SWD-836.

7. Circumstances have changed substantially since the Division hearing. During the hearing *de novo* it became apparent that DKD was not in fact notified of the initial application, but it also became apparent that DKD was not a record "leasehold operator within one-half mile of the [proposed disposal] well" pursuant to Rule 701, 19.15.9.701(B)(2). Almost six weeks after the application was filed, an assignment from Chesapeake to DKD was recorded (May 14, 2002).[1] Moreover, the fact that the document was unrecorded strongly suggests that notice to DKD's predecessor-in-interest was appropriate. *See* NMSA 1978, § 70-1-2 (Repl. 1995)(effect of failure to record). Nevertheless, after being notified of the potential notice issue, the Division set the matter for hearing. The subsequent hearing before the Division in which DKD actively participated (as well as during the hearing on the application for review *de novo)* cured any defect in the notice.

8. Another notice issue addressed by the Division concerned notice to surface owners Felipe A. Moreno and Adelaida P. Moreno. It seems to be undisputed that these persons, owners of record of surface rights at the proposed injection site, were not notified of the application in this matter. However, subsequent to the hearing before the Division and prior to the hearing of this matter, those individuals conveyed their interest to Gandy Corporation. Through a letter agreement, Gandy Corporation and Pronghorn have become partners in the proposed disposal operation (along with Marks & Garner) and Gandy Corporation has agreed to the use of the property for purposes of saltwater disposal. It seems this transaction has cured any notice issue with respect to the surface owner.

[1] As the assignment does not bear the approval of the State Land Office, its validity is in doubt. *See* NMSA 1978, § 19-1-13 (Repl. 1994).

9. A final notice issue was obliquely raised by DKD concerning the extent of the perforations through which injection would be accomplished. Initially, notice was provided that injection would be accomplished through perforations located between 6,000 and 6,200 feet. Later, Pronghorn, after a conversation with a Division engineer, requested that it be permitted to inject from 6,000 to 6,400. It does not appear that this defect is material or that DKD was prejudiced by the change.

10. Thus, it appears that notice is not an issue in this matter and we can consider the merits of the application.

11. As noted, Pronghorn proposes to dispose of produced water into the San Andres and Glorieta formations. Pronghorn seeks to use the State "I" Well No. 2 (API No. 30-025-03735) for this purpose.

12. Rules 701 through 708 (19.15.9.701 through 19.15.9.708 NMAC) govern the injection of produced water into any formation. Injection wells must be equipped, operated, monitored and maintained in such a way as to assure mechanical integrity and prevent leaks and fluid movement adjacent to the well bore. *See* 19.15.9.703(A) NMAC. Furthermore, injection wells must be operated and maintained in such a way as to confine the injected fluids into the interval approved and prevent surface damage or pollution. *See* 19.15.9.703(B) NMAC. In no event may injection operations be permitted to endanger underground sources of drinking water (19.15.9.703(C) NMAC) and injection wells must undergo rigorous testing to serve these goals (19.15.9.704 NMAC).

13. Order No. SWD-836 appears to have addressed each of these points, and the parties have not raised any issue with respect to the conditions for injection set out in SWD-836. Administrative notice is taken of Order No. SWD-836 and the accompanying file.

14. Although not stated explicitly in the rules, injection operations must not cause waste or threaten correlative rights. Apparently to address this issue the parties focused their presentations on the potential productivity of the San Andres and Glorieta formations.

15. Pronghorn presented the testimony of a petroleum engineer who testified that he had studied production data, scout ticket data, production test data, log data and other data to reach conclusions concerning the proposed well. He testified that no well in the immediate vicinity of the proposed injection well produced oil or gas from either the San Andres or Glorieta formations in either Section 16 or Section 1. All 35 wells in those sections had penetrated both formations but produced oil and gas only from lower formations such as the Wolfcamp or the Pennsylvania-Strawn. Pronghorn's witness testified that data from electric logs indicated that the resistivity of formation water in the San Andres was 0.165 ohm and 0.86 ohm in the Glorieta; this data demonstrates that the water saturation of the basal San Andres and the upper Glorieta in the vicinity of the proposed injection well exceeds 94 percent. In the two primary zones of permeability, water saturations exceed 98% in the upper interval and 62% in the lower interval. Pronghorn's expert testified that even though some hydrocarbons are likely present in the

reservoir (a "show" of hydrocarbons was seen in the State "I" Well No. 2), the relative permeability of the rock and the water saturation make it extremely unlikely that any of the hydrocarbons could move to a well bore and be recovered. The witness further testified that the nearest production from either the San Andres or the Glorieta formations was six miles south of the proposed injection well.

16. DKD's witness testified it was his intent to drill a well to produce hydrocarbons from "shallow zones" but failed to identify any specific objective and failed to produce any evidence supporting its apparent assertion that either the San Andres or the Glorieta will produce oil or gas. The witness also testified concerning the potential harm that the proposed injection could cause to DKD's injection well, some 2,000 feet away, but Pronghorn's witness testified that the DKD well was using a zone for disposal that was several thousand feet below the proposed zone. Furthermore, Pronghorn's expert testified even after nine years of operation at 1,500 barrels per day, water would be swept from the well bore at most 1,320 feet south. Therefore, it is apparent that the proposed well does not pose a danger to DKD's operations or other operations in the vicinity.

17. It thus appears that the Glorieta and San Andres are wet and will not produce commercial quantities of oil or gas in the vicinity of the proposed injection well. It also appears that the proposed operation will not pose a physical threat to DKD's operations, since water will be swept at most 1,320 feet from the well in nine years. Nor does it appear that the proposed operation poses a hazard to other oil and gas operations in the vicinity.

18. DKD seems to claim that Pronghorn's application threatens its existing operations and its substantial investment in those operations and could result ultimately in a loss of approximately 35 to 40 percent of its total revenue. This claim cannot be addressed here; the Commission has no authority to regulate competition among commercial disposal operations.

19. Finally, DKD objects to the application of Pronghorn on legal grounds. DKD argues that a mineral right is necessary to operate the proposed injection well, but that Chesapeake owns the mineral interest and Pronghorn only owns a small surface parcel.[2] DKD argues that Chesapeake's letter stating it has no objection to the application or the issuance of an injection permit is irrelevant.

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[2] DKD's argument that a mineral lease is necessary is undercut by its own operations. The assignment from Chesapeake to DKD on the property where DKD maintains its own injection operation appears not to be valid since it was not approved by the Commissioner of Public Lands pursuant to NMSA 1978, § 19-10-13. Thus, DKD appears not to possess a mineral lease for its injection operations either. *See* paragraph 7, above.

20. Pronghorn, citing Snyder Ranches Inc. v. Oil Conservation Commission et al., 110 N.M. 637, 798 P.2d 587 (S.Ct. 1990), seems to argue that subsurface trespass is a matter for the courts, not this body, and that the potential for subsurface trespass is essentially irrelevant in this proceeding.

21. It appears to be undisputed that Pronghorn controls a one-acre parcel at the site of the proposed disposal well. It also appears to be undisputed that Pronghorn does not own the relevant mineral interest underlying the one-acre disposal site; that is owned by Chesapeake, who holds an oil and gas lease granted by the State Land Office. It also seems to be undisputed that Chesapeake has acquiesced in writing to the disposal operation proposed by Pronghorn.

22. DKD's assertion that the right to inject water produced in connection with oil and gas exploration and production can be drawn from a mineral lease appears to be correct; the right to inject fluids is usually considered to be inherent in the mineral lessee as a part of the lessee's right to use so much of the land as is necessary to explore for and remove the oil and gas. DKD's apparent assertion that the typical oil and gas lease does not grant inherent rights to dispose of water that is produced from another lease, transported to the lease, and proposed for disposal also appears to be correct.

23. However, a surface owner like Pronghorn may also possess an independent right to permit injection into non-productive zones underlying the property. This right is theoretical and no conclusions should drawn in this case concerning it. An interesting discussion appears in the annals of the Rocky Mountain Mineral Law Institute. *See* Yoder & Owen, "Disposal of Produced Water," 37 Rocky Mountain Mineral Law Institute, § 21.02[2].

24. Snyder Ranches holds that a salt water disposal permit under Rule 701 (19.15.9.701 NMAC) is merely a license to inject and does not confer any specific property right on the holder. Thus, the issue of subsurface trespass is the responsibility of the operator, as correctly observed by Pronghorn. The Commission and the Division may in appropriate circumstances require an operator demonstrate that the operator has a good faith claim to operate the well or operation. *See e.g.* Application of TMBR/Sharp Drilling, Inc., Cases 12731 and 12744, paragraphs 27, 28 (Order No. R-11700-B):

> 27. When an application for permit to drill is filed, the Division does not determine whether an applicant can validly claim a real property interest in the property subject to the application, and therefore whether the applicant is "duly authorized" and "is in charge of the development of a lease or the operation of a producing property." The Division has no jurisdiction to determine the validity of any title, or the validity or continuation in force and effect of any oil and gas lease. Exclusive jurisdiction of such matters resides in the courts of the State of New Mexico. . . .

28. It is the responsibility of the operator filing an application for a permit to drill to do so under a good faith claim to title and a good faith belief that it is authorized to drill the well applied for.

25. However, in this matter, Pronghorn can make such a good faith claim. Pronghorn owns the property in the immediate vicinity of the proposed injection operation. Chesapeake, the mineral lessee, has indicated it has no objection to the proposed injection operation. Pronghorn has indicated its willingness to seek from the State Land Office a salt-water disposal easement (if required by the State Land Office). Given these undisputed facts, Pronghorn meets any reasonable criteria for issuance of a permit. If DKD believes that Pronghorn lacks the necessary title in this case, its recourse is in the courts of the State of New Mexico, not this forum. *Application of TMBR/Sharp Drilling, Inc., supra.*

26. The reason the permit to dispose of produced water exists in the first place is to ensure that formations potentially productive of oil or gas are protected from the injection operations and that sources of fresh water are also protected. As noted, SDW-836 appears to meet these objectives.

27. For the foregoing reasons, the application of Pronghorn herein should be approved.

IT IS THEREFORE ORDERED THAT:

1. The application of Pronghorn is granted and Order No. SWD-836 (granting Pronghorn Management Corporation a permit to utilize the State "I" Well No. 2 (API No. 30-025-03735) for injection of produced water) shall be and hereby is reinstated.

2. Jurisdiction of this matter is retained for the entry of such further orders as the Commission may deem necessary.

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JAMI BAILEY, MEMBER

ROBERT LEE, MEMBER

ADRIENNE SANDOVAL, CHAIR

SEAL

EXHIBIT 10

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

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 15059
ORDER NO. R-13889

APPLICATION OF MESQUITE SWD, INCORPORATED FOR APPROVAL OF A SALT WATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on January 9, 2014, at Santa Fe, New Mexico, before Examiner Phillip R. Goetze and Examiner Michael McMillan.

NOW, on this 2nd day of September, 2014, the Division Director, having considered the testimony, the record, and the recommendations of Examiner Goetze,

FINDS THAT:

(1) Due public notice has been given, and the Division has jurisdiction of this case and its subject matter.

(2) Mesquite SWD, Incorporated ("Applicant" or "Mesquite") seeks authority to drill and utilize its Blue Quail SWD Well No. 1 (API No. 30-025-pending; the "subject well"), located 2100 feet from the North line and 1660 feet from the West line (Unit letter F) of Section 11, Township 25 South, Range 32 East, NMPM, Lea County, New Mexico, for commercial disposal of produced water into the Bell Canyon formation of the Delaware Mountain Group through an open-hole interval from 4790 feet to 6200 feet.

(3) On June 26, 2013, Mesquite submitted an administrative application (Application No. pAXK1316849130) to the Division for approval of this well for injection of produced water. On July 2, 2013, the Division received a notification of protest by Yates Petroleum Corporation, Abo Petroleum Corporation, and Myco Industries, Incorporated and a second notification of protest by Devon Energy Production Company, L.P. On October18, 2013, the Division received a request from Mesquite to place this application on a hearing docket.

(4) The Applicant appeared through counsel and presented the following testimony:

(a) The subject well is to be drilled to a total depth of 6200 feet with the seven (7)-inch production casing shoe at the top of the injection interval at approximately 4790 feet. The injection interval will be approximately 1410 feet of open hole with the packer set in the seven (7)-inch casing at approximately 4740 feet.

(b) The proposed average injection rate is 3500 barrels of water per day (BWPD) with a maximum injection rate of 6000 BWPD.

(c) The proposed maximum surface injection pressure is 958 pounds per square inch (psi) which conforms to the pressure gradient of 0.2 psi per foot to the top perforation (or top of open-hole interval) which the Division may administratively approve without testing.

(d) The produced waters going into the subject well would be from horizontal production wells completed in the Bone Spring formation. This source of produced water is compatible with existing formation fluids in the proposed injection interval.

(e) No fresh-water wells were identified within a two-mile radius of the subject well. The well will be adequately equipped and cemented to isolate any fresh water intervals.

(f) The results of the half-mile Area of Review (AOR) around the subject well found no existing wells that penetrated the proposed injection interval.

(g) Devon Energy Production Company, L.P. protested the original C-108 application for the subject well filed on June 26, 2013. Applicant amended the application by decreasing the injection interval and excluding the upper Cherry Canyon formation that has an estimated top of formation of approximately 6250 feet. Devon withdrew its protest of the application with the amended injection interval.

(h) Applicant found no geologic evidence of faulting or potential hydrologic connections between the proposed injection interval and any possible occurrences of underground sources of drinking water.

(i) Applicant identified the necessity for commercial disposal of produced water in the vicinity of the subject well due to the prolific development of the Bone Spring formation by horizontal wells.

(j) Applicant provided the opinion that the operation of the subject well will not adversely impact offset leasehold interest owners.

(k) Applicant identified potential for hydrocarbon occurrences in the Ramsey and Olds members in the upper section of the Bell Canyon formation which has been developed but other penetrations in the area have not found any indications of commercial production.

(5) Yates Petroleum Corporation, Abo Petroleum Corporation, and Myco Industries, Incorporated (collectively referred to as "Yates") appeared at hearing through counsel in opposition to this application and presented the following testimony:

(a) Yates is preparing to develop the Farber Working Interest Unit with several horizontal wells that are within the AOR for the subject well. The target of the development program is the Bone Spring formation which is stratigraphically below the injection interval in the Delaware Mountain Group.

(b) Based on the completion and initial production of the Undaunted BSD State Com. Well No. 1H (API No. 30-025-40408), Yates stated that all of the proposed wells will be productive in the second Bone Spring sand.

(c) Yates provided a preliminary drilling program showing horizontal wells that are oriented North to South or South to North and are approximately one mile in length with a proposed distribution of four wells per section. This pattern of development is identified for Sections 1, 2, 11, 12, 13 and 14, and is scheduled for completion between 2014 and 2016. Several of these development wells will have surface locations within the AOR of the subject well.

(d) Yates anticipates that the plume from the injection of produced water into the Bell Canyon formation would extend significantly into half-mile AOR during the three years proposed for the development drilling of the Farber Working Interest Unit.

(e) Yates' engineer testified that injection of produced water with high total dissolved solids (TDS) concentrations as proposed by the Applicant and at the administratively approved surface pressure will result in formations fluids that will require a drilling mud weight equivalent to 13.9 pounds per gallon. Yates' engineer opined this weight of drilling mud would be "on the high end of what's possible in the real world".

(f) Yates' engineer provided additional testimony for a scenario with the subject well operating at a maximum surface injection pressure with a pressure gradient of 0.3 pounds per square inch (psi) per foot and injection of produced water with high concentrations of TDS. This increase in surface pressure will double the pressure in the injection interval which may result in adverse drilling conditions such as washouts and lost circulation.

(g) Yates' engineer presented testimony regarding the drilling operations for the Door BIW State Well No. 1 (API No. 30-025-37843) and the Door BIW State Well No. 1Y (API No. 30-025-38016) in relationship to an operating salt water disposal well, the State T SWD Well No. 2 (API No. 30-025-03735; Administrative Order SWD-836), located approximately one-half mile from these two Yates wells. This testimony included the impacts of water flow within the San Andres and Glorieta formations on drilling, the abandonment of the Yates' Door BIW State Well No. 1, the replacement of this well with Yates' BIW State Well No. 1Y and an account of the mud weights for the drilling of both wells.

(6) Yates requested that the subject well should not be approved based on testimony and exhibits presented at hearing. Yates contended that approval of the subject well would increase well costs and would reduce production efficiency of the completed wells. Yates also opposed the injection into the shallower stratum since the operation of the subject well will potentially interfere with their opportunity to recover its just and fair share of hydrocarbons in the Bone Spring formation, thereby impairing correlative rights.

The Division concludes that:

(7) Yates' concern for the utilization by Applicant of the proposed Blue Quail SWD Well No. 1 for disposal of produced salt water into a shallower interval that can interfere with the drilling to deeper targets is noted. However, under Section 70-2-12.B(4) NMSA Laws of 1978, the Division is required to prevent the drowning by water any stratum or part thereof capable of producing oil and gas in pay quantities and to prevent the premature and irregular encroachment of water or any other kind of water encroachment that reduces or tends to reduce the total ultimate recovery of crude petroleum oil or gas from any pool. Under the Oil and Gas Act, the Division's authority to prevent "the drowning by water any stratum" does not extend into formations that are not the targeted hydrocarbon reservoirs or pools.

(8) Under Section 70-2-12.B(15) NMSA Laws of 1978, the Division is required to regulate the disposition of water produced or used in connection with the drilling for or producing of oil or gas and to direct surface and subsurface disposal of the water in a manner that will afford reasonable protection against contamination of fresh water supplies designated by the state engineer. Yates' testimony and evidence for the

utilization by Applicant of the subject well for disposal of produced salt water did not demonstrate any potential for contamination of fresh water supplies.

(9) The application has been duly filed under the provisions of Division Rule 19.15.26.8 NMAC.

(10) Division records indicate Mesquite SWD, Incorporated (OGRID 161968) as of the date of this Order is in compliance with Division Rule 19.15.5.9 NMAC.

(11) There are no wells within the half-mile AOR for the subject well that penetrate the proposed injection interval.

(12) The applicant has presented satisfactory evidence that all requirements prescribed in Division Rule 19.15.26.8 NMAC have been met.

(13) The application should be approved with conditions.

(14) Division considers the proposed open-hole completion for the subject well capable of having a greater probability to allow migration of injected fluids to other formations. Therefore, an open-hole injection interval will not be approved and the casing program shall be amended to include casing with cement to total depth of the permitted interval. Injection will be through perforations from 4790 feet to 6200 feet.

(15) Division does consider Yate's testimony and evidence regarding formation pressure relevant to the Applicant's proposed commercial operation of the subject well and the potential drilling operations within the immediate area. Consequently, the maximum surface injection pressure for the subject well will be limited to an equivalent gradient of 0.2 psi per foot to the top of perforations. Relief from this pressure requirement should be granted only following notice and adjudicatory hearing.

IT IS THEREFORE ORDERED THAT:

(1) Mesquite SWD, Incorporated ("Mesquite" or "operator"), is hereby authorized to utilize its proposed Blue Quail SWD Well No. 1 (API No. 30-025-pending; the "subject well"), located 2100 feet from the North line and 1660 feet from the West line (Unit letter F) of Section 11, Township 25 South, Range 32 East, NMPM, Lea County, New Mexico, for commercial disposal of only UIC Class II fluids.

(2) Disposal shall be through perforations from approximately 4790 feet to 6200 feet into the Bell Canyon formation of the Delaware Mountain Group. Injection is to be through lined tubing and a packer set within 100 feet above the top perforation in the permitted interval.

(3) The operator shall complete the subject well using the revised cement and casing program (operator's amended Page 10 and Page 10-A of Form C-108) provided to Division on July 28, 2014, and made part of this Order.

(4) The operator shall supply the Division with a copy of a mudlog over the permitted disposal interval. The operator shall notify the Division's District I of significant hydrocarbon shows that are observed during drilling, and provide Division's District I office and the Santa Fe engineering bureau with a copy of the log for review prior to perforation of the permitted interval. If significant hydrocarbon shows indicate the potential for the permitted interval to be classified as a stratum capable of producing hydrocarbons in paying quantities, then this disposal order shall be terminated *ipso facto* under Section 70-2-12.B(4) NMSA Laws of 1978.

(5) The operator of this well shall run an injection survey (tracer/temperature or equivalent) of the injection interval within one (1) year after commencing disposal into this well. The operator will supply both the Division District I office and Santa Fe engineering bureau with a copy of the survey log. If the Division does not receive the log within the prescribed time period, then this disposal order shall be terminated *ipso facto.*

(6) The operator shall take all steps necessary to ensure that the disposed water enters only the permitted disposal interval and is not permitted to escape to other formations or onto the surface.

(7) After installation of tubing, the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

(8) The well shall pass an initial mechanical integrity test ("MIT") prior to initially commencing disposal and prior to resuming disposal each time the disposal packer is unseated. All MIT procedures and schedules shall follow the requirements in Division Rule 19.15.26.11A. NMAC.

(9) The wellhead injection pressure on the well shall be limited to **no more than 958 psi**. In addition, the disposal well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well.

(10) The Director of the Division may authorize an increase in tubing pressure upon a proper showing **at Division hearing** by the operator of said well that such higher pressure will not result in migration of the disposed fluid from the approved formation. Notification for the hearing will follow Division Rule 19.15.26.8B.(2). Such proper showing shall be demonstrated by sufficient evidence including but not limited to an acceptable Step-Rate Test.

(11) The operator shall notify the supervisor of the Division's District I office of the date and time of the installation of disposal equipment and of any MIT test so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of disposal to the Division's District I office. The operator shall submit monthly reports of the disposal operations on Division Form C-115, in

accordance with rules 19.15.26.13 NMAC and 19.15.7.24 NMAC.

(12) Without limitation on the duties of the operator as provided in Division Rule 19.15.29 NMAC and 19.15.30 NMAC, or otherwise, the operator shall immediately notify the Division's district office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from or around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

(13) The injection authority granted under this order is not transferable except upon Division approval. The Division may require the operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

(14) The Division may revoke this injection permit after notice and hearing if the operator is in violation of 19.15.5.9 NMAC.

(15) The disposal authority granted herein shall terminate two years after the effective date of this order if the operator has not commenced injection operations into the subject well, provided however, the Division, upon written request, mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

(16) One year after disposal into the well has ceased, the well will be considered abandoned and the authority to dispose will terminate *ipso facto.*

(17) Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

(18) Jurisdiction is retained by the Division for the entry of such further orders as may be necessary for the prevention of waste and/or protection of correlative rights or upon failure of the operator to conduct operations (1) to protect fresh or protectable waters or (2) consistent with the requirements in this order, whereupon the Division may, after notice and hearing or prior to notice and hearing in event of an emergency, terminate the disposal authority granted herein.

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

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JAMI BAILEY
Director

Mesquite SWD, Inc.
Blue Quail SWD #1
2100' FNL & 1660' FWL
Sec. 11, T25S-R32E Lea County, NM

API 30-025-NA

Proposed Drilling/Completion of Blue Quail SWD #1 Well

Proposed New Well Completion Diagram

API: 30025xxxxx
Operator: Mesquite SWD, Inc.
Lease: Blue Quail SWD Well No: 1 KB: 3517 Est
Location: Sec 11, T25S-R32E Lea Co., NM GL: 3497 Est
Footage: 2100' FNL & 1660' FWL

Surface Csg

Size:	13-3/8" 48# H-40
Set @:	860
Sxs cmt:	560
Circ:	Yes
TOC:	Surface
Hole Size:	17-1/2"

Intermediate Csg

Size:	9--5/8" 36/40# J55/N80
Set @:	4550
Sxs cmt:	1255
Circ:	Circ to Surface
TOC:	Surface
Hole Size:	12-1/4"

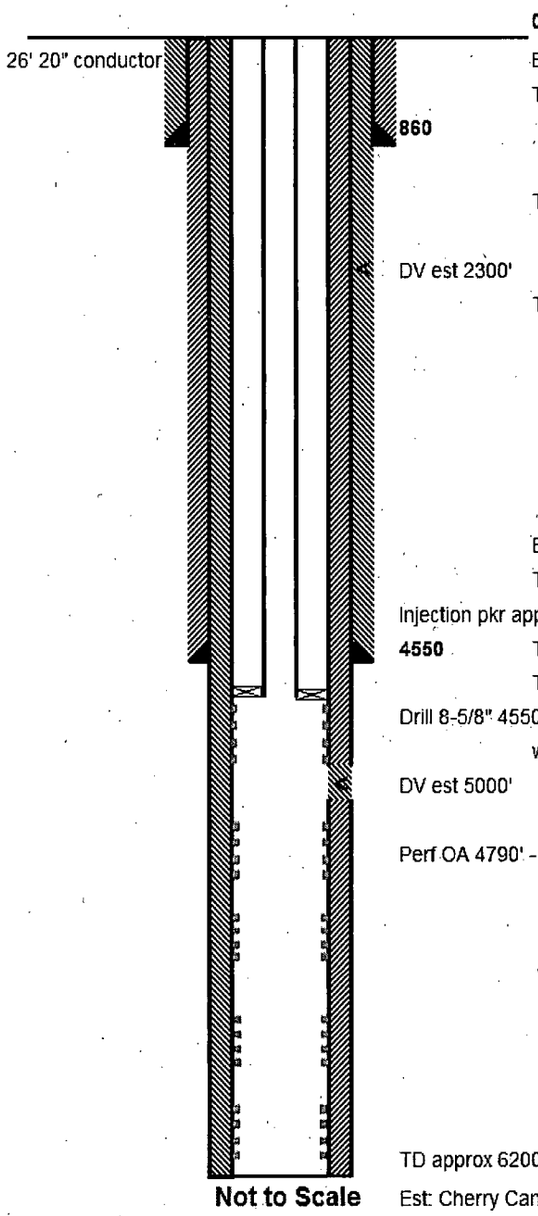
Production Csg

Size:	7" 23/26# J-55
Set @:	~6200
Sxs cmt:	850
Circ:	Circ to Surface
TOC:	Surface
Hole Size:	8-5/8"

Cmt calc @50% excess

Tubular requirements (made-up):
4740' 4-1/2" L/N80 12.75# upset Fiberglass lined
Lok-Set (or equivalent) Packer set approx 4740'

Load tubing annulus w/corrosion inhibitor
Complete surface head for disposal



Est Tops:
T/Rustler 770'
T/Castile 1110'
T/Salado 2320'
B/salt 4510'
T/Lamar 4750'
Injection pkr approx 4740'
T/Bell Canyon 4790'
T/Olds 4820'
Drill 8-5/8" 4550' to TD
w/9# brine/fresh
Perf OA 4790' - ~6200'
TD approx 6200'
Est: Cherry Canyon 6250'

Mesquite SWD, Inc. API 30-025-NA
Blue Quail SWD #1
2100' FNL & 1660' FWL
Sec. 11, T25S-R32E Lea County, NM

Cement Program:

13-⅜" 48# H-40 Set 860' w/560 sx cmt
360 sx C + 4% PF20 + 2% PF1 + .125 pps FR29 + .4 pps PF45
Density 13.5 Yield 1.75 H^2O 9.137

200 sx C + 2% PF1
Density 14.8 Yield 1.34 H^2O 6.321

9-⅝" 36#/40# J-55/N-80 Set 4550' w/1255 sx cmt
Stage 1
415 sx 35/65 Poz/C + 5% (BWOW) PF44 + 6% PF20 + 1% PF1 + ..125 pps pf29 + .4 pps PF45 +3 pps PF42
Density 12.9 Yield 1.92 H^2O 9.945

200 sx C + .2% PF13
Density 14.8 Yield 1.33 H^2O .6.307

Stage 2
540 sx 35/65 Poz/C +5% (BWOW) PF44 + 6% PF20 + 1% PF1 +.125% pps PF29 + .4 pps PF45 +3 pps PF42
Density 12.9 Yield 1.92 H^2O +.9.945

100 sx C NEAT
Density 14.8 Yield 1.32 H^2O 6.311

7" 23#/26# J-55 Set approx 6200' w/850 sx cmt
Stage 1
200 sx C + .3% PF13
Density 14.8 Yield 1.33 H^2O 6.307

Stage 2
550 sx 35/65 Poz/C +5% (BWOW) PF44 + 6% PF20 + .125 pps PF29 + .4 pps PF45
Density 12.9 Yield 1.89 H^2O 10.051

100 sx C + .2% PF13
Density 14.8 Yield 1.33 H^2O 6.331

Entered August 23, 1984

EXHIBIT 11

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

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

CASE NO. 8234
Order No. R-7637

APPLICATION OF ANADARKO
PRODUCTION COMPANY FOR
SALT WATER DISPOSAL AND
AN UNORTHODOX WELL LOCATION,
EDDY COUNTY, NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on August 1, 1984, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 23rd day of August, 1984, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

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

(2) That the applicant, Anadarko Production Company, seeks authority to dispose of produced salt water into the Cisco Canyon formation in the perforated interval from approximately 7800 feet to 8040 feet in its Dagger Draw SWD Well No. 1 to be located at an unorthodox location 1495 feet from the North line and 225 feet from the West line of Section 22, Township 19 South, Range 25 East, NMPM, Eddy County, New Mexico.

(3) That the proposed disposal zone in the above well encompasses the "C" and "D" zones of the Cisco Canyon formation.

(4) That no commercial oil and gas production has been found in the "C" and "D" zones in the immediate area of the said proposed disposal well.

(5) That the "C" and "D" zones appear to be separated from the "A" and "B" zones by impermeable non-porous dolomite and shales.

(6) That the disposal of produced water into the proposed disposal interval will not cause the premature drowning by water of any zone capable of producing commercial quantities of oil and gas in the area of said Section 22.

(7) That approval of the application will not impair correlative rights nor cause waste.

(8) That the injection should be accomplished through 2 7/8-inch plastic-lined tubing installed in a packer set at approximately 7800 feet; that the casing-tubing annulus should be filled with an inert fluid; and that a pressure gauge or approved leak detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(9) That the applicant should be authorized to dispose of up to a maximum of 10,000 Bbls/day of salt water into the proposed disposal well.

(10) That the injection well or system should be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 1560 psi.

(11) That the Director of the Division should be authorized to administratively approve an increase in the injection pressure upon a proper showing by the operator that such higher pressure will not result in migration of the injected water from the "C" and "D" zones of the Cisco Canyon formation.

(12) That the operator should notify the supervisor of the Artesia district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(13) That the operator should take all steps necessary to ensure that the injected water enters only the proposed injection interval and is not permitted to escape to other formations or onto the surface.

IT IS THEREFORE ORDERED:

(1) That the applicant, Anadarko Production Company, is hereby authorized to drill its Dagger Draw Salt Water Disposal Well No. 1 at an unorthodox location 1495 feet from the North line and 225 feet from the West line of Section 22, Township 19 South, Range 25 East, NMPM, Eddy County, New Mexico, to dispose of produced salt water into the "C" and "D" zones of the Cisco Canyon formation, injection to be accomplished through 2 7/8-inch tubing installed in a packer set at approximately 7800 feet, with injection into the perforated interval from approximately 7800 feet to 8040 feet;

PROVIDED HOWEVER, that the tubing shall be plastic-lined; that the casing-tubing annulus shall be filled with an inert fluid; and that a pressure gauge shall be attached to the annulus or the annulus shall be equipped with an approved leak detection device in order to determine leakage in the casing, tubing, or packer.

(2) That the injection well or system shall be equipped with a pressure limiting switch or other acceptable device which will limit the wellhead pressure on the injection well to no more than 1560 psi.

(3) That the Director of the Division may authorize an increase in injection pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the injected fluid from the "C" and "D" zones of the Cisco Canyon formation.

(4) That the operator shall notify the supervisor of the Artesia district office of the Division of the date and time of the installation of disposal equipment so that the same may be inspected.

(5) That the operator shall immediately notify the supervisor of the Division's Artesia district office of the failure of the tubing, casing, or packer, in said well or the leakage of water from or around said well and shall take such steps as may be timely and necessary to correct such failure or leakage.

(6) That the applicant shall submit monthly reports of its disposal operations in accordance with Rules 702, 703, 704, 705, 706, 708, and 1120 of the Division Rules and Regulations.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JIM BACA, Member

ED KELLEY, Member

JOE D. RAMEY, Chairman and Secretary

S E A L

fd/

EXHIBIT 12

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

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 15159
ORDER NO. R-13922

APPLICATION OF BTA OIL PRODUCERS, LLC FOR APPROVAL OF A SALT WATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

This case came on for hearing at 8:15 a. m. on June 26, 2014, at Santa Fe, New Mexico, before Examiner Richard I. Ezeanyim.

NOW, on this 30th day of October, 2014, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner.

FINDS THAT:

(1) Due public notice has been given, and the Division has jurisdiction of this case and its subject matter.

(2) The applicant, BTA Oil Producers, LLC ("BTA" "Applicant" or "Operator"), seeks approval to inject produced water for the purposes of disposal into its 9418 JV-P Vaca Draw Well No. 1 (**API No. 30-025-33639**), located 1980 feet from the South and West lines of Section 10, Township 25 South, Range 33 East, NMPM, Lea County, New Mexico.

(3) The Applicant proposes to dispose produced water into the Bell Canyon and upper Cherry Canyon formations of the Delaware Mountain Group at depths of approximately 5,062 to 6,750 feet subsurface.

(4) The 9418 JV-P Vaca Draw Well No. 1 is currently producing minimal amount of oil and gas from the Wolfcamp formation. The Applicant intends to plug back to the Delaware Mountain Group and use the well for salt water disposal purposes.

(5) In February 2014, the Applicant submitted an administrative application to the Division requesting to convert this well for salt water disposal purposes. The

Applicant provided notice of this application to all affected parties including the Bureau of Land Management (BLM) and the surface land owner.

(6) EOG Resources protested the application, but on June 17, 2014, withdrew its objection to the granting of the application.

(7) The BLM objected to the granting of this application on the grounds that the well is still producing in paying quantities. The surface land owner also objected to the granting of this application. Accordingly, this application was referred to the hearing process.

(8) At the hearing, BLM and the surface land owner did not appear to contest the application.

(9) No other party appeared at the hearing to oppose the granting of this application.

(10) The Applicant appeared at the hearing through counsel and presented the following testimony:

(a) The 9418 JV-P Vaca Draw Well No. 1 is currently producing small amounts of oil and gas from the Wolfcamp formation. The well is a stripper well and BTA intends to convert it to a salt water disposal well to dispose produced water from the Bone Spring formation.

(b) BTA intends to drill the following four (4) wells in Section 10, Township 25 South, Range 33 East, NMPM, Lea County, New Mexico, to the Bone Spring formation.

Well Name	**API Number**
9418 JV-P Vaca Draw Well No. 2H	30-025-41621
9418 JV-P Vaca Draw Well No. 3H	30-025-41622
9418 JV-P Vaca Draw Well No. 4H	30-025-41623
9418 JV-P Vaca Draw Well No. 5H	30-025-41624

(c) The Applicant needs to dispose the produced water from these wells in the Bone Spring formation, and plans to plug back the 9418 JV-P Well No. 1 from the Wolfcamp formation to the Delaware formation, and use it for both lease and commercial salt water disposal purposes.

(d) The 9418 JV-P Vaca Draw Well No. 1 currently produces less than one (1) barrel of oil per day and less than 29 Mcf per day of gas, respectively.

(e) The Bone Spring waters to be disposed into the Delaware formation are compatible since both waters have similar dissolved solids content.

(f) The wells listed in Finding Paragraph (10.b) above will penetrate the injection interval into the Bone Spring formation, but they are outside the one-half mile area of review (AOR). There are no other wells within one-half mile area of review that penetrated the injection interval.

(g) The injection interval is overlain and underlain by confining barriers, so that the injected fluids will remain within the injection zone.

The Division concludes as follows:

(11) The BLM protested this application on the grounds that the well is still producing in paying quantities. As a result, the Applicant using decline curve analysis conducted the economic viability of this well to the economic limit.

(12) The analysis demonstrates that the well is truly a stripper well, and the cost of producing the well to abandonment will be greater than the revenues generated.

(13) The evidence submitted by the Applicant also demonstrates that if the well is not converted to a salt water disposal well, the cost of disposing the Bone Spring water from these new wells will be great. In addition, the Bone Spring formation is known to have very high water cuts.

(14) The Oil Conservation Division (OCD) is obligated to prevent waste, protect correlative rights, and protect the environment.

(15) The injection well is adequately constructed to prevent migration of the injected fluids to underground fresh water sources.

(16) There are no water wells in the area, and the surface casing which is set at 715 feet with cement circulated to the surface will protect the fresh water at an approximate depth of 600 feet.

(17) Division records indicate that BTA (OGRID 260297) is in compliance with Division Rule 19.15.5.9 NMAC as of the date of this order.

(18) The proposed conversion of this well to salt water disposal well should prevent waste and will not impair correlative rights.

(19) Accordingly, this application should be approved.

IT IS THEREFORE ORDERED THAT:

(1) BTA Oil Producers, LLC **[OGRID 260297]** ("BTA" "Applicant" or "Operator") is hereby authorized to inject produced water for the purpose of disposal into the Bell Canyon and upper Cherry Canyon formations of the Delaware Mountain Group, through its 9418 JV-P Vaca Draw Well No. 1 (**API No. 30-025-33639),** located 1980 feet

from the South and West lines of Section 10, Township 25 South, Range 33 East, NMPM, Lea County, New Mexico, in an injection interval at depths of approximately 5,062 feet and 6,750 feet below the surface.

(2) The well shall be constructed with the surface casing set at 715 feet with cement circulated to the surface, and with the intermediate casing set at 5,000 feet with cement circulated to the surface. The production casing shall be set at 12, 575 feet with cement circulated to the surface. All previous perforations below the injection interval shall be properly squeezed and isolated with cast iron bridge plugs (CIBP).

(3) Operator shall take all steps necessary to ensure that the injected fluid enters only the disposal interval and is not permitted to escape to other formations or onto the surface from the injection well.

(4) Injection shall be accomplished through a plastic-lined steel tubing installed in a packer set in the tubing at an approximate depth of 5,045 feet, with the injection to be accomplished through perforated interval from 5,062 feet to 6,750 feet. The casing-tubing annulus shall be filled with an inert fluid, and a gauge or approved leak-detection device shall be attached to the annulus in order to detect leakage in the casing, tubing or packer.

(5) Prior to commencing injection operations, the casing in the disposal well shall be pressure tested throughout the interval from the surface down to the packer setting depth to assure the integrity of such casing.

(6) The maximum surface injection pressure shall be **1013 psi**. The injection well shall be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to no more than the pressure authorized herein.

(7) The Division Director may administratively authorize an increase in injection pressure upon a showing by the operator that such higher pressure will not result in fracturing of the injection formation or confining strata.

(8) The operator shall give at least 72 hours advance notice to the supervisor of the Division's Hobbs District Office of the date and time (i) injection equipment will be installed, and (ii) the mechanical integrity pressure tests will be conducted, so these operations may be witnessed.

(9) The operator shall provide written notice of the date of the commencement of injection to the Hobbs District Office of the Division.

(10) The operator shall immediately notify the supervisor of the Division's Hobbs District Office of any failure of the tubing, casing or packer in the disposal well, or the leakage of water, oil, gas or other fluid from or around any producing, injection or abandoned well within ½ mile of the injection well, and shall take all steps as may be timely and necessary to correct such failure or leakage.

(11) The injection operations shall be governed by Division Rules 19.15.26.1 through 19.15.26.15 NMAC. The operator shall submit monthly reports of the disposal operation on Division Form C-115, in accordance with Division Rules 19.15.26.13 NMAC and 19.15.7.24 NMAC.

(12) The Division may revoke this injection order after notice and hearing if the Operator is in violation of Rule 19.15.5.9 NMAC.

(13) The injection authority granted under this order is not transferable except under Division approval. The Division may require the Operator to demonstrate mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

(14) The injection authority granted herein shall terminate two years after the effective date of this order if the operator has not commenced disposal operations; provided, however, the Division Director, upon written request by the operator filed prior to the expiration of such time, may grant an extension for good cause. In accordance with Rule 19.15.26.12.C(1) NMAC, whenever there is a continuous one year period of non-injection into the injection well, the injection authority granted herein shall terminate **ipso facto.**

(15) The Operator shall provide written notice to the Division upon permanent cessation of the disposal operations.

(16) This order does not relieve the Operator of responsibility should its operations cause any actual damage or threat of damage to protectable fresh water, human health or the environment, nor does it relieve the Operator of responsibility for complying with applicable Division rules or other state, federal or local laws or regulations.

(17) Upon failure of the Operator to conduct operations (1) in such manner as will protect fresh water, or (2) in a manner consistent with the requirements in this order, the Division may, after notice and hearing, (or without notice and hearing in event of an emergency, subject to the provisions of NMSA 1978 Section 70-2-23), terminate the disposal authority granted herein.

(18) This order is subject to approval by the Bureau of Land Management (BLM) before commencing the injection operations.

(19) Jurisdiction of this case is retained for the entry of such further orders as the Division may deem necessary.

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

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

JAMI BAILEY
Director

EXHIBIT 13

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

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION DIVISION FOR THE PURPOSE OF CONSIDERING:

CASE NO. 15241
ORDER NO. R-13958

APPLICATION OF COBALT OPERATING, LLC. FOR AUTHORIZATION TO INJECT, LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on December 4, 2014, at Santa Fe, New Mexico, before Examiner Michael McMillan.

NOW, on this 19th day of February, 2015, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner,

FINDS THAT:

(1) Due public notice has been given, and the Division has jurisdiction of this case and its subject matter.

(2) Cobalt Operating, LLC ("Applicant" , "Cobalt" or "Operator"), seeks authority to re-enter and utilize its Warren Well No. 2 **(API No. 30-025-26953;** the "subject well"), located 2200 feet from the North line and 880 feet from the East line, Unit letter H of Section 8, Township 17 South, Range 37 East, NMPM, Lea County, New Mexico, for lease oil field water disposal into the Devonian formation through perforations from 11,760 feet to 11,875 feet, and an open-hole interval from approximately 11,875 feet to approximately 12,850 feet.

(3) On October 20, 2014, Cobalt submitted an administrative application **(Application No. pMAM1429351209),** to the Division for approval of this well for injection of produced water. Claudia Wilbourn and Kenneth Goff objected to the granting of this application. Accordingly, this application was referred to the hearing process.

(4) No other party appeared at the hearing to oppose the granting of this application.

(5) The Applicant appeared at the hearing through counsel and presented the following testimony:

(a) The subject well is to be deepened to a total depth of 12,850 feet with a four (4)-inch diameter open hole from 11,875 feet to 12,850 feet. The injection interval will be approximately 115 feet of perforations, and 975 feet of open hole with the packer set in the five and half (5 1/2)-inch casing at approximately 11,660 feet.

(b) The maximum surface pressure will be 2352 psi.

(c) The produced waters going into the subject well would be from production from wells completed in the Devonian formation.

(d) Hydrocarbon production in this area is found above the injection interval in the Strawn formation, as well as the Devonian formation.

(e) Historical production and testing of the hydrocarbon zones in this area in the Devonian formation have very high water content resulting in abandonment of oil-producing wells.

(f) The Applicant does not expect any waste of oil or gas to occur as a result of disposal into the Devonian formation.

(g) The half-mile Area of Review around the subject well contains 10 wells, of which five penetrated the disposal interval.

(h) The subject well is currently producing from the Devonian formation with a high water cut and a low oil volume; therefore, the well is uneconomical to produce.

The Division concludes as follows:

(6) Division records indicate that Cobalt Operating, LLC is not in compliance with Rule 19.15.5.9 NMAC. However, on September 2, 2014, Cobalt entered into Inactive Well Agreed Compliance Order (ACOI-291), in which Cobalt agreed to plug, place on approved temporary abandonment status, or restore to production or other beneficial purposes certain wells in the ACOI-291.

(7) The well to be converted to injection [Warren Well No.2 **(API No. 30-025-26953)]** is a marginal and stripper well, and has reached it economic abandonment limit. The Operator therefore has the right to use the well for other beneficial purposes.

(8) The Cobalt's Warren Well No. 1 **(API No. 30-025-26323)** is recompleted and producing from the Strawn formation, while the Hale State Well No. 1Y **(API No. 30-025-26773)** is recompleted and producing from the Devonian formation. The proposed injection well, the Warren Well No. 2, is stratigraphically low on structure from the producing zones which are the upper portions of the Devonian formation. Therefore,

injection of produced water into the Warren Well No. 2 as proposed will not affect hydrocarbon production from the Devonian formation.

(9) The Devonian formation is a good candidate for salt water disposal because of its permeability and porosity. The produced water from the Devonian formation will be disposed into the Devonian formation by this injection well in a closed loop system. There are no water compatibility issues.

(10) The injection well is adequately constructed to prevent the migration of the injected water upwards to underground sources of drinking water. The depth of fresh water sources in this area is between 200 to 300 feet. The surface casing in this well will be set at 378 feet with cement circulated to the surface. The intermediate casing will be set at 4, 400 feet with cement circulated to the surface. The 5-1/2 inch production casing will be set at 11,875 feet with a calculated top of cement at 2,400 feet. The operator will be required to run a Cement Bond Log (CBL) to verify this top of cement.

(11) The plugged and abandoned wells in the area of review (AOR) are properly plugged and abandoned and should not act as conduits to underground sources of drinking water (USD

(12) Claudia Wilburn and Kenneth Goff objected to administrative approval of this injection authority. Claudia Wilburn did not appear at the hearing. Mr. Kenneth Goff appeared at the hearing and presented no technical evidence that demonstrates that the conversion of this well to injection will contaminate his fresh water sources.

(13) There will be no waste of hydrocarbons and correlative rights will not be impaired by granting this injection authority.

(14) This application should be approved.

IT IS THEREFORE ORDERED THAT:

(1) Cobalt Operating, LLC ("Cobalt" or "Operator"), application for authorization to utilize its proposed Warren Well No. 2 (**API No. 30-025-26953;** the "subject well"), located 2200 feet from the North line and 880 feet from the East line, Unit letter H of Section 8, Township 17 South, Range 37 East, NMPM, Lea County, New Mexico, for lease oil field water disposal into the Devonian formation through perforations from approximately 11,760 feet to 11,875 feet, and an open-hole interval from approximately 11,875 feet to approximately 12,850 feet is hereby **approved.**

(2) The injection well shall be constructed with the surface casing set at 378 feet with cement circulated to the surface, and the intermediate casing shall be set at 4, 400 feet with cement circulated to the surface. The operator shall set the 5-1/2 inch production casing at 11,875 feet, and run a cement bond log (CBL) to demonstrate that the actual top of cement on the production casing is 2,400 feet before commencing injection operations. The results of the CBL shall be reported to the Hobbs District Office

of the Division. All previous perforations above the injection interval shall be properly squeezed and isolated with cast iron bridge plugs (CIBP).

(3) The Operator shall comply with the Inactive Well Agreed Compliance Order (ACOI-291), in which Cobalt agreed to plug, place on approved temporary abandonment status, or restore to production or other beneficial purposes certain wells in the ACOI-291, before commencing injection operations into this well.

(4) After installation of tubing, the casing-tubing annulus shall be loaded with an inert fluid and equipped with a pressure gauge or an approved leak detection device in order to determine leakage in the casing, tubing, or packer. The casing shall be pressure tested from the surface to the packer setting depth to assure casing integrity.

(5) The subject well shall pass an initial mechanical integrity test ("MIT") prior to initially commencing disposal and prior to resuming disposal each time the disposal packer is unseated. All MIT testing procedures and schedules shall follow the requirements in Division Rule 19.15.26.11A. NMAC.

(6) The wellhead injection pressure on the well shall be limited to no more than **2352 psi**. In addition, the subject well or system shall be equipped with a pressure limiting device in workable condition which shall, at all times, limit surface tubing pressure to the maximum allowable pressure for this well.

(7) The Director of the Division may authorize an increase in tubing pressure upon a proper showing by the operator of said well that such higher pressure will not result in migration of the disposed fluid from the target formation. Such proper showing shall be demonstrated by sufficient evidence including but not limited to an acceptable Step-Rate Test.

(8) The operator shall notify the supervisor of the Division's District I office of the date and time of the installation of disposal equipment and of any MIT test so that the same may be inspected and witnessed. The operator shall provide written notice of the date of commencement of disposal to the Division's district I office. The injection operations shall be governed by Division Rules 19.15.26.1 through 19.15.26.15 NMAC. The operator shall submit monthly reports of the disposal operations on Division Form C-115, in accordance with rules 19.15.26.13 NMAC and 19.15.7.24 NMAC.

(9) Without limitation on the duties of the operator as provided in 19.15.29 NMAC and 19.15.30 NMAC, or otherwise, the operator shall immediately notify the Division's district office of any failure of the tubing, casing or packer in the well, or of any leakage or release of water, oil or gas from or around any produced or plugged and abandoned well in the area, and shall take such measures as may be timely and necessary to correct such failure or leakage.

(10) The injection authority granted under this Order is not transferable except upon Division approval. The Division may require the operator to demonstrate

mechanical integrity of any injection well that will be transferred prior to approving transfer of authority to inject.

(11) The Division may revoke this injection permit after notice and hearing if the operator is in violation of 19.15.5.9 NMAC.

(12) The Division Director shall be authorized to amend this permit administratively after proper notice and opportunity for hearing.

(13) The disposal authority granted herein shall terminate two years after the effective date of this order if the operator has not commenced injection operations into the subject well, provided however, the Division, upon written request, mailed by the operator prior to the termination date, may grant an extension thereof for good cause.

(14) One year after disposal into the subject well has ceased, the well will be considered abandoned and the authority to dispose will terminate ipso facto.

(15) Upon failure of the Operator to conduct operations (1) in such manner as will protect fresh water, or (2) in a manner consistent with the requirements in this order, the Division may, after notice and hearing, (or without notice and hearing in event of an emergency), subject to the provisions of NMSA 1978 Section 70-2-23, terminate the disposal authority granted herein.

(16) Compliance with this order does not relieve the operator of the obligation to comply with other applicable federal, state or local laws or rules, or to exercise due care for the protection of fresh water, public health and safety and the environment.

(17) The Operator shall provide written notice to the Division upon permanent cessation of the disposal operations.

(18) Jurisdiction is retained by the Division for the entry of such further orders as may be necessary.

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

SEAL

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

David R. Catanach

DAVID R. CATANACH
Director

EXHIBIT 14

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

APPLICATION OF GOODNIGHT MIDSTREAM PERMIAN, LLC FOR APPROVAL OF A PRODUCED WATER DISPOSAL WELL, LEA COUNTY, NEW MEXICO

Case No. 22626

ORDER ON MOTION TO DISMISS

This Order follows a Motion to Dismiss ("Motion") filed by Empire New Mexico, LLC ("Empire") on June 6, 2022. The Oil Conservation Division ("Division") Hearing Examiner ("Examiner"), having heard arguments presented on June 16, 2022 on the Motion, enters the following findings and order.

FINDINGS

1. On March 4, 2022, Goodnight Midstream Permian, LLC ("Goodnight") filed an application ("Application") for approval of a produced water disposal well located in Section 9, T21S, R36E, Lea County ("Proposed Well"). The Application proposed disposal into the San Andres formation.

2. Empire entered an appearance into the case and objected to the case being heard by affidavit. Empire then filed the Motion. Empire seeks to dismiss the Application because the Proposed Well will inject within an existing statutory unit

3. Order R-7765, issued December 27, 1984 in Case No. 8397 ("Unit Order"), established the Eunice Monument South Unit ("Unit") pursuant to the Statutory Unitization Act. NMSA 1978, §§70-7-1 et seq. ("Act"). The Unit Order established a Unit Area of over 14,000 acres including Section 9, T21S, R36E. Unit Order, Order ¶2. The vertical limits of the Unit extend from the top of the Grayburg formation "to a lower limit at the base of the San Andres formation". Unit Order, Order ¶3.

4. Gulf Oil Corporation was the operator of the Unit under the Unit Order. Empire is the current operator.

5. The Proposed Well will inject at a location within the Unit Area. The issue for the purposes of this Order is whether the existence of the Unit precludes any injection within the Unit Area.

6. The purpose of the Act is to "provide for the unitized management, operation and further development of the oil and gas properties to which the Statutory Unitization Act is applicable, to the end that greater ultimate recovery may be had therefrom,

waste prevented, and correlative rights protected of all owners of mineral interests in each unitized area." NMSA 1978, §70-7-1.

7. The Unit Order authorizes the operator of the Unit "to institute a secondary recovery project for the recovery of oil and all associated and constituent liquid or liquified hydrocarbons within the unit area". Unit Order, Order ¶4. For the purposes of this Order, this language is assumed to be the "unit operations" described in the Act.

8. The Unit Order does not specifically prohibit, or even address, potential injection operations within the Unit Area.

9. The existence of a Unit, established under the Statutory Unitization Act, does not, by itself, prohibit the operation of a disposal well within the Unit. The Division must evaluate whether the proposed injection is allowable under the Oil and Gas Act.

10. The Oil and Gas Act prohibits "waste" which includes "…the locating, spacing, drilling, equipping, operating or producing, of any well or wells in a manner to reduce or tend to reduce the total quantity of crude petroleum oil or natural gas ultimately recovered from any pool…". NMSA 1978, §70-2-3(A). The Oil and Gas Act requires the Division to regulate the disposal of produced water by injection "in a manner that protects public health, the environment and fresh water resources", NMSA 1978, §70-2-12(B)(15), and further "to prevent the drowning by water of any stratum or part thereof capable of producing oil or gas or both oil and gas in paying quantities and to prevent the premature and irregular encroachment of water or any other kind of water encroachment that reduces or tends to reduce the total ultimate recovery of crude petroleum oil or gas or both oil and gas from any pool". NMSA 1978, §70-2-12(B)(4).

11. Empire claims in the Motion that Goodnight's injection will affect current and future unit operations. These claims can only be verified through an evidentiary hearing.

12. The Division concludes that there are insufficient grounds to dismiss the Application. The location of the Proposed Well within the Unit Area requires an evidentiary hearing to determine whether the proposed injection will interfere with unit operations.

ORDER

It is hereby **ORDERED** that the Motion is denied. At the hearing, evidence can be presented to determine whether the Proposed Well will interfere with unit operations, will not cause waste, will protect correlative rights and will otherwise comply with the Oil and Gas Act.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

William R. Brancard
WILLIAM R. BRANCARD
HEARING EXAMINER

Date: August 24, 2022

EXHIBIT 15

UNIT OPERATING AGREEMENT
EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

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EXHIBIT NO. 4
Case No. 8397
November 7, 1984

UNIT OPERATING AGREEMENT
EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

THIS AGREEMENT, entered into as of the 22nd day of June, 1984, by the parties who have signed the original of this instrument, a counterpart thereof or other instrument agreeing to be bound by the provisions hereof;

W I T N E S S E T H:

WHEREAS, the parties hereto, as Working Interest Owners have executed that certain agreement entitled "Unit Agreement, Eunice Monument South Unit, Lea County, New Mexico" hereinafter referred to as "Unit Agreement", and which, among other things, provides for a separate agreement to be made and entered into by and between Working Interest Owners to provide for Unit Operations therein defined:

NOW, THEREFORE, in consideration of the mutual agreements herein set forth, it is agreed as follows:

ARTICLE 1

CONFIRMATION OF UNIT AGREEMENT

1.1 Confirmation of Unit Agreement. The Unit Agreement is hereby confirmed and incorporated herein by reference and made a part of this Agreement. The definitions in the Unit Agreement are adopted for all purposes of this Agreement. In the event of any conflict between the Unit Agreement and this Agreement, the Unit Agreement shall prevail.

ARTICLE 2

EXHIBITS

2.1 Exhibits. The following exhibits are incorporated herein by reference or attachment:

2.1.1 Exhibits "A" and "B" of the Unit Agreement.

2.1.2 Exhibit "C", attached hereto, is a summary showing each Working Interest Owner's working interest in each Tract, the percentage

of total Unit Participation attributable to each such interest, and the total Unit Participation of each Working Interest Owner.

2.1.3 Exhibit "D", attached hereto, contains insurance provisions applicable to Unit Operations.

2.1.4 Exhibit "E", attached hereto, is the Accounting Procedure applicable to Unit Operations. In the event of conflict between this agreement and Exhibit "E", this agreement shall prevail.

2.1.5 Exhibit "F", attached hereto, contains Certificate of Compliance provisions provided for in Article 21.

2.1.6 Exhibit "G", attached hereto, is the Gas Balancing Agreement applicable to Unit Operations.

2.2 Revision of Exhibits. Whenever Exhibit A or B are revised, Exhibit C shall be revised accordingly and be effective as of the same date. Unit Operator shall also revise Exhibit C from time to time as required to conform to changes in ownership of which Unit Operator has been notified as provided in the Unit Agreement.

2.3 Reference to Exhibits. When reference is made herein to an exhibit, it is to the exhibit as originally attached or, if revised, to the last revision.

ARTICLE 3

SUPERVISION OF OPERATIONS BY WORKING INTEREST OWNERS

3.1 Overall Supervision. Subject to the other terms and provisions of this agreement and of the Unit Agreement, Working Interest Owners shall exercise overall supervision and control of all matters pertaining to the Unit Operations pursuant to this Agreement and the Unit Agreement. In the exercise of such power, each Working Interest Owner shall act solely in its own behalf in

the capacity of an individual owner and not on behalf of the owners as an entirety.

3.2 Particular Powers and Duties. The Working Interest Owners, using the voting procedures given in Article 4.3, unless otherwise specifically provided in this Agreement, shall decide matters pertaining to Unit Operations which include, but are not limited to the following:

3.2.1 Method of Operation. The kind, character and method of operation, including any type of pressure maintenance, secondary recovery or other enhanced recovery program to be employed.

3.2.2 Drilling of Wells. The drilling, deepening, or sidetracking of any well within the Unit Area for the production of Unitized Substances; and the drilling of any well for injection, salt water disposal or for any other Unit purpose.

3.2.3 Well Workovers and Change of Status. The reworking, recompleting or repairing of any well for the purpose of production of Unitized Substances reasonably estimated to require an expenditure in excess of the expenditure limitation specified in Section 3.2.4 hereinbelow; and the abandonment or change of status of any well in the Unit, or the use of any such well for injection or other purposes.

3.2.4 Expenditures. Making of any single expenditure in excess of thirty-five thousand dollars ($35,000.00), except as provided in Section 7.9 hereof; provided that approval by Working Interest Owners for the drilling,

sidetracking, reworking, drilling deeper or plugging back of any well shall include approval of all necessary expenditures required therefor and for completing, testing and equipping the same, including necessary flow lines, separators and lease tankage.

3.2.5 Amendment of Overhead Rates. The amendment of the overhead rates provided for in Section III of Exhibit "E" if, as set forth in Section III.3 of Exhibit "E", such rates are found to be insufficient or excessive.

3.2.6 Disposition of Surplus Facilities. Selling or otherwise disposing of any major item of surplus unit material or equipment, the current list price of new equipment similar thereto being fifteen thousand dollars ($15,000.00) or more.

3.2.7 Appearance Before a Court or Regulatory Body. The designating of a representative to appear before any court or regulatory body in matters pertaining to unit operations; provided, however, that the authorization by Working Interest Owners of the designation of any such representatives shall not prevent any Working Interest Owner from appearing in person or from designating another representative in its own behalf.

3.2.8 Audit Exceptions. Any unresolved audit exceptions relating to audits as provided for in Exhibit "E".

3.2.9 Assignments to Committees. The appointment or designation of committees or subcommittees necessary for the study of any problem in connection with Unit Operations.

3.2.10 The selection of a successor to the Unit Operator.

3.2.11 The enlargement of the Unit Area.

3.2.12 The adjustment and readjustment of investments.

3.2.13 Acquisition of Wells for Unit Operations.

3.2.14 The termination of the Unit Agreement.

ARTICLE 4

MANNER OF EXERCISING SUPERVISION

4.1 Designation of Representatives. Each Working Interest Owner shall advise Unit Operator in writing the names and addresses of its representative and alternate who are authorized to represent and bind it in respect to any matter pertaining to the development and operation of the Unit Area. Such representative or alternate may be changed from time to time by written notice to Unit Operator.

4.2 Meetings. All meetings of Working Interest Owners for the purpose of considering and acting upon any matter pertaining to the development and operation of the Unit Area shall be called by Unit Operator upon its own motion or at the request of two or more Working Interest Owners having a total Unit Participation of not less than ten (10%) percent. No meeting shall be called on less than fourteen (14) days' advance written notice, with agenda for the meeting attached. The Working Interest Owners attending such meeting shall not be prevented from amending items included in the agenda or from deciding such amended item or from deciding other items presented at such meeting. The representative of Unit Operator shall be Chairman of each meeting.

4.3 Voting Procedure. Working Interest Owners shall act upon and determine all matters coming before them, as follows:

4.3.1 Voting Interest. Each Working Interest Owner shall have a voting interest equal to its Unit Participation in effect at the time of the vote.

4.3.2 Vote Required. Unless otherwise provided herein or in the Unit Agreement, Working Interest Owners shall determine all matters by the affirmative vote of four or more Working Interest Owners having a combined voting interest of at least sixty-five percent (65%); however, should any one Working Interest Owner have more than thirty percent (30%) voting interest, its negative vote or failure to vote shall not defeat a motion and such motion shall pass if approved by Working Interest Owners having a majority voting interest, unless two or more additional Working Interest Owners having a combined voting interest of at least five percent (5%) likewise vote against the motion or fail to vote.

4.3.3 Vote at Meeting by Non-Attending Working Interest Owners. Any Working Interest Owner not represented at a meeting may vote on any item included in the agenda of the meeting by letter or telegram addressed to the Chairman of the meeting, provided such vote is received prior to the submission of such item to vote. Such vote shall not be counted with respect to any item on the agenda which is amended at the meeting.

4.3.4 Poll Votes. Working Interest Owners may decide any matter by vote taken by letter or telegram, provided the matter is first submitted in writing to each Working Interest Owner and no meeting on the matter is called, as provided in Paragraph 4.2, within fourteen (14) days after such proposal is dispatched to Working Interest

Owners. Such vote will be final and Unit Operator will give prompt notice of the results of such voting to all Working Interest Owners.

ARTICLE 5

INDIVIDUAL RIGHTS AND PRIVILEGES OF WORKING INTEREST OWNERS

5.1 Reservation of Rights. Working Interest Owners severally reserve to themselves all their rights, powers, authority and privileges, except as expressly otherwise provided in this Agreement and in the Unit Agreement.

5.2 Specific Rights. Each Working Interest Owner shall have, among others, the following specific rights and privileges:

5.2.1 Access to Unit Area. Access to the Unit Area, at all reasonable times, to inspect the operations hereunder and all wells and records and data pertaining thereto.

5.2.2 Reports by Request. The right to receive from Unit Operator, upon written request, copies of all reports to any governmental agency, reports of crude oil runs and stocks, inventory reports and all other data pertaining to Unit Operations. The cost of gathering and furnishing data not ordinarily furnished by Unit Operator to all Working Interest Owners shall be charged solely to Working Interest Owners requesting the same.

5.2.3 Audits. The right to audit the accounts of Unit Operator according to the provisions of Exhibit "E".

ARTICLE 6

UNIT OPERATOR

6.1 Unit Operator. Gulf Oil Corporation is hereby designated as the initial Unit Operator.

6.2 Resignation or Removal. Unit Operator may resign at any time. Unit Operator may be removed at any time by the

affirmative vote of Working Interest Owners having eighty percent (80 %) or more of the voting interest remaining after excluding the voting interest of Unit Operator. Such resignation or removal shall not become effective for a period of six (6) months after the resignation or removal, unless a successor Unit Operator has taken over Unit Operations prior to the expiration of such period.

6.3 Selection of Successor. Upon the resignation or removal of Unit Operator, a successor Unit Operator shall be selected by Working Interest Owners as provided in Section 8 of the Unit Agreement.

6.4 Records and Information. The Unit Operator resigning or being removed shall give complete cooperation to the new Unit Operator and shall deliver to its successor all records and information necessary to the discharge of the new Unit Operator's duties and obligations.

ARTICLE 7

POWERS AND DUTIES OF UNIT OPERATOR

7.1 Exclusive Rights to Operate Unit. Subject to the other provisions of this Agreement, and to the orders, directions and limitations rightfully given or imposed by Working Interest Owners, Unit Operator shall have the exclusive right and be obligated to conduct Unit Operations.

7.2 Workmanlike Conduct. Unit Operator shall conduct all operations hereunder in a good and workmanlike manner and, in the absence of specific instructions from Working Interest Owners, shall have the right and duty to conduct such operations in the same manner as would a prudent operator under the same or in similar circumstances. Unit Operator shall freely consult with Working Interest Owners and keep them advised of all matters arising in connection with such operations which Unit Operator, in the

exercise of its best judgment, considers important. Unit Operator shall not be liable to Working Interest Owners for damages, unless such damages result from the gross negligence or willful misconduct of Unit Operator.

7.3 Liens and Encumbrances. Unit Operator shall endeavor to keep the land and leases in the Unit Area free from all liens and encumbrances occasioned by its operations hereunder, except the lien of Unit Operator granted hereunder.

7.4 Employees. The number of employees used by Unit Operator in conducting operations hereunder, 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 employed by Unit Operator.

7.5 Records. Unit Operator shall keep true and correct books, accounts and records of its operations hereunder.

7.6 Reports to Working Interest Owners. Unit Operator shall furnish to each Working Interest Owner periodic reports of the development and operation of the Unit Area.

7.7 Reports to Governmental Authorities. Unit Operator shall make all reports to governmental authorities that it has the duty to make as Unit Operator.

7.8 Engineering and Geological Information. Unit Operator shall furnish to each Working Interest Owner, upon written request, a copy of the log of, and copies of engineering and geological data pertaining to, wells drilled by Unit Operator.

7.9 Expenditures. Unit Operator is authorized to make single expenditures not in excess of thirty-five thousand dollars ($35,000.00) without prior approval of Working Interest Owners. If an emergency occurs, Unit Operator may immediately make or incur such expenditures as in its opinion are required to deal with the emergency. Unit Operator shall report to Working Interest Owner, as promptly as possible, the nature of the emergency and the action taken.

7.10 Wells Drilled by Unit Operator. All wells drilled by Unit Operator shall be at the usual rates prevailing in the area. Unit Operator may employ its own tools and equipment, but

the charge therefor shall not exceed the prevailing rate in the area, and the work shall be performed by Unit Operator under the same terms and conditions as are usual in the area in contracts of independent contractors doing work of a similar nature.

7.11 Border Agreements. Unit Operator may, after approval by Working Interest Owners, enter into border agreements with respect to lands adjacent to the Unit Area for the purpose of coordinating operations.

ARTICLE 8

TAXES

8.1 Ad Valorem Taxes. Beginning with the first calendar year after the Effective Date hereof, Unit Operator shall make and file all necessary property tax renditions, whether on real or personal property and returns with the proper taxing authorities with respect to all property of each Working Interest Owner used or held by Unit Operator for Unit Operations. Unit Operator shall settle assessments arising therefrom. All such property taxes shall be paid by Unit Operator and charged to the joint account; however, if the interest of a Working Interest Owner is subject to a separately assessed overriding royalty interest production payment or other interest in excess of a one-eighth (1/8) royalty, such Working Interest Owner shall notify Unit Operator of such interest prior to the rendition date and shall be given credit for the reduction in taxes paid resulting therefrom. Any Working Interest Owner dissatisfied with any assessment of its interest in real or personal property shall have the right, at its own expense, and after due notice to the Unit Operator, to protest and resist any such assessment,

8.2 Taxes and Assessments. Each Working Interest Owner shall pay or cause to be paid all production, severance, gathering, windfall profits tax and other taxes and assessments imposed upon or on account of the production or handling of its share of Unitized Substances.

8.3 Income Tax Election. Notwithstanding any provisions herein that the rights and liabilities hereunder are several and not joint or collective, or that this Agreement and operations

hereunder shall not constitute a partnership, if for Federal income tax purposes this Agreement and the operations hereunder are regarded as a partnership, then each of the Parties hereto elects to be excluded from the application of all of the provisions of Subchapter K, Chapter 1, Subtitle A, of the Internal Revenue Code of 1954, as permitted and authorized by Section 761 of the Code and the regulations promulgated thereunder. Unit Operator is authorized and directed to execute on behalf of each of the Parties hereto such evidence of this election as may be required by the Secretary of the Treasury of the United States or the Federal Internal Revenue Service, including specifically, but not by way of limitation, all of the returns, statements, and the data required by Federal Regulations 1.761-1(a). Should there be any requirement that each Party hereto give further evidence of this election, each such Party shall execute such documents and furnish such other evidence as may be required by the Federal Internal Revenue Service or as may be necessary to evidence this election. Each party hereto further agrees not to give any notices or take any other action inconsistent with the election made hereby. If any present or future income tax laws of the state in which the Unit Area is located or any future income tax law of the United States contain provisions similar to those in Subchapter K, Chapter 1, Subtitle A, of the Internal Revenue Code of 1954, under which an election similar to that provided by Section 761 of the Code is permitted, each of the Parties hereto agrees to make such election as may be permitted or required by such laws. In making the foregoing election, each of the Parties states that the income derived by such Party from the operations under this Agreement can be adequately determined without the computation of partnership taxable income.

ARTICLE 9

INSURANCE

9.1 Insurance. Unit Operator, with respect to Unit Operations, shall:

(a) comply with the Workmen's Compensation Laws of the State,

(b) carry Employer's Liability and other insurance required by the laws of the State, and

(c) provide other insurance as set forth in Exhibit D.

ARTICLE 10

ADJUSTMENT OF INVESTMENTS

10.1 Personal Property Taken Over. Upon the effective date hereof, Working Interest Owners shall deliver to Unit Operator possession of:

10.1.1 Wells and Well Equipment. All usable wellbores as defined in Article 11.3, together with the casing, tubing, and downhole equipment up to and including the christmas tree.

10.1.2 Lease and Operating Equipment. All lease and operating equipment, salt water disposal wells and facility systems related to the unitized formation which Working Interest Owners determine to be necessary or desirable for conducting Unit Operations.

10.1.3 Records. A copy of all production and well records pertaining to any well which has historically or is currently producing from the Unitized Formation.

10.2 Inventory and Evaluation of Personal Property. Working Interest Owners shall appoint an inventory committee which shall, as of the Effective Date hereof, or as soon thereafter as feasible, cause to be taken, under the supervision of the Unit Operator and at Unit Expense, joint physical inventories of lease and well equipment within the Unit Area, which inventories shall be used as a basis for determining the controllable items of equipment to be taken over by the Unit Operator hereunder. The Unit Operator shall notify each Working Interest Owner within each separate Tract at least five (5) days prior to the taking of the inventory with respect to said Tract, so that each of said Working Interest Owners may make arrangements to be represented at the taking of the inventory. Such inventories shall exclude all items not of use and value to the Unit and not necessary to Unit Operations. Such

inventories shall include and be limited to those items of equipment normally considered controllable as recommended in the material classification manual in Bulletin No. 6 dated May, 1971, or any amendments thereto, published by the Petroleum Accountants Society of North America, except that certain items normally considered noncontrollable, such as sucker rods and other items as agreed upon by the Working Interest Owners may be included in the inventories in order to insure a more equitable adjustment of investments. Immediately following completion, such inventories shall be priced in accordance with the provision of Exhibit "E", Accounting Procedure, attached hereto and made a part hereof; such pricing shall be performed under the supervision of, by the personnel of and in the offices of the Unit Operator, with Working Interest Owners furnishing such additional pricing help as may be available and necessary. It is specifically provided that with respect to each well taken over for Unit Operations, no value shall be assigned to intangible drilling costs of such well or to the down-hole casing therein.

10.3 Inventory and Valuations. After completion of the inventory and evaluation of property in accordance with the provisions of Section 10.2, Unit Operator shall submit to each Working Interest Owner a copy of the inventory and valuations thereon together with a letter ballot for approval of such inventory and valuations. Within sixty (60) days after receipt of such inventory and valuations each Working Interest Owner shall return such letter ballot to Unit Operator indicating its approval or disapproval thereof. It is agreed that such inventory and valuations shall be binding upon all parties if approved by Working Interest Owners owning as much as sixty-five percent (65%) of the Working Interest in the Unit Area.

10.4 Investment Adjustment. As soon as practicable after approval by Working Interest Owners of the inventory and valuations as provided in Section 10.3, each Working Interest Owner shall be credited with the value of its interest in all personal property so taken over by Unit Operator under Sections 10.1.1 and 10.1.2, and charged with an amount equal to that obtained by multiplying the total value of all such personal property so taken over by Unit Operator under Sections 10.1.1 and 10.1.2 by such Working Interest Owner's Unit Participation, as shown on Exhibit

"C", attached hereto. If the charge against any Working Interest Owner is greater than the amount credited to such Working Interest Owner, the resulting net charge shall be paid and in all other respects be treated as any other item of Unit Expense chargeable against such Working Interest Owner. If the credit to any Working Interest Owner is greater than the amount charged against such Working Interest Owner, the resulting net credit shall be paid to such Working Interest Owner by Unit Operator out of funds received by it in settlement of the net charges described above.

10.5 General Facilities. The acquisition of warehouses, warehouse stocks, lease houses, camps, facilities systems, and office building necessary for Unit Operations shall be by negotiation by and between the owners thereof and Unit Operator, subject to the approval of Working Interest Owners.

10.6 Ownership of Personal Property and Facilities. Each Working Interest Owner, individually, shall, by virtue hereof, own an undivided interest in all personal property and facilities taken over or otherwise acquired by Unit Operator pursuant to this agreement equal to its Unit Participation, shown on Exhibit "C", attached hereto.

ARTICLE 11

WELLBORES

11.1 Demand Wells. Upon the Effective Date of Unitization, or thereafter as demanded by the Unit Operator pursuant to the Unit plan of operations, Working Interest Owners will provide a useable wellbore, as defined in Article 11.3, on each forty acres which would constitute a proration unit within the Unit Area. If any such forty acres is not provided with a useable wellbore upon demand, the owner or owners contributing the forty acre location shall have the option for ninety (90) days to provide a useable wellbore. If a useable wellbore is not provided within the ninety day period, the owner or owners contributing the forty acre location shall within 10 days of the end of such ninety (90) day period remit the sum of one hundred thousand dollars ($100,000) to the Unit Operator to be applied toward the cost of drilling, completing, and equipping a well on the deficient forty acre location. All costs of drilling, completing, and equipping the well in excess of the $100,000 shall be charged to the joint account to be

shared by all owners in proportion to their respective Unit Participation percentage. In the event that an owner or owners fail to provide a required useable wellbore, and fail to pay the assessed $100,000 for each wellbore deficient location within the required time period, such owner or owners shall be in default of payment, and action shall be initiated in accordance with provisions of Article 12.5 of this Agreement.

11.2 Exception to Demand Well Requirement. Any forty acre proration unit which has not contributed oil production from the Unitized Formation for purposes of the Tract Participation formula of Section 13 of the Unit Agreement will not be subject to the requirements of Article 11.1, above.

11.3 Useable Wellbore Definition. A "Useable Wellbore" shall be defined as a wellbore which is (1) suitable for unit operations which shall include being adequately cased to the satisfaction of the Working Interest Owners, down to the top of, or into the Unitized Formation, or through the Unitized Formation but plugged back to a depth no deeper than the base of the Unitized Formation, and (2) clear and free of obstructions from the surface to either the base of the Unitized Formation or to total depth, whichever is shallower, and (3) squeezed off at all non-unitized intervals.

11.3.1 Wellbores Made Useable. After the Effective Date of Unitization, any wellbore demanded by the Unit which requires remedial work to be made "Useable" may be worked over by the well owners, but such work may be witnessed by a representative of Unit Operator. The Working Interest Owners will not be liable for any cost or expense when work is performed by wellbore owners. Wellbore owners may request that remedial work required to make a wellbore "Useable" be performed by the Unit Operator. Following any such written request, Unit Operator will review wellbore records to determine appropriate procedures and cost estimates. If the Unit Operator determines that the required remedial work is technically feasible and can be performed on

a timely basis, Unit Operator at its sole discretion may agree to perform the required work. The wellbore owners shall bear the sole cost, risk, and expense of such remedial work up to a maximum amount of one hundred thousand dollars ($100,000). If Unit Operator estimates that such remedial work will cost in excess of $100,000, an AFE for the amount in excess of $100,000 will be submitted to Working Interest Owners prior to the start of work and such excess shall be charged to the joint account.

11.3.2 Wellbores Accepted as "Useable Wellbores". Notwithstanding paragraph 11.3, any well actively producing as a single completion from the Unitized Formation for at least six (6) consecutive months prior to the Effective Date of unitization shall be accepted as a "Useable Wellbore." Any well which has not actively produced as a single completion from the Unitized Formation for six (6) consecutive months prior to the Effective Date of unitization shall not be accepted as a "Useable Wellbore" until it can be entered by the Unit Operator and assessed pursuant to Article 11.3. Any well not so assessed within two years following the effective date of unitization shall then be deemed a "Useable Wellbore."

ARTICLE 12

DEVELOPMENT AND OPERATING COSTS

12.1 Basis of Charge to Working Interest Owners. Subject to the provisions of Section 12.2 hereof, Unit Operator initially shall pay all Unit Expense. Each Working Interest Owner shall reimburse Unit Operator for its share of Unit Expenses. All charges, credits, and accounting for Unit Expense shall be in accordance with Exhibit "E" attached hereto. Each Working Interest Owner's share of such charges shall be the same as its Unit Participation.

12.2 Advance Billings. Unit Operator shall have the right, at its option, to require other Working Interest Owners to advance their respective proportions of estimated development and operating costs and expenses by submitting to such other Working Interest Owners, on or before the 15th day of any month, an itemized estimate of such costs and expenses for the succeeding month with a request for payment in advance. Within thirty (30) days thereafter, each such other Working Interest Owner shall pay to Unit Operator its proportionate part of such estimate. Adjustment between estimates and the actual costs shall be made by Unit Operator at the close of each calendar month, and the accounts of the Working Interest Owners shall be adjusted accordingly.

12.3 Commingling of Funds. Funds received by Unit Operator under this agreement need not be segregated by Unit Operator or maintained by it as a separate fund, but may be commingled with its own funds.

12.4 Lien and Security Interest of Unit Operator and Working Interest Owners. Each Working Interest Owner grants to Unit Operator a lien upon its Oil and Gas Rights in each Tract, and a security interest in its share of Unitized Substances when extracted and its interest in all Unit Equipment, to secure payment of its share of Unit Expense, together with interest thereon at the Prime rate set by Bank of America for the same period +2% per annum. To the extent that Unit Operator has a security interest under the Uniform Commercial Code of the State, Unit Operator shall be entitled to exercise the rights and remedies of a secured party under the Code. The bringing of a suit and the obtaining of judgment by Unit Operator for the secured indebtedness shall not be deemed an election of remedies or otherwise affect the lien rights or security interest as security for the payment thereof. In addition, upon default by any Working Interest Owner in the payment of its share of Unit Expense, Unit Operator shall have the right, without prejudice to other rights or remedies, to collect from the purchaser the proceeds from the sale of such Working Interest Owner's share of Unitized Substances until the amount owed by such Working Interest Owner, plus interest has been paid. Each purchaser shall be entitled to rely upon Unit Operator's written statement concerning the amount of any default. Unit Operator

grants a like lien and security interest to the Working Interest Owners.

12.5 Unpaid Unit Expense. If any Working Interest Owner fails to pay its share of Unit Expense within sixty (60) days after rendition of a statement therefor by Unit Operator, the non-defaulting Working Interest Owners shall, upon request by Unit Operator, pay the unpaid amount as if it were Unit Expense in the proportion that the Unit Participation of each such Working Interest Owner bears to the Unit Participation of all such Working Interest Owners. Each Working Interest Owner so paying its share of the unpaid amount shall, to obtain reimbursement thereof, be subrogated to the security rights described in Section 12.4 of this agreement.

12.6 Carved-Out Interest. If any Working Interest Owner shall, after executing this agreement, create an overriding royalty, production payment, net proceeds interest, carried interest, or any other interest out of its Working Interest, such carved-out interest shall be subject to the terms and provisions of this agreement, specifically including, but without limitation, Section 12.4 hereof entitled "Lien and Security Interest of Unit Operator and Working Interest Owners." If the Working Interest Owner creating such carved-out interest (a) fails to pay any Unit Expense chargeable to such Working Interest Owner under this agreement, and the production of Unitized Substances accruing to the credit of such Working Interest Owner is insufficient for that purpose, or (b) withdraws from this agreement under the terms and provisions of Article 17 hereof, the carved-out interest shall be chargeable with a pro rata portion of all Unit Expense incurred hereunder, the same as though carved-out interest were a Working Interest, and Unit Operator shall have the right to enforce against such carved-out interest the lien and all other rights granted in Section 12.4 for the purpose of collecting the Unit Expense chargeable to the carved-out interest.

12.7 Rentals. The Working Interest Owners in each Tract shall pay all rentals, minimum royalty, advance rentals or delay rentals due under the lease thereon and shall concurrently submit to the Unit Operator evidence of payment.

12.8 Budgets. Before or as soon as practical after the Effective Date, Unit Operator shall prepare a budget of estimated Unit Expense for the remainder of the calendar year, and, on or before the first day of each August thereafter, shall prepare a budget for the ensuing calendar year. A budget shall set forth the estimated Unit Expense by quarterly periods. Budgets shall be estimates only, and shall be adjusted or corrected by Working Interest Owners and Unit Operator whenever an adjustment or correction is proper. A copy of each budget and adjusted budget shall be furnished promptly to each Working Interest Owner.

ARTICLE 13

NON-UNITIZED FORMATIONS

13.1 Right to Operate. Any Working Interest Owner that now has or hereafter acquires the right to drill for and produce oil, gas, or other minerals from a formation underlying the Unit Area other than the Unitized Formation, shall have the right to do so notwithstanding this Agreement or the Unit Agreement. In exercising the right, however, the Working Interest Owner shall exercise care to prevent unreasonable interference with Unit Operations. No Working Interest Owner other than Unit Operator shall produce Unitized Substances through any well drilled or operated by it. If any Working Interest Owner drills any well into or through the Unitized Formation, the Unitized Formation shall be protected in a manner satisfactory to other Unit Working Interest Owners so

that production of Unitized Substances will not be adversely affected.

13.2 Multiple Completions. No well now or hereafter completed in the Unitized Formation shall ever be completed as a multiple completion with the Unitized Formation unless such multiple completion and subsequent handling of the multiple completion is approved by Working Interest Owners in accordance with the voting procedure described in Article 4.3 of this Agreement.

ARTICLE 14

TITLES

14.1 Warranty and Indemnity. Each Working Interest Owner represents and warrants that it is the owner of the respective Working Interest as shown to be owned by it on appropriate Exhibits to this Agreement and hereby indemnifies and holds the other Working Interest Owners harmless from any loss due to the failure, in whole or in part, of its title to any such interest, except failure of title arising out of operations hereunder; provided, however, that such indemnity and any liability for breach of warranty shall be limited to an amount equal to the net value that had been received from the sale of Unitized Substances attributed hereunder to the interest as to which title failed. Each failure of title will be effective, insofar as this Agreement is concerned, as of the first day of the calendar month in which such failure is finally determined and there shall be no retroactive adjustment of Unit Expense or retroactive allocation of Unitized Substances or the proceeds therefrom as a result of title failure.

14.2 Failure of Title Because of Unit Operations. The failure of title to any Working Interest in any Tract because of Unit Operations, including nonproduction from such Tract, shall not change the Unit Participation of the Working Interest Owner

whose title failed in relation to the Unit Participations of the other Working Interest Owners at the time of the title failure.

ARTICLE 15

LIABILITY, CLAIMS AND SUITS

15.1 Individual Liability. The duties, obligations, and liabilities of Working Interest Owners shall be several and not joint or collective; and nothing contained herein shall ever be construed as creating a partnership of any kind, joint venture or an association or trust between or among Working Interest Owners.

15.2 Settlements. Unit Operator may settle any single damage claim or suit involving Unit Operations if the expenditure does not exceed ten thousand dollars ($10,000) and if the payment is in complete settlement of such claim or suit. If the amount required for settlement exceeds the above amount, Working Interest Owners shall determine the further handling of the claim or suit, unless such authority is delegated to Unit Operator. All costs and expense of handling, settling, or otherwise discharging such claim or suit shall be an item of Unit Expense, subject to such limitation as is set forth in Exhibit "E". If a claim is made against any Working Interest Owner or if any Working Interest Owner is sued on account of any matter arising from Unit Operations over which such Working Interest Owner individually has no control because of the rights given Working Interest Owners and Unit Operator by this Agreement and the Unit Agreement, the Working Interest Owner shall immediately notify Unit Operator, and the claim or suit shall be treated as any other claim or suit involving Unit Operations.

ARTICLE 16

NOTICES

16.1 Notices. All notices required hereunder shall be in writing and shall be deemed to have been properly served when sent by mail or telegram to the address of the representative of each Working Interest Owner as furnished to Unit Operator in accordance with Article 4 hereof.

ARTICLE 17

WITHDRAWAL OF WORKING INTEREST OWNER

17.1 Withdrawal. A Working Interest Owner may withdraw from this Agreement by transferring, without warranty of title either express or implied, to the Working Interest Owners who do not desire to withdraw all its Oil and Gas Rights, exclusive of Royalty Interests, together with its interest in all Unit Equipment and in all wells used in Unit Operations, provided that such transfer shall not relieve such Working Interest Owner from any obligation or liability incurred prior to the first day of the month following receipt by Unit Operator of such transfer. The delivery of the transfer shall be made to Unit Operator for the transferees. The transferred interest shall be owned by the transferees in proportion to their respective Unit Participations. The transferees, in proportion to the respective interests so acquired, shall pay the transferor for its interest in Unit Equipment, the salvage value thereof less its share of the estimated cost of salvaging same and of plugging and abandoning all wells then being used or held for Unit Operations, as determined by Working Interest Owners. In the event such withdrawing owner's interest in the aforesaid salvage value is less than such owner's share of such estimated costs, the withdrawing owner, as a condition precedent to withdrawal, shall pay the Unit Operator, for the benefit of Working Interest Owners succeeding to its interest, a sum equal to the deficiency. Within sixty (60) days after receiving delivery of the transfer, Unit Operator shall render a final statement to the withdrawing owner for its share of Unit Expense, including any deficiency in salvage value, as determined by Working Interest Owners, incurred as of the first day of the month following the date of receipt of the transfer. Provided all Unit Expense, including any deficiency hereunder, due from the withdrawing owner has been paid in full within thirty (30) days after the rendering of such final statement by the Unit Operator, the transfer shall be effective the first day of the month following its receipt by Unit Operator and, as of such effective date, withdrawing owner shall be relieved from all further obligations and liabilities

hereunder and under the Unit Agreement, and the rights of the withdrawing Working Interest Owner hereunder and under the Unit Agreement shall cease insofar as they existed by virtue of the interest transferred.

17.2 Limitation on Withdrawal. Notwithstanding anything set forth in Article 17.1, Working Interest Owners may refuse to permit the withdrawal of a Working Interest Owner if its Working Interest is burdened by any royalties, overriding royalties, production payments, net proceeds interest, carried interest, or any other interest created out of the Working Interest in excess of one-eighth (1/8th) lessor's royalty, unless the other Working Interest Owners willing to accept the assignment agree to accept the Working Interest subject to such burdens.

ARTICLE 18

ABANDONMENT OF WELLS

18.1 Rights of Former Owners. If Working Interest Owners decide to permanently abandon any well completed in the Unitized Formation within the Unit Area prior to termination of the Unit Agreement, Unit Operator shall give written notice of such fact to the Working Interest Owners of the Tract on which such well is located and said Working Interest Owners shall have the right and option for a period of sixty (60) days after receipt of such notice to notify Unit Operator of their election to take over and own said well and to deepen or plug back said well to a formation other than the Unitized Formation. Within sixty (60) days after said Working Interest Owners have so notified Unit Operator of their desire to take over such well, they shall pay the Unit Operator, for credit to the joint account of the Working Interest Owners, the amount as estimated and fixed by Working Interest Owners to be the net salvage value of the equipment in and on said well, except casing and other equipment originally contributed at no cost. The Working Interest Owners of the Tract, by taking over the well, agree to seal off the Unitized Formation in a manner satisfactory to Working Interest Owners, and upon abandonment to plug the well in compliance with all applicable laws and regulations.

18.2 Plugging. In the event the Working Interest Owners of a Tract do not elect to take over a well located thereon which is proposed for abandonment, Unit Operator shall plug and abandon the well in accordance with applicable laws, and regulations.

ARTICLE 19

EFFECTIVE DATE AND TERM

19.1 Effective Date. This Agreement shall become effective on the date and at the time the Unit Agreement becomes effective.

19.2 Term. This Agreement shall continue in full force and effect so long as the Unit Agreement remains in force and effect and thereafter until (a) all Unit wells have been abandoned and plugged or turned over to Working Interest Owners in accordance with Article 20 hereof, (b) all personal and real property acquired for the Joint Account of Working Interest Owners have been disposed of by Unit Operator in accordance with instructions of Working Interest Owners, and (c) there has been a final accounting.

ARTICLE 20

ABANDONMENT OF OPERATIONS

20.1 Termination. Upon termination of the Unit Agreement, the following will occur:

20.1.1 Oil and Gas Rights. Oil and Gas Rights in and to each separate Tract shall no longer be affected by this Agreement, and thereafter the parties shall be governed by the terms and provisions of the leases, contracts, and other instruments affecting the separate Tracts.

20.1.2 Right to Operate. Working Interest Owners of any Tract desiring to take over

and continue to operate a well or wells located thereon may do so by paying Unit Operator, for the credit of the joint account, the net salvage value, as determined by the Working Interest Owners, of the equipment in and on the well, except casing and other equipment originally contributed at no cost, and by agreeing to properly plug the well at such time as it is abandoned.

20.1.3 Salvaging Wells. Unit Operator shall salvage as much of the casing and equipment in or on wells not taken over by Working Interest Owners of separate Tracts as can economically and reasonably be salvaged, and shall cause the wells to be plugged and abandoned in compliance with applicable laws and regulations.

20.1.4 Cost of Abandonment. The cost of abandonment of Unit Operations shall be Unit Expense.

20.1.5 Distribution of Assets. Working Interest Owners shall share in the distribution of Unit Equipment, or the proceeds thereof, in proportion to their Unit Participations.

ARTICLE 21

LAWS, REGULATIONS AND CERTIFICATE OF COMPLIANCE

21.1 Laws and Regulations. This Agreement and operations hereunder are subject to all valid laws and valid rules, regulations and orders of all regulatory bodies having jurisdiction and to all other applicable federal, state, and local laws, ordinances, rules, regulations and orders; and any provision of this Agreement found to be contrary to or inconsistent with any such law, ordinance, rule, regulation or order shall be deemed modified accordingly.

21.2 Certificate of Compliance. In the performance of work under this Agreement, the parties agree to comply and Unit Operator shall require each independent contractor to comply with the provisions of Exhibit "F".

ARTICLE 22

EXCISE TAX PROVISIONS

22.1 Crude Oil Excise Tax. For the period during which excise taxes are payable under the Crude Oil Windfall Profit Tax Act of 1980 on any party's Unitized Substances, the first crude oil allocated to any Tract after distribution of any incremental tertiary crude as hereinafter provided shall be the tax tier type of crude oil actually produced or considered to have been produced from such Tract during the base period under I.R.C. regulations but not to exceed its Tract Participation share or the amount of such tax tier type of crude oil currently available. Any excess of a tax tier type of crude oil existing after the foregoing specific identification allocation shall be allocated to the remaining Tracts in the Unit which have an underallocation of crude oil in proportion to the amount of their relative underallocations of crude oil. Anything hereinabove notwithstanding, any incremental tertiary oil as defined under I.R.C. Section 4993 shall be allocated to each Tract in accordance with its Tract Participation prior to any other allocation of tax tier type of crude oil under this Article 22.1. In no case shall the sum of the different tax tier types of crude oil allocated to any Tract exceed the total amount of crude oil allocable under its Tract Participation.

22.2 Amendment By Working Interest Owners. This Article 22 may be amended or deleted by vote of the Working Interest Owners using the voting procedure set out in Article 4.3 of this Operating Agreement if in the opinion of the Working Interest Owners (a) application of Article 22 as written becomes unworkable or inequitable as a result of changes in laws or regulations of any governmental agency, or (b) amendment or deletion of this Article 22 is necessary to comply with applicable laws, rules, regulations or orders of any governmental agency having jurisdiction.

ARTICLE 23

GOVERNMENTAL REGULATIONS

23.1 Governmental Regulations. Working Interest Owners agree to release Unit Operator from any and all losses, damages,

injuries, claims and causes of action arising out of, incident to or resulting directly or indirectly from Unit Operator's interpretation or application of rules, rulings, regulations or orders of any governmental agency or predecessor agencies to the extent Unit Operator's interpretation or application of such rules, rulings, regulations or orders were made in good faith. Working Interest Owners further agree to reimburse Unit Operator for their proportionate share of any amounts Unit Operator may be required to refund, rebate or pay as a result of an incorrect interpretation or application of the above noted rules, rulings, regulations or orders, together with their proportionate part of interest and penalties owing by Unit Operator as a result of such incorrect interpretation or application of such rules, rulings, regulations or orders.

ARTICLE 24

COUNTERPART EXECUTION

24.1 Counterpart Execution. This Agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties and 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 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 land within the above described Unit Area. Furthermore, this Agreement shall extend to and be binding on the parties hereto, their successors, heirs and assigns.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement upon the respective dates indicated opposite their respective signatures.

GULF OIL CORPORATION

By _____
Attorney-in-Fact

June 22, 1984

THE STATE OF TEXAS §

COUNTY OF MIDLAND §

The foregoing instrument was acknowledged before me this 22nd day of June, 19 84, by L. A. Turner, Attorney-in-Fact, for/of Gulf Oil Corporation, a Pennsylvania corporation, on behalf of said corporation.

My Commission Expires:

7-30-88

Carolyn D. Larson

EXHIBIT C
WORKING INTEREST OWNER SUMMARY
EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

WORKING INTEREST OWNER	OLD TRACT	NEW TRACT	PERCENT UNIT OWNERSHIP
AMERADA HESS CORPORATION	008	077	0.148770
	055	084	1.153271
AMERADA HESS CORPORATION			1.302041
AMOCO PRODUCTION COMPANY	081	001	2.077190
	082	002	0.230352
	097	003	0.161889
	116	004	0.017721
	080	005	0.063690
	087	006	0.080786
	048	007	1.666127
	059	008	2.264863
	065	009	0.331526
	003	010	0.584461
	004	011	0.027077
	114	058	0.031885
	104	061	0.199372
	105	076	0.074180
	115	101	0.228542
AMOCO PRODUCTION COMPANY			8.039661
APOLLO OIL COMPANY	052	081	0.108986
ATLANTIC RICHFIELD COMPANY	081	001	2.077190
	082	002	0.230352
	097	003	0.161889
	116	004	0.017721
	080	005	0.063690
	087	006	0.080786
	048	007	1.666127
	059	008	2.264863
	065	009	0.331526
	043	027	2.680609
	042	028	0.934498
	046	043	0.634662
	049	044	0.063394
	028	045	0.238845
	072	046	0.135395
	106	047	0.132934
	062	049	0.751002
	023	050	0.050367
	019	059	0.882435
	036A	062	0.158116
	036B	064	0.067881
	002	066	0.512798
	026	068	0.220246
	045	075	0.693134
	105	076	0.087493
	009	078	0.055491
	053	082	0.250057
	054	083	0.192757
	066	087	3.457004
	077	092	0.050973
	084	096	0.363610
	098	099	0.173659
	099	100	0.026594
ATLANTIC RICHFIELD COMPANY			19.708098
BOSS, KENNETH R.	052	081	0.217972
BRADY PRODUCTION	068	089	0.211657
BRUNO, EARL	079	094	0.153687

EXHIBIT C
WORKING INTEREST OWNER SUMMARY
EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

WORKING INTEREST OWNER	OLD TRACT	NEW TRACT	PERCENT UNIT OWNERSHIP
CATRON W.I. ACCT.	049	044	0.063394
	028	045	0.238845
	072	046	0.135395
	106	047	0.132934
CATRON W.I. ACCT.			0.570568
CATRON, J. S. & T. B. CATRON III	050	048	0.018148
CATRON, THOMAS B. III, TRUSTEE	050	048	0.018148
CHEVRON, U.S.A., INC.	081	001	2.077190
	082	002	0.230352
	097	003	0.161889
	116	004	0.017721
	080	005	0.063690
	087	006	0.080786
	048	007	1.666127
	059	008	2.264863
	065	009	0.331526
CHEVRON, U.S.A., INC.			6.894144
CITIES SERVICE COMPANY	013	039	0.244360
	091	041	0.751093
CITIES SERVICE COMPANY			0.995453
CONOCO INC.	081	001	2.077190
	082	002	0.230352
	097	003	0.161889
	116	004	0.017721
	080	005	0.063690
	087	006	0.080786
	048	007	1.666127
	059	008	2.264863
	065	009	0.331526
	075	025	0.474353
	096	026	1.957890
CONOCO INC.			9.326387
CRILE, HERMAN R.	073	072	0.013744
	074	091	0.026231
CRILE, HERMAN R.			0.039975
DENNIS, ETHEL	031	055	0.013819
ELLISON, T. W.	031	055	0.013819
EXXON COMPANY U.S.A.	006	012	0.151224
	021	037	1.962315
	067	088	0.931331
	068	089	0.211657
	069	090	1.604876
EXXON COMPANY U.S.A.			4.861403
FIELDS, BERT JR.	024	063	0.058119

EXHIBIT C
WORKING INTEREST OWNER SUMMARY
EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

WORKING INTEREST OWNER	OLD TRACT	NEW TRACT	PERCENT UNIT OWNERSHIP
GETTY OIL COMPANY	092	023	0.918559
	103	024	0.277424
	088	030	1.328423
	117	031	0.137520
	001	032	0.427150
	089	033	0.169794
	060	038	0.442503
	046	043	0.634662
	090	056	0.186322
	093	060	0.559636
	025	065	0.009005
	012	073	0.081241
	053	082	0.250057
	083	095	0.375553
	085	097	1.415360
	098	099	0.086860
	099	100	0.013302
GETTY OIL COMPANY			7.313371
GULF OIL CORPORATION	095	013	1.055350
	102	014	2.739613
	017	015	3.195507
	035	016	0.682139
	038	017	3.726787
	047	018	1.459570
	063	019	0.426101
	064	020	0.796347
	071	021	0.355963
	094	022	2.683321
	010	029	0.405359
	020	034	3.559765
	034	035	1.701394
	040	036	0.361025
	060	038	0.885006
	039	051	2.723870
	037	057	0.520475
	107	071	0.825987
	005	079	0.714308
	056	085	0.185457
	057	086	0.649681
	098	099	0.347319
	099	100	0.053189
GULF OIL CORPORATION			30.053533
HARTMAN, DOYLE	070	040	0.051033
	113	042	0.032484
HARTMAN, DOYLE			0.083517
HEDDLEY, KENNETH	074	091	0.026231
HENDRIX, JOHN H.	031	055	0.066329
HUDSON, E.R.	024	063	0.004359
	118	063	0.000000
	007	074	0.004353
HUDSON, E.R.			0.008712
HUDSON, E.R. & W.A.	024	063	0.024701
	118	063	0.000000
	007	074	0.024664
HUDSON, E.R. & W.A.			0.049365

EXHIBIT C
WORKING INTEREST OWNER SUMMARY
EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

WORKING INTEREST OWNER	OLD TRACT	NEW TRACT	PERCENT UNIT OWNERSHIP
KLEIN, M.	031	055	0.031783
KLEIN, S. H.	031	055	0.031783
KOCH EXPLORATION COMPANY	044	069	0.326589
LANDRETH PRODUCTION COMPANY	104	061	0. 92552
	105	076	0.071642
LANDRETH PRODUCTION COMPANY			0.264194
ME-TEX COMPANIES	050	048	0.254073
PERDEW, W. L. EST.	064	069	0.017189
PFLUGER, CARL	070	040	0.025516
	113	042	0.032484
PFLUGER, CARL			0.058000
S & S ENGINEERING	052	081	0.108986
SHELBY, JEANNE FIELDS	024	063	0.058119
SHELL WESTERN E & P, INC.	033	052	0.237670
	018	053	5.112412
	032	054	0.485839
	027	070	0.287522
	086	098	0.572268
SHELL WESTERN E & P, INC.			6.695711
SUN OIL COMPANY	060	038	0.442503
	051	080	0.498853
	078	093	0.055857
SUN OIL COMPANY			0.997213
TEXACO INC.	022	067	0.635532
TURNER, F.W. JR. EST.	024	063	0.087179
	118	063	0.000000
TURNER, F.W. JR. EST.			0.087179
TWO STATES OIL COMPANY	073	072	0.059555
	074	091	0.052462
TWO STATES OIL COMPANY			0.112017
WILBANKS, BRUCE	031	055	0.063565
WISER OIL COMPANY	074	091	0.104924
			100.000000

EXHIBIT "D"

EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

INSURANCE COVERAGE

(a) Workmen's Compensation Insurance and Employers' Liability Insurance in accordance with the laws of the state in which the Contract Area is situated;

and,

(b) Comprehensive General Public Liability in the following amounts:

Bodily Injury:	$150,000.00 each occurrence $300,000.00 aggregate
Property Damage:	$100,000.00 each occurrence, with the exception of the first $5,000.00 loss which is self-insured $200,000.00 aggregate

The $5,000.00 self-insured property damage loss incident to each accident shall be charged to the Joint Account.

EXHIBIT "E"

EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

ACCOUNTING PROCEDURE
JOINT OPERATIONS

I. GENERAL PROVISIONS

1. Definitions

"Joint Property" shall mean the real and personal property subject to the agreement to which this Accounting Procedure is attached.

"Joint Operations" shall mean all operations necessary or proper for the development, operation, protection and maintenance of the Joint Property.

"Joint Account" shall mean the account showing the charges paid and credits received in the conduct of the Joint Operations and which are to be shared by the Parties.

"Operator" shall mean the party designated to conduct the Joint Operations.

"Non-Operators" shall mean the parties to this agreement other than the Operator.

"Parties" shall mean Operator and Non-Operators.

"First Level Supervisors" shall mean those employees whose primary function in Joint Operations is the direct supervision of other employees and/or contract labor directly employed on the Joint Property in a field operating capacity.

"Technical Employees" shall mean those employees having special and specific engineering, geological or other professional skills, and whose primary function in Joint Operations is the handling of specific operating conditions and problems for the benefit of the Joint Property.

"Personal Expenses" shall mean travel and other reasonable reimbursable expenses of Operator's employees.

"Material" shall mean personal property, equipment or supplies acquired or held for use on the Joint Property.

"Controllable Material" shall mean Material which at the time is so classified in the Material Classification Manual as most recently recommended by the Council of Petroleum Accountants Societies of North America.

2. Statement and Billings

Operator shall bill Non-Operators on or before the last day of each month for their proportionate share of the Joint Account for the preceding month. Such bills will be accompanied by statements which identify the authority for expenditure, lease or facility, and all charges and credits, summarized by appropriate classifications of investment and expense except that items of Controllable Material and unusual charges and credits shall be separately identified and fully described in detail.

3. Advances and Payments by Non-Operators

Unless otherwise provided for in the agreement, the Operator may require the Non-Operators to advance their share of estimated cash outlay for the succeeding month's operation. Operator shall adjust each monthly billing to reflect advances received from the Non-Operators.

Each Non-Operator shall pay its proportion of all bills within ~~fifteen (15)~~ thirty (30) days after receipt. If payment is not made within such time, the unpaid balance shall bear interest monthly at the rate of twelve percent (12%) per annum or the maximum contract rate permitted by the applicable usury laws in the state in which the Joint Property is located, whichever is the lesser, plus attorney's fees, court costs, and other costs in connection with the collection of unpaid amounts.

4. Adjustments

Payment of any such bills shall not prejudice the right of any Non-Operator to protest or question the correctness thereof; provided, however, all bills and statements rendered to Non-Operators by Operator during any calendar year shall conclusively be presumed to be true and correct after twenty-four (24) months following the end of any such calendar year, unless within the said twenty-four (24) month period a Non-Operator takes written exception thereto and makes claim on Operator for adjustment. No adjustment favorable to Operator shall be made unless it is made within the same prescribed period. The provisions of this paragraph shall not prevent adjustments resulting from a physical inventory of Controllable Material as provided for in Section V.

5. Audits

A. Non-Operator, upon notice in writing to Operator and all other Non-Operators, shall have the right to audit Operator's accounts and records relating to the Joint Account for any calendar year within the twenty-four (24) month period following the end of such calendar year; provided, however, the making of an audit shall not extend the time for the taking of written exception to and the adjustments of accounts as provided for in Paragraph 4 of this Section I. Where there are two or more Non-Operators, the Non-Operators shall make every reasonable effort to conduct joint or simultaneous audits in a manner which will result in a minimum of inconvenience to the Operator. Operator shall bear no portion of the Non-Operators' audit cost incurred under this paragraph unless agreed to by the Operator.

6. Approval by Non-Operators

Where an approval or other agreement of the Parties or Non-Operators is expressly required under other sections of this Accounting Procedure and if the agreement to which this Accounting Procedure is attached contains no contrary provisions in regard thereto, Operator shall notify all Non-Operators of the Operator's proposal, and the agreement or approval of a majority in interest of the Non-Operators shall be controlling on all Non-Operators.

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II. DIRECT CHARGES

Operator shall charge the Joint Account with the following items:

1. Rentals and Royalties

Lease rentals and royalties paid by Operator for the Joint Operations.

2. Labor

A. (1) Salaries and wages of Operator's field employees directly employed on the Joint Property in the conduct of Joint Operations.

(2) Salaries of first level Supervisors in the field.

(3) Salaries and wages of Technical Employees directly employed on the Joint Property if such charges are excluded from the Overhead rates.

B. Operator's cost of holiday, vacation, sickness and disability benefits and other customary allowances paid to employees whose salaries and wages are chargeable to the Joint Account under Paragraph 2A of this Section II. Such costs under this Paragraph 2B may be charged on a "when and as paid basis" or by "percentage assessment" on the amount of salaries and wages chargeable to the Joint Account under Paragraph 2A of this Section II. If percentage assessment is used, the rate shall be based on the Operator's cost experience.

C. Expenditures or contributions made pursuant to assessments imposed by governmental authority which are applicable to Operator's costs chargeable to the Joint Account under Paragraphs 2A and 2B of this Section II.

D. Personal Expenses of those employees whose salaries and wages are chargeable to the Joint Account under Paragraph 2A of this Section II.

3. Employee Benefits

Operator's current costs of established plans for employees' group life insurance, hospitalization, pension, retirement, stock purchase, thrift, bonus, and other benefit plans of a like nature, applicable to Operator's labor cost chargeable to the Joint Account under Paragraphs 2A and 2B of this Section II shall be Operator's actual cost not to exceed the percent most recently recommended by the Council of Petroleum Accounts Societies of North America.

4. Material

Material purchased or furnished by Operator for use on the Joint Property as provided under Section IV. Only such Material shall be purchased for or transferred to the Joint Property as may be required for immediate use and is reasonably practical and consistent with efficient and economical operations. The accumulation of surplus stocks shall be avoided.

5. Transportation

Transportation of employees and Material necessary for the Joint Operations but subject to the following limitations:

A. If Material is moved to the Joint Property from the Operator's warehouse or other properties, no charge shall be made to the Joint Account for a distance greater than the distance from the nearest reliable supply store, recognized barge terminal, or railway receiving point where like material is normally available, unless agreed to by the Parties.

B. If surplus Material is moved to Operator's warehouse or other storage point, no charge shall be made to the Joint Account for a distance greater than the distance to the nearest reliable supply store, recognized barge terminal, or railway receiving point unless agreed to by the Parties. No charge shall be made to the Joint Account for moving Material to other properties belonging to Operator, unless agreed to by the Parties.

C. In the application of Subparagraphs A and B above, there shall be no equalization of actual gross trucking cost of $400 or less excluding accessorial charges.

6. Services

The cost of contract services, equipment and utilities provided by outside sources, except services excluded by Paragraph 9 of Section II and Paragraph 1. ii of Section III. The cost of professional consultant services and contract services of technical personnel directly engaged on the Joint Property if such charges are excluded from the Overhead rates. The cost of professional consultant services or contract services of technical personnel not directly engaged on the Joint Property shall not be charged to the Joint Account unless previously agreed to by the Parties.

7. Equipment and Facilities Furnished by Operator

A. Operator shall charge the Joint Account for use of Operator owned equipment and facilities at rates commensurate with costs of ownership and operation. Such rates shall include costs of maintenance, repairs, other operating expense, insurance, taxes, depreciation, and interest on investment not to exceed eight per cent (8%) per annum. Such rates shall not exceed average commercial rates currently prevailing in the immediate area of the Joint Property.

B.. In lieu of charges in Paragraph 7A above, Operator may elect to use average commercial rates prevailing in the immediate area of the Joint Property less 20%. For automotive equipment, Operator may elect to use rates published by the Petroleum Motor Transport Association.

8. Damages and Losses to Joint Property

All costs or expenses necessary for the repair or replacement of Joint Property made necessary because of damages or losses incurred by fire, flood, storm, theft, accident, or other cause, except those resulting from Operator's gross negligence or willful misconduct. Operator shall furnish Non-Operator written notice of damages or losses incurred as soon as practicable after a report thereof has been received by Operator.

9. Legal Expense

Expense of handling, investigating and settling litigation or claims, discharging of liens, payment of judgments and amounts paid for settlement of claims incurred in or resulting from operations under the agreement or necessary to protect or recover the Joint Property, except that no charge for services of Operator's legal staff or fees or expense of outside attorneys shall be made unless previously agreed to by the Parties. All other legal expense is considered to be covered by the overhead provisions of Section III unless otherwise agreed to by the Parties, except as provided in Section I, Paragraph 3.

10. **Taxes**

All taxes of every kind and nature assessed or levied upon or in connection with the Joint Property, the operation thereof, or the production therefrom, and which taxes have been paid by the Operator for the benefit of the Parties.

11. **Insurance**

Net premiums paid for insurance required to be carried for the Joint Operations for the protection of the Parties. In the event Joint Operations are conducted in a state in which Operator may act as self-insurer for Workmen's Compensation and/or Employers Liability under the respective state's laws, Operator may, at its election, include the risk under its self-insurance program and in that event, Operator shall include a charge at Operator's cost not to exceed manual rates.

12. **Other Expenditures**

Any other expenditure not covered or dealt with in the foregoing provisions of this Section II, or in Section III, and which is incurred by the Operator in the necessary and proper conduct of the Joint Operations.

III. OVERHEAD

1. **Overhead - Drilling and Producing Operations**

i. As compensation for administrative, supervision, office services and warehousing costs, Operator shall charge drilling and producing operations on either:

(X) Fixed Rate Basis, Paragraph 1A, or
( ) Percentage Basis, Paragraph 1B.

Unless otherwise agreed to by the Parties, such charge shall be in lieu of costs and expenses of all offices and salaries or wages plus applicable burdens and expenses of all personnel, except those directly chargeable under Paragraph 2A, Section II. The cost and expense of services from outside sources in connection with matters of taxation, traffic, accounting or matters before or involving governmental agencies shall be considered as included in the Overhead rates provided for in the above selected Paragraph of this Section III unless such cost and expense are agreed to by the Parties as a direct charge to the Joint Account.

ii. The salaries, wages and Personal Expenses of Technical Employees and/or the cost of professional consultant services and contract services of technical personnel directly employed on the Joint Property shall ( ) shall not (X) be covered by the Overhead rates.

A. Overhead - Fixed Rate Basis

(1) Operator shall charge the Joint Account at the following rates per well per month:

Drilling Well Rate $ 4,960.00
Producing Well Rate $ 496.00

(2) Application of Overhead - Fixed Rate Basis shall be as follows:

(a) Drilling Well Rate

[1] Charges for onshore drilling wells shall begin on the date the well is spudded and terminate on the date the drilling or completion rig is released, whichever is later, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days.

[2] Charges for offshore drilling wells shall begin on the date when drilling or completion equipment arrives on location and terminate on the date the drilling or completion equipment moves off location or rig is released, whichever occurs first, except that no charge shall be made during suspension of drilling operations for fifteen (15) or more consecutive days

[3] Charges for wells undergoing any type of workover or recompletion for a period of five (5) consecutive days or more shall be made at the drilling well rate. Such charges shall be applied for the period from date workover operations, with rig, commence through date of rig release, except that no charge shall be made during suspension of operations for fifteen (15) or more consecutive days.

(b) Producing Well Rates

[1] An active well either produced or injected into for any portion of the month shall be considered as a one-well charge for the entire month.

[2] Each active completion in a multi-completed well in which production is not commingled down hole shall be considered as a one-well charge providing each completion is considered a separate well by the governing regulatory authority.

[3] An inactive gas well shut in because of overproduction or failure of purchaser to take the production shall be considered as a one-well charge providing the gas well is directly connected to a permanent sales outlet.

[4] A one-well charge may be made for the month in which plugging and abandonment operations are completed on any well.

[5] All other inactive wells (including but not limited to inactive wells covered by unit allowable, lease allowable, transferred allowable, etc.) shall not qualify for an overhead charge.

(3) The well rates shall be adjusted as of the first day of April each year following the effective date of the agreement to which this Accounting Procedure is attached. The adjustment shall be computed by multiplying the rate currently in use by the percentage increase or decrease in the average weekly earnings of Crude Petroleum and Gas Production Workers for the last calendar year compared to the calendar year preceding as shown by the index of average weekly earnings of Crude Petroleum and Gas Fields Production Workers as published by the United States Department of Labor, Bureau of Labor Statistics, or the equivalent Canadian index as published by Statistics Canada, as applicable. The adjusted rates shall be the rates currently in use, plus or minus the computed adjustment.

B. Overhead - Percentage Basis

(1) Operator shall charge the Joint Account at the following rates:

(a) Development

_____ Percent (%) of the cost of Development of the Joint Property exclusive of costs provided under Paragraph 9 of Section II and all salvage credits.

(b) Operating

_____ Percent (%) of the cost of Operating the Joint Property exclusive of costs provided under Paragraphs 1 and 9 of Section II, all salvage credits, the value of injected substances purchased for secondary recovery and all taxes and assessments which are levied, assessed and paid upon the mineral interest in and to the Joint Property.

(2) Application of Overhead - Percentage Basis shall be as follows:
For the purpose of determining charges on a percentage basis under Paragraph 1B of this Section III, development shall include all costs in connection with drilling, redrilling, deepening or any remedial operations on any or all wells involving the use of drilling crew and equipment; also, preliminary expenditures necessary in preparation for drilling and expenditures incurred in abandoning when the well is not completed as a producer, and original cost of construction or installation of fixed assets, the expansion of fixed assets and any other project clearly discernible as a fixed asset, except Major Construction as defined in Paragraph 2 of this Section III. All other costs shall be considered as Operating.

2. Overhead - Major Construction

To compensate Operator for overhead costs incurred in the construction and installation of fixed assets, the expansion of fixed assets, and any other project clearly discernible as a fixed asset required for the development and operation of the Joint Property, Operator shall either negotiate a rate prior to the beginning of construction, or shall charge the Joint Account for Overhead based on the following rates for any Major Construction project in excess of $25,000 :

A. 5 % of total costs if such costs are more than $ 25,000 but less than $ 100,000 ; plus

B. 3 % of total costs in excess of $100,000 but less than $1,000,000; plus

C. 2 % of total costs in excess of $1,000,000.

Total cost shall mean the gross cost of any one project. For the purpose of this paragraph, the component parts of a single project shall not be treated separately and the cost of drilling and workover wells shall be excluded.

3. Amendment of Rates

The Overhead rates provided for in this Section III may be amended from time to time only by mutual agreement between the Parties hereto if, in practice, the rates are found to be insufficient or excessive.

IV. PRICING OF JOINT ACCOUNT MATERIAL PURCHASES, TRANSFERS AND DISPOSITIONS

Operator is responsible for Joint Account Material and shall make proper and timely charges and credits for all material movements affecting the Joint Property. Operator shall provide all Material for use on the Joint Property; however, at Operator's option, such Material may be supplied by the Non-Operator. Operator shall make timely disposition of idle and/or surplus Material, such disposal being made either through sale to Operator or Non-Operator, division in kind, or sale to outsiders. Operator may purchase, but shall be under no obligation to purchase, interest of Non-Operators in surplus condition A or B Material. The disposal of surplus Controllable Material not purchased by the Operator shall be agreed to by the Parties.

1. Purchases

Material purchased shall be charged at the price paid by Operator after deduction of all discounts received. In case of Material found to be defective or returned to vendor for any other reason, credit shall be passed to the Joint Account when adjustment has been received by the Operator.

2. Transfers and Dispositions

Material furnished to the Joint Property and Material transferred from the Joint Property or disposed of by the Operator, unless otherwise agreed to by the Parties, shall be priced on the following bases exclusive of cash discounts:

A. New Material (Condition A)

(1) Tubular goods, except line pipe, shall be priced at the current new price in effect on date of movement on a maximum carload or barge load weight basis, regardless of quantity transferred, equalized to the lowest published price f.o.b. railway receiving point or recognized barge terminal nearest the Joint Property where such Material is normally available.

(2) Line Pipe

(a) Movement of less than 30,000 pounds shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store nearest the Joint Property where such Material is normally available.

(b) Movement of 30,000 pounds or more shall be priced under provisions of tubular goods pricing in Paragraph 2A (1) of this Section IV.

(3) Other Material shall be priced at the current new price, in effect at date of movement, as listed by a reliable supply store or f.o.b. railway receiving point nearest the Joint Property where such Material is normally available.

B. Good Used Material (Condition B)

Material in sound and serviceable condition and suitable for reuse without reconditioning:

(1) Material moved to the Joint Property

(a) At seventy-five percent (75%) of current new price, as determined by Paragraph 2A of this Section IV.

(2) Material moved from the Joint Property

(a) At seventy-five percent (75%) of current new price, as determined by Paragraph 2A of this Section IV, if Material was originally charged to the Joint Account as new Material, or

(b) at sixty-five percent (65%) of current new price, as determined by Paragraph 2A of this Section IV, if Material was originally charged to the Joint Account as good used Material at seventy-five percent (75%) of current new price.

The cost of reconditioning, if any, shall be absorbed by the transferring property.

C. Other Used Material (Condition C and D)

(1) Condition C

Material which is not in sound and serviceable condition and not suitable for its original function until after reconditioning shall be priced at fifty percent (50%) of current new price as determined by Paragraph 2A of this Section IV. The cost of reconditioning shall be charged to the receiving property, provided Condition C value plus cost of reconditioning does not exceed Condition B value.

(2) Condition D

All other Material, including junk, shall be priced at a value commensurate with its use or at prevailing prices. Material no longer suitable for its original purpose but usable for some other purpose, shall be priced on a basis comparable with that of items normally used for such other purpose. Operator may dispose of Condition D Material under procedures normally utilized by the Operator without prior approval of Non-Operators.

D. Obsolete Material

Material which is serviceable and usable for its original function but condition and/or value of such Material is not equivalent to that which would justify a price as provided above may be specially priced as agreed to by the Parties. Such price should result in the Joint Account being charged with the value of the service rendered by such Material.

E. Pricing Conditions

(1) Loading and unloading costs may be charged to the Joint Account at the rate of ~~fifteen~~ twenty-five cents (~~15¢~~ 25¢) per hundred weight on all tubular goods movements, in lieu of loading and unloading costs sustained, when actual hauling cost of such tubular goods are equalized under provisions of Paragraph 5 of Section II.

(2) Material involving erection costs shall be charged at applicable percentage of the current knocked-down price of new Material.

3. **Premium Prices**

Whenever Material is not readily obtainable at published or listed prices because of national emergencies, strikes or other unusual causes over which the Operator has no control, the Operator may charge the Joint Account for the required Material at the Operator's actual cost incurred in providing such Material, in making it suitable for use, and in moving it to the Joint Property; provided notice in writing is furnished to Non-Operators of the proposed charge prior to billing Non-Operators for such Material. Each Non-Operator shall have the right, by so electing and notifying Operator within ten days after receiving notice from Operator, to furnish in kind all or part of his share of such Material suitable for use and acceptable to Operator.

4. **Warranty of Material Furnished by Operator**

Operator does not warrant the Material furnished. In case of defective Material, credit shall not be passed to the Joint Account until adjustment has been received by Operator from the manufacturers or their agents.

V. INVENTORIES

The Operator shall maintain detailed records of Controllable Material.

1. **Periodic Inventories, Notice and Representation**

At reasonable intervals, Inventories shall be taken by Operator of the Joint Account Controllable Material. Written notice of intention to take inventory shall be given by Operator at least thirty (30) days before any inventory is to begin so that Non-Operators may be represented when any inventory is taken. Failure of Non-Operators to be represented at an inventory shall bind Non-Operators to accept the inventory taken by Operator.

2. **Reconciliation and Adjustment of Inventories**

Reconciliation of a physical inventory with the Joint Account shall be made, and a list of overages and shortages shall be furnished to the Non-Operators within six months following the taking of the inventory. Inventory adjustments shall be made by Operator with the Joint Account for overages and shortages, but Operator shall be held accountable only for shortages due to lack of reasonable diligence.

3. **Special Inventories**

Special Inventories may be taken whenever there is any sale or change of interest in the Joint Property. It shall be the duty of the party selling to notify all other Parties as quickly as possible after the transfer of interest takes place. In such cases, both the seller and the purchaser shall be governed by such inventory.

4. **Expense of Conducting Periodic Inventories**

The expense of conducting periodic Inventories shall not be charged to the Joint Account unless agreed to by the Parties.

EXHIBIT "F"

EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

CERTIFICATE OF COMPLIANCE

Contractor agrees that, as to all current contracts and purchase orders, as defined below, heretofore issued or entered into by Gulf, as purchaser, for the furnishing of supplies or services by Contractor, and as to each such contract and purchase order, which may hereafter be issued or entered into by Gulf in favor of the Contractor during one year from the date of execution of this Certificate, the Contractor will comply with the Federal Government's Requirements as identified below, and agrees that without further reference thereto the provisions contained in this Certificate shall be a part of each such contract and purchase order.

For the purpose of this Certificate, the words "contract" and "purchase order" shall mean any nonexempt agreement or arrangement between Gulf and the Contractor for the furnishing of supplies or services or for the use of real or personal property, including lease arrangements which, in whole or in part, are necessary to the performance of any one or more contracts between Gulf and the United States of America or under which any portion of the Gulf's obligation under any one or more such contracts is performed, undertaken, or assumed.

Gulf understands and agrees that Contractor's assent to the incorporation of the provisions in this Certificate into every nonexempt contract and purchase order betwen Gulf and Contractor during the periods specified herein is intended to satisfy Gulf's requirements under the governing executive orders and statutes (reference to which includes amendments and orders superseding in whole or in part) and the rules and regulations issued thereunder. Gulf further understands and agrees that this Certification is not meant to create, nor shall it be construed as creating, any enforceable rights hereunder for any firm, organization or individual who is not a party to any such contract or purchase order between Gulf and Contractor.

NONSEGREGATED FACILITIES

The undersigned bidder, offerer, applicant, seller, contractor, or subcontractor, hereinafter referred to as Contractor, certifies to Gulf and the Federal Government agencies with which it contracts that he does not maintain or provide for his employees any segregated facilities at any of his establishments, and that he does not permit his employees to perform their services at any location, under his control, where segregated facilities are maintained. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, rest rooms and wash rooms, restaurants and other eating areas, time clocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, creed, color, or national origin, because of habit, local custom, or otherwise.

EMPLOYMENT OF THE HANDICAPPED

Applicable to all contracts and purchase orders exceeding $2,500, not otherwise exempted: Contractor agrees to comply with Rehabilitation Act of 1973 and all orders, rules, and regulations issued thereunder and amendments thereto.

EQUAL OPPORTUNITY, VETERANS, AND MINORITY BUSINESS ENTERPRISES

Applicable to all contracts and purchase orders exceeding $10,000, not otherwise exempted: Contractor agrees to comply with Executive Order 11246 regarding

Equal Opportunity and all orders, rules and regulations issued thereunder or amendments thereto. Contractor agrees to comply with Executive Order 11701 and Vietnam Veteran's Readjustment Act of 1974 and orders, rules, and regulations issued thereunder or amendments thereto. Contractor agrees to comply with Executive Orders 11458 and 11625 regarding Minority Business Enterprises and all orders, rules, and regulations issued thereunder or amendments thereto.

MINORITY BUSINESS ENTERPRISES AND
UTILIZATION OF SMALL BUSINESS CONCERNS
AND SMALL BUSINESS CONCERNS OWNED AND CONTROLLED
BY SOCIALLY AND ECONMICALLY DISADVANTAGED INDIVIDUALS

Contractor agrees to comply with Executive Order 11625 regarding Minority Business Enterprises and all orders, rules and regulations issued thereunder or amendments thereto.

Applicable to all contracts of over $10,000 not otherwise exempted:

(A) It is the policy of the United States that small business concerns and small business concerns owned and controlled by socially and economically disadvantaged individuals shall have the maximum practicable opportunity to participate in the performance of contracts let by any Federal agency.

(B) The Contractor hereby agrees to carry out this policy in the awarding of subcontracts to the fullest extent consistent with the efficient performance of this contract. The Contractor further agrees to cooperate in any studies or surveys that may be conducted by the Small Business Administration or the contracting agency which may be necessary to determine the extent of the Contractor's compliance with this clause.

(C) (1) The terms "small business concern" shall mean a small business as defined pursuant to Section 3 of the Small Business Act and in relevant regulations promulgated pursuant thereto.

(2) The term "small business concern owned and controlled by socially and economically disadvantaged individuals" shall mean a small business concern—

(i) which is at least 51 per centum owned by one or more socially and economically disadvantaged individuals; or in the case of any publicly owned business, at least 51 per centum of the stock of which is owned by one or more socially and economically disadvantaged individuals; and

(ii) whose management and daily business operations are controlled by one or more of such individuals.

The contractor shall presume that socially and economically disadvantaged individuals include Black Americans, Hispanic Americans, Native Americans, Asian Pacific Americans, and other minorities, or any other individual found to be disadvantaged by the Small Business Administration pursuant to section 8(a) of the Small Business Act.

(D) Contractors acting in good faith may rely on written representations by their subcontractors as either a small business concern or a small business concern owned and controlled by socially and economically disadvantaged individuals.

SMALL BUSINESS AND SMALL DISADVANTAGED
BUSINESS SUBCONTRACTING (OVER $500,000 OR
$1,000,000 FOR CONSTRUCTION OF ANY PUBLIC FACILITY)

Applicable to all contracts over $500,000 or $1,000,000 for construction of any public facility not otherwise exempted:

Pursuant to Temporary Regulation 50, Supplement 2(c) where applicable the contractor agrees to negotiate detailed subcontracting plan.

UTILIZATION OF WOMEN-OWNED BUSINESS CONCERNS

Applicable to all contracts over $10,000 not otherwise exempted:

(A) It is the policy of the United States Government that women-owned businesses shall have the maximum practicable opportunity to participate in the

performance of contracts awarded by any Federal agency.

(B) The Contractor agrees to use his best efforts to carry out this policy in the award of subcontracts to the fullest extent consistent with the efficient performance of this contract. As used in this contract, a "woman-owned business" concern means a business that is at least 51% owned by a woman or women who also control and operate it. "Control" in this context means exercising the power to make policy decisions. "Operate" in this context means being actively involved in the day-to-day management. "Women" mean all women business owners.

WOMEN-OWNED BUSINESS CONCERNS SUBCONTRACTING PROGRAM

Applicable to all contracts over $500,000 or $1,000,000 for construction of any public facility not otherwise exempted:

(A) The Contractor agrees to establish and conduct a program which will enable women-owned business concerns to be considered fairly as subcontractors and suppliers under this contract. In this connection, the contractor shall:

1. Designate a liaison officer who will administer the Contractor's "Women-Owned Business Concerns Program".

2. Provide adequate and timely consideration of the potentialities of known women-owned business concerns in all "make-or-buy" decisions.

3. Develop a list of qualified bidders that are women-owned businesses and assure that known women-owned business concerns have an equitable opportunity to compete for subcontracts, particularly by making information on forthcoming opportunities available by arranging solicitations, time for preparation of bids, quantities, specifications, and delivery schedules so as to facilitate the participation of women-owned business concerns.

4. Maintain records showing (i) procedures which have been adopted to comply with the policies set forth in this clause, including the establishment of a source list of women-owned business concerns; (ii) awards to women-owned businesses on the source list by minority and non-minority women-owned business concerns; and (iii) specific efforts to identify and award contracts to women-owned business concerns.

5. Include the "Utilization of Women-Owned Business Concerns" clause in subcontracts which offer substantial subcontracting opportunities.

6. Cooperate in any studies and surveys of the Contractor's women-owned business concerns procedures and practices that the Contracting Officer may from time-to-time conduct.

7. Submit periodic reports of subcontracting to women-owned business concerns with respect to the records referred to in subparagraph 4 above, in such form and manner and at such time (not more often than quarterly) as the Contracting Officer may prescribe.

(B) The Contractor further agrees to insert, in any subcontract hereunder which may exceed $500,000 or $1,000,000 in the case of contracts for the construction of any public facility and which offers substantial subcontracting possibilities, provisions which shall conform substantially to the language of this clause, including this paragraph B and to notify the Contracting Officer of the names of such subcontractors.

(C) The Contractor further agrees to require written certification by its subcontractors that they are bona fide women-owned and controlled business concerns in accordance with the definition of a women-owned business concern as set forth in the Utilization Clause 1(b) above at the time of submission of bids or proposals.

The aforementioned Contractor agrees that the provisions of this Certificate of Compliance are hereby incorporated in every nonexempt contract or purchase order between us currently in force or that may be issued during one year from the date of execution of the Operating Agreement.

8/81

EXHIBIT "G"

EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

GAS STORAGE AND BALANCING AGREEMENT

The parties to the Operating Agreement to which this agreement is attached own the working interests underlying the Unit Area covered by such agreement in accordance with the percentages of participation as set forth in Exhibit "B" to the Operating Agreement.

In accordance with the terms of the Operating Agreement, each party thereto has the right, subject to existing contracts, to take its share of the casinghead gas produced from the Unit Area and market the same. Existing casinghead contracts for the individual tracts shall remain in place and shall be the basis for settlement between the purchasers and the individual parties to this agreement. Settlement volumes will be based on the volume delivered to a purchaser and will be apportioned to the parties in the ratio that a single tract's unit participation bears to the sum of the unit participations of all tracts which are dedicated to that purchaser. In the event any of the parties hereto is not at any time taking or marketing its share of gas or has contracted to sell its share of gas produced from the Unit Area to a purchaser which does not at any time while this agreement is in effect take the full share of gas attributable to the interest of such party, the terms of this agreement shall automatically become effective.

During the period or periods when any party hereto has no market or fails to take its share of gas produced from any tract within the Unit Area, or its purchaser does not take its full share of gas produced from such tract, the other parties shall be entitled to take each month one hundred percent (100%) of the gas production assigned to such tract and shall be entitled to deliver to its or their purchaser all of such gas production.

On a cumulative basis, each purchaser and each party not taking its full share of the gas produced shall be credited with gas in storage equal to its full share of the gas produced under this agreement, less its share of gas used in lease operations, vented or lost, and less that portion such purchaser and such party took. The Operator will maintain current accounts of the gas balances between the various purchasers and between the various parties hereto, and will furnish all purchasers and parties hereto monthly statements showing the total quantity of gas produced, the amount used in lease operations, vented or lost, and the monthly and cumulative over and under account of each purchaser and party hereto. The Operator will, from time to time, adjust the volumes delivered to each purchaser so as to minimize the relative over/short positions of all purchasers and parties.

At all times while gas is produced from the Unit Area, each party hereto will make settlement with the respective royalty owners to whom they are each accountable, just as if each party were taking or delivering to a purchaser its share, and its share only, of total gas production exclusive of gas used in lease operations, vented or lost. Each party hereto agrees to hold each other party harmless from any and all claims for royalty payments asserted by royalty owners to whom each party is accountable. The term "royalty owner" shall include owners of royalty, overriding royalties, production payments, and similar interests.

After notice to the Operator, any party at any time may begin taking or delivering to its purchaser its full share of the gas produced from a tract under which it has gas in storage less such party's share of gas used in operations, vented or lost. In addition to such share, each party, including the Operator, until it has recovered its gas in storage and balanced the gas account as to its interest, shall

be entitled to take or deliver to its purchaser a share of gas determined by multiplying fifty percent (50%) of the interest in the current gas production of the party or parties without gas in storage by a fraction, the numerator of which is the interest in the tract or tracts of such party with gas in storage and the denominator of which is the total percentage interest in such tracts of all parties with gas in storage currently taking or delivering to a purchaser.

Each party taking or delivering gas to its purchaser shall pay any and all production taxes due on such gas.

Should production of gas from the Unit Area be permanently discontinued before the gas account is balanced, settlement will be made between the underproduced and overproduced parties. In making such settelment, the underproduced party or parties will be paid a sum of money, by the overproduced party or parties attributable to the overproduction which said overproduced party received, equal to the proceeds received less applicable taxes theretofore paid for the latest delivery of a volume of gas equal to that for which settlement is made.

Nothing herein shall change or affect each party's obligation to pay its proportionate share of all costs and liabilities incurred, as its share thereof is set forth in the Operating Agreement.

This agreement shall constitute a separate agreement as to each tract within the Unit Area and shall become effective in accordance with its terms and shall remain in force and effect as long as the Operating Agreement to which it is attached remains in effect, and shall inure to the benefit of and be binding upon the parties hereto, their successors, legal representatives and assigns.

EXHIBIT 16

UNIT AGREEMENT
EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

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Exhibit "A" (Map of Unit Area)
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EXHIBIT NO. 3
Case No. 8397
November 7, 1984

UNIT AGREEMENT
FOR THE DEVELOPMENT AND OPERATION
OF THE
EUNICE MONUMENT SOUTH UNIT
LEA COUNTY, NEW MEXICO

THIS AGREEMENT, entered into as of the 22nd day of June, 1984, by and between the parties subscribing, ratifying, or consenting hereto, and herein referred to as the "parties hereto,"

WITNESSETH:

WHEREAS, the parties hereto are the owners of working, royalty, or other oil and gas interests in the Unit Area subject to this Agreement; and

WHEREAS, the Mineral Leasing Act of February 25, 1920, 41 Stat. 437, as amended, 30 U.S.C. 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 (Section 1, Chapter 88, Laws 1943, as amended by Section 1 of Chapter 176, Laws of 1961) (Chapter 19, Article 10, Section 45, New Mexico Statutes 1978 Annotated), to consent to and approve the development or operation of State lands under agreements made by lessees of State land jointly or severally with other lessees where such agreements provide for the unit operation or development of part of or all of any oil or gas pool, field or area; and

WHEREAS, the Commissioner of Public Lands of the State of New Mexico is authorized by an Act of the Legislature (Section 1, Chapter 88, Laws 1943, as amended by Section 1, Chapter 162, Laws of 1951) (Chapter 19, Article 10, Section 47, New Mexico Statutes 1978 Annotated) to amend with the approval of lessee, evidenced by the lessee's execution of such agreement or otherwise, any oil and gas lease embracing State lands so that the length of the term of said lease may coincide with the term of such agreements for the unit operation and development of part or all of any oil or gas pool, field or area; and

WHEREAS, the Oil Conservation Division of the State of New Mexico (hereinafter referred to as the "Division") is authorized by an Act of the Legislature (Chapter 72, Laws of 1935 as amended) (Chapter 70, Article 2, Section 2 et seq., New Mexico Statutes 1978 Annotated) to approve this Agreement and the conservation provisions hereof; and

WHEREAS, the Oil Conservation Division of the Energy and Minerals Department of the State of New Mexico is authorized by law (Chapter 65, Article 3 and Article 14, N.M.S. 1953 Annotated) to approve this Agreement and the conservation provisions hereof; and

WHEREAS, the parties hereto hold sufficient interest in the 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 interest in the below-defined Unit Area, and agree severally among themselves as follows:

SECTION 1. ENABLING ACT AND REGULATIONS. The Mineral Leasing Act of February 25, 1920, as amended, supra, and all valid pertinent regulations, including operating and unit plan regulations, heretofore issued thereunder or valid, pertinent, and reasonable regulations hereafter issued thereunder are accepted and made a part of this Agreement as to Federal lands, provided such regulations are not inconsistent with the terms of this Agreement; and as to non-Federal lands, the oil and gas operating regulations in effect as of the Effective Date hereof governing drilling and producing operations, not inconsistent with the terms hereof or the laws of the state in which the non-Federal land is located, are hereby accepted and made a part of this Agreement.

SECTION 2. UNIT AREA AND DEFINITIONS. For the purpose of this Agreement, the following terms and expressions as used herein shall mean:

(a) "Unit Area" is defined as those lands described in Exhibit "B" and depicted on Exhibit "A" hereof, and such land is hereby designated and recognized as constituting the Unit Area, containing 14,190 acres, more or less, in Lea County, New Mexico.

(b) "Land Commissioner" is defined as the Commissioner of Public Lands of the State of New Mexico.

(c) "Division" is defined as the Oil Conservation Division of the Department of Energy and Minerals of the State of New Mexico.

(d) "Authorized Officer" or "A.O." is any employee of the Bureau of Land Management who has been delegated the required authority to act on behalf of the BLM.

(e) "Secretary" is defined as the Secretary of the Interior of the United States of America, or his duly authorized delegate.

(f) "Department" is defined as the Department of the Interior of the United States of America.

(g) "Proper BLM Office" is defined as the Bureau of Land Management office having jurisdiction over the federal lands included in the Unit Area.

(h) "Unitized Formation" shall mean that interval underlying the Unit Area, the vertical limits of which extend from an upper limit described as 100 feet below mean sea level or at the top of the Grayburg formation, whichever is higher, to a lower limit at the base of the San Andres formation; the geologic markers having been previously found to occur at 3,657 feet and 5,290 feet, respectively, in Continental Oil Company's #23 Meyer B-4 well (located at 660 feet FSL and 1,980 feet FEL of Section 4, T-21-S, R-36-E, Lea County, New Mexico) as recorded on the Welex Acoustic Velocity Log taken on October 30, 1962, said log being measured from a kelly drive bushing elevation of 3,595 feet above sea level.

(i) "Unitized Substances" are all oil, gas, gaseous substances, sulphur contained in gas, condensate, distillate and all associated and constituent liquid or liquefiable hydrocarbons, other than outside substances, within and produced from the Unitized Formation.

(j) "Tract" is each parcel of land described as such and given a Tract number in Exhibit "B".

(k) "Tract Participation" is defined as the percentage of participation shown on Exhibit "B" for allocating Unitized Substances to a Tract under this Agreement.

(l) "Unit Participation" is the sum of the percentages obtained by multiplying the Working Interest of a Working Interest Owner in each Tract by the Tract Participation of such Tract.

(m) "Working Interest" is the right to search for, produce and acquire Unitized Substances whether held as an incident of ownership of mineral fee simple title, under an oil and gas lease, operating agreement, or otherwise held, which interest is chargeable with and obligated to pay or bear, either in cash or out of production, or otherwise, all or a portion of the cost of drilling, developing and producing the Unitized Substances from the Unitized Formation and operations thereof hereunder. Provided that any royalty interest created out of a working interest subsequent to the execution of this Agreement by the owner of the working interest shall continue to be subject to such working interest burdens and obligations.

(n) "Working Interest Owner" is any party hereto owning a Working Interest, including a carried working interest owner, holding an interest in Unitized Substances by virtue of a lease, operating agreement, fee title or otherwise. The owner of oil and gas rights that are free of lease or other instrument creating a Working Interest in another shall be regarded as a Working Interest Owner to the extent of seven-eighths (7/8) of his interest in Unitized Substances, and as a Royalty Owner with respect to his remaining one-eighth (1/8) interest therein.

(o) "Royalty Interest" or "Royalty" is an interest other than a Working Interest in or right to receive a portion of the Unitized Substances or the proceeds thereof and includes the royalty interest reserved by the lessor or by an oil and gas lease and any overriding royalty interest, oil payment interest, net profit contracts, or any other payment or burden which does not carry with it the right to search for and produce unitized substances.

(p) "Royalty Owner" is the owner of a Royalty Interest.

(q) "Unit Operating Agreement" is the agreement entered into by and between the Unit Operator and the Working Interest Owners as provided in Section 9, infra, and shall be styled "Unit Operating Agreement, Eunice Monument South Unit, Lea County, New Mexico".

(r) "Oil and Gas Rights" is the right to explore, develop and operate lands within the Unit Area for the production of Unitized Substances, or to share in the production so obtained or the proceeds thereof.

(s) "Outside Substances" is any substance obtained from any source other than the Unitized Formation and injected into the Unitized Formation.

(t) "Unit Manager" is any person or corporation appointed by Working Interest Owners to perform the duties of Unit Operator until the selection and qualification of a successor Unit Operator as provided for in Section 7 hereof.

(u) "Unit Operator" is the party designated by Working Interest Owners under the Unit Operating Agreement to conduct Unit Operations.

(v) "Unit Operations" is any operation conducted pursuant to this Agreement and the Unit Operating Agreement.

(w) "Unit Equipment" is all personal property, lease and well equipment, plants, and other facilities and equipment taken over or otherwise acquired for the joint account for use in Unit Operations.

(x) "Unit Expense" is all cost, expense, or indebtedness incurred by Working Interest Owners or Unit Operator pursuant to this Agreement and the Unit Operating Agreement for or on account of Unit Operations.

(y) "Effective Date" is the date determined in accordance with Section 24, or as redetermined in accordance with Section 39.

SECTION 3. EXHIBITS. The following exhibits are incorporated herein by reference: Exhibit "A" attached hereto is a map showing

the Unit Area and the boundaries and identity of tracts and leases in said Unit 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 comprising each Tract, percentages and kind of ownership of oil and gas interests in all land in the Unit Area, and Tract Participation of each Tract. 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. The shapes and descriptions of the respective Tracts have been established by using the best information available. Each Working Interest Owner is responsible for supplying Unit Operator with accurate information relating to each Working Interest Owner's interest. If it subsequently appears that any Tract, because of diverse royalty or working interest ownership on the Effective Date hereof, should be divided into more than one Tract, or when any revision is requested by the A.O., or any correction of any error other than mechanical miscalculations or clerical is needed, then the Unit Operator, with the approval of the Working Interest owners, may correct the mistake by revising the exhibits to conform to the facts. The revision shall not include any reevaluation of engineering or geological interpretations used in determing Tract Participation. Each such revision of an exhibit made prior to thirty (30) days after the Effective Date shall be effective as of the Effective Date. Each other such revision of an exhibit shall be effective at 7:00 a.m. on the first day of the calendar month next following the filing for record of the revised exhibit or on such other date as may be determined by Working Interest Owners and set forth in the revised exhibit. Copies of such revision shall be filed with the Land Commissioner, and not less than four copies shall be filed with the A.O. In any such revision, there shall be no retroactive allocation or adjustment of Unit Expense or of interests in the Unitized Substances produced, or proceeds thereof.

SECTION 4. EXPANSION. The above described Unit Area may, with the approval of the A.O. and Land Commissioner, when practicable be expanded to include therein any additional Tract or Tracts regarded as reasonably necessary or advisable for the purposes of this Agreement provided however, in such expansion there shall be no retroactive allocation or adjustment of Unit Expense or of interests in the Unitized Substances produced, or proceeds thereof. Pursuant to Subsection (b), the Working Interest Owners may agree upon an adjustment of investment by reason of the expansion. Such expansion shall be effected in the following manner:

(a) The Working Interest Owner or Owners of a Tract or Tracts desiring to bring such Tract or Tracts into this unit, shall file an application therefor with Unit Operator requesting such admission.

(b) Unit Operator shall circulate a notice of the proposed expansion to each Working Interest Owner in the Unit Area and in the Tract proposed to be included in the unit, setting out the basis for admission, the Tract Participation to be assigned to each Tract in the enlarged Unit Area and other pertinent data. After negotiation (at Working Interest Owners' meeting or otherwise) if at least three Working Interest Owners having in the aggregate seventy-five percent (75%) of the Unit Participation then in effect have agreed to inclusion of such Tract or Tracts in the Unit Area, then Unit Operator shall:

(1) After obtaining preliminary concurrence by the A.O. and Land Commissioner, prepare a notice of proposed expansion describing the contemplated changes in the boundaries of the Unit Area, the reason therefor, the basis for admission of the additional Tract or Tracts, the Tract Participation to be assigned thereto and the proposed effective date thereof; and

(2) Deliver copies of said notice to Land Commissioner, the A.O. at the Proper BLM Office, each Working Interest Owner and to the last known address of each lessee and lessor whose interests are affected, advising such parties that thirty (30) days will be allowed for submission to the Unit Operator of any objection to such proposed expansion; and

(3) File, upon the expiration of said thirty (30) day period as set out in (2) immediately above with the Land Commissioner and A.O. the following: (a) evidence of mailing or delivering copies of said notice of expansion; (b) an application for approval of such expansion; (c) an instrument containing the appropriate joinders in compliance with the participation requirements of Section 14, and Section 34, infra; and (d) a copy of all objections received along with the Unit Operator's response thereto.

The expansion shall, after due consideration of all pertinent information and approval by the Land Commissioner and the A.O., become effective as of the date prescribed in the notice thereof, preferably the first day of the month subsequent to the date of notice. The revised Tract Participation of the respective Tracts included within the Unit Area prior to such enlargement shall remain the same ratio one to another.

SECTION 5. UNITIZED LAND. All land committed to this Agreement as to the Unitized Formation shall constitute land referred to herein as "Unitized Land" or "Land subject to this Agreement". Nothing herein shall be construed to unitize, pool, or in any way affect the oil, gas and other minerals contained in or that may be produced from any formation other than the Unitized Formation as defined in Section 2(h) of this Agreement.

SECTION 6. UNIT OPERATOR. GULF OIL CORPORATION is hereby designated the Unit Operator, and by signing this instrument as Unit Operator, agrees and consents to accept the duties and obligations of Unit Operator for the operation, 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 interests in Unitized Substances, when such interests are owned by it and the term "Working Interest Owner" when used herein shall include or refer to the Unit Operator as the owner of a Working Interest when such an interest is owned by it.

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

SECTION 7. RESIGNATION OR REMOVAL OF UNIT OPERATOR. Unit Operator shall have the right to resign at any time, but such resignation shall not become effective so as to release Unit Operator from the duties and obligations of Unit Operator and terminate Unit Operator's rights as such for a period of six (6) months after written notice of intention to resign has been given by Unit Operator to all Working Interest Owners, the Land Commissioner and the A.O. unless a new Unit Operator shall have taken over and assumed the duties and obligations of Unit Operator prior to the expiration of said period.

The Unit Operator shall, upon default or failure in the performance of its duties and obligations hereunder, be subject to removal by Working Interest Owners having in the aggregate eighty percent (80%) or more of the Unit Participation then in effect exclusive of the Working Interest Owner who is the Unit Operator. Such removal shall be effective upon notice thereof to the Land Commissioner and the A.O.

In all such instances of effective resignation or removal, until a successor to Unit Operator is selected and approved as hereinafter provided, the Working Interest Owners shall be jointly responsible for the performance of the duties of the Unit Operator and shall, not later than thirty (30) days before such resignation or removal becomes effective, appoint a Unit Manager to represent them in any action to be taken hereunder.

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 wells, equipment, books and records, materials, appurtenances and any

other assets used in connection with the Unit Operations to the new duly qualified successor Unit Operator or to the Unit Manager if no such new Unit Operator is elected. Nothing herein shall be construed as authorizing the removal of any material, equipment or appurtenances needed for the preservation of any wells. Nothing herein contained shall be construed to relieve or discharge any Unit Operator or Unit Manager who resigns or is removed hereunder from any liability or duties accruing or performable by it prior to the effective date of such resignation or removal.

SECTION 8. SUCCESSOR UNIT OPERATOR. Whenever the Unit Operator shall tender its resignation as Unit Operator or shall be removed as hereinabove provided, the Working Interest Owners shall select a successor Unit Operator as herein provided. 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 Land Commissioner and the A.O. If no successor Unit Operator or Unit Manager is selected and qualified as herein provided, the Land Commissioner and/or the A.O., at their election, may declare this Agreement terminated.

In selecting a successor Unit Operator, the affirmative vote of three or more Working Interest Owners having a total of sixty-five percent (65%) or more of the total Unit Participation shall prevail; provided that if any one Working Interest Owner has a Unit Participation of more than thirty-five percent (35%), its negative vote or failure to vote shall not be regarded as sufficient unless supported by the vote of one or more other Working Interest Owners having a total Unit Participation of at least five percent (5%). If the Unit Operator who is removed votes only to succeed itself or fails to vote, the successor Unit Operator may be selected by the affirmative vote of the owners of at least seventy-five percent (75%) of the Unit Participation remaining after excluding the Unit Participation of Unit Operator so removed.

SECTION 9. ACCOUNTING PROVISIONS AND UNIT OPERATING AGREEMENT. Costs and expenses incurred by Unit Operator in conducting Unit Operations hereunder shall be paid, apportioned among and borne by the Working Interest Owners in accordance with 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 contracts and such other rights and obligations as between Unit Operator and the Working Interest Owners as may be agreed upon by the 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 Agreement or to relieve the Unit Operator of any right or obligation established under this Agreement, and in case of any inconsistency or conflict between this Agreement and the Unit Operating Agreement, this Agreement shall prevail. Copies of any Unit Operating Agreement executed pursuant to this Section shall be filed with the Land Commissioner and with the A.O. at the Proper BLM Office as required prior to approval of this Agreement.

SECTION 10. 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 including surface rights 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. Upon request, 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.

SECTION 11. PLAN OF OPERATIONS. It is recognized and agreed by the parties hereto that all of the land subject to this Agreement is reasonably proved to be productive of Unitized Substances and that the object and purpose of this Agreement is to formulate and to put into effect an improved recovery project in order to effect additional recovery of Unitized Substances, prevent waste and conserve natural resources. Unit Operator shall have the right to inject into the Unitized Formation any substances for secondary recovery or enhanced recovery purposes in accordance with a plan of operation approved by the Working Interest Owners, the A.O., the Land Commissioner and the Division, including the right to drill and maintain injection wells on the Unitized Land and completed in the Unitized Formation, and to use abandoned well or wells producing from the Unitized Formation for said purpose. Subject to like approval, the Plan of Operation may be revised as conditions may warrant.

The initial Plan of Operation shall be filed with the A.O., the Land Commissioner and the Division concurrently with the filing of this Unit Agreement for final approval. Said initial plan of operations and all revisions thereof shall be as complete and adequate as the A.O., the Land Commissioner and the Division may determine to be necessary for timely operation consistent herewith. Upon approval of this Agreement and the initial plan by the A.O. and Commissioner, said plan, and all subsequently approved plans, shall constitute the 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 like approval a plan for an additional specified period of operations. After such operations are commenced, reasonable diligence shall be exercised by the Unit Operator in complying with the obligations of the approved Plan of Operation.

Notwithstanding anything to the contrary herein contained, should the Unit Operator fail to commence Unit Operations for the secondary recovery of Unitized Substances from the Unit Area within eighteen (18) months after the effective date of this Agreement, or any extension thereof approved by the A.O., this Agreement shall terminate automatically as of the date of default.

SECTION 12. USE OF SURFACE AND USE OF WATER. The parties to the extent of their rights and interests, hereby grant to Unit Operator the right to use as much of the surface, including the water thereunder, of the Unitized Land as may reasonably be necessary for Unit Operations.

Unit Operator's free use of water or brine or both for Unit Operations, shall not include any water from any well, lake, pond or irrigation ditch of a surface owner, unless approval for such use is granted by the surface owner.

Unit Operator shall pay the surface owner for damages to growing crops, fences, improvements and structures on the Unitized Land that result from Unit Operations, and such payments shall be considered as items of unit expense to be borne by all the Working Interest Owners of lands subject hereto.

SECTION 13. TRACT PARTICIPATION. In Exhibit "B" attached hereto there are listed and numbered the various Tracts within the Unit Area, and set forth opposite each Tract are figures which represent the Tract Participation, during Unit Operations if all Tracts in the Unit Area qualify as provided herein. The Tract Participation of each Tract as shown in Exhibit "B" was determined in accordance with the following formula:

Tract Participation = 50% A/B + 40% C/D + 10% E/F

A = the Tract Cumulative Oil Production from the Unitized Formation as of September 30, 1982.

B = the Unit Total Cumulative Oil Production from the Unitized Formation as of September 30, 1982.

C = the Remaining Primary Oil Reserves from the Unitized Formation for the Tract, beginning October 1, 1982, as determined by the Technical Committee on February 25, 1983.

D = the Remaining Primary Oil Reserves from the Unitized Formation for all Unit Tracts, beginning October 1, 1982, as determined by the Technical Committee on February 25, 1983.

E = the amount of oil produced from the Unitized Formation by the Tract from January 1, 1982, through September 30, 1982.

F = the amount of oil produced from the Unitized Formation by all Unit Tracts from January 1, 1982, through September 30, 1982.

In the event less than all Tracts are qualified on the Effective Date hereof, the Tract Participation shall be calculated on the basis of all such qualified Tracts rather than all Tracts in the Unit Area.

SECTION 14. TRACTS QUALIFIED FOR PARTICIPATION. On and after the Effective Date hereof, the Tracts within the Unit Area which shall be entitled to participation in the production of Unitized Substances shall be those Tracts more particularly described in Exhibit "B" that corner or have a common boundary (Tracts separated only by a public road or a railroad right-of-way shall be considered to have a common boundary), and that otherwise qualify as follows:

(a) Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest have become parties to this Agreement and as to which Royalty Owners owning seventy-five percent (75%) or more of the Royalty Interest have become parties to this Agreement.

(b) Each Tract as to which Working Interest Owners owning one hundred percent (100%) of the Working Interest have become parties to this Agreement, and as to which Royalty Owners owning less than seventy-five percent (75%) of the Royalty Interest have become parties to this Agreement, and as to which (1) the Working Interest Owner who operates the Tract and Working Interest Owners owning at least seventy-five percent (75%) of the remaining Working Interest in such Tract have joined in a request for the inclusion of such Tract, and as to which (2) Working Interest Owners owning at least seventy-five percent (75%) of the combined Unit Participation in all Tracts that meet the requirements of Section 14(a) above have voted in favor of the inclusion of such tract.

(c) Each Tract as to which Working Interest Owners owning less than one hundred percent (100%) of the Working Interest have become parties to this Agreement, regardless of the percentage of Royalty Interest therein that is committed hereto; and as to which (1) the Working Interest Owner who operates the Tract and Working Interest Owner owning at least seventy-five percent (75%) of the remaining Working Interest in such Tract who have become parties to this Agreement have joined in a request for inclusion of such Tract, and have executed and delivered, or obligated themselves to execute and deliver an indemnity agreement indemnifying and agreeing to hold harmless the other owners of committed Working Interests, their successors and assigns, against all claims and demands that may be made by the owners of Working Interest in such Tract who are not parties to this Agreement, and which arise out of the inclusion of the Tract; and as to which (2) Working Interest Owners owning at least seventy-five percent (75%) of the Unit Participation in all Tracts that meet the requirements of Section 14(a) and 14(b) have voted in favor of the inclusion of such Tract and to accept the indemnity agreement. Upon the inclusion of such a Tract, the Tract Participations which would have been attributed to the nonsubscribing owners of Working Interest in such Tract, had they become parties to this Agreement and the Unit Operating Agreement, shall be attributed to the Working Interest Owners in

such Tract who have become parties to such agreements, and joined in the indemnity agreement, in proportion to their respective Working Interests in the Tract.

If on the Effective Date of this Agreement there is any Tract or Tracts which have not been effectively committed to or made subject to this Agreement by qualifying as above provided, then such Tract or Tracts shall not be entitled to participate hereunder. Unit Operator shall, when submitting this Agreement for final approval by the Land Commissioner and the A.O., file therewith a schedule of those tracts which have been committed and made subject to this Agreement and are entitled to participate in Unitized Substances. Said schedule shall set forth opposite each such committed Tract the lease number or assignment number, the owner of record of the lease, and the percentage participation of such tract which shall be computed according to the participation formula set forth in Section 13 (Tract Participation) above. This schedule of participation shall be revised Exhibit "B" and upon approval thereof by the Land Commissioner and the A.O., shall become a part of this Agreement and shall govern the allocation of production of Unitized Substances until a new schedule is approved by the Land Commissioner and A.O.

SECTION 15.A. ALLOCATION OF UNITIZED SUBSTANCES. All Unitized Substances produced and saved (less, save and except any part of such Unitized Substances used in conformity with good operating practices on unitized land for drilling, operating, camp and other production or development purposes and for injection or unavoidable loss in accordance with a Plan of Operation approved by the A.O. and Land Commissioner) shall be apportioned among and allocated to the qualified Tracts in accordance with the respective Tract Participations effective hereunder during the respective periods such Unitized Substances were produced, as set forth in the schedule of participation in Exhibit "B". The amount of Unitized Substances so allocated to each Tract, and only that amount (regardless of whether it be more or less than the amount of the actual production of Unitized Substances from the well or wells, if any, on such Tract) shall, for all intents, uses and purposes, be deemed to have been produced from such Tract.

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

No Tract committed to this Agreement and qualified for participation as above provided shall be subsequently excluded from participation hereunder on account of depletion of Unitized Substances.

If the Working Interest and/or the Royalty Interest in any Tract are divided with respect to separate parcels or portions of such Tract and owned now or hereafter in severalty by different persons, the Tract Participation shall in the absence of a recordable instrument executed by all owners in such Tract and furnished to Unit Operator fixing the divisions of ownership, be divided among such parcels or portions in proportion to the number of surface acres in each.

SECTION 15.B. WINDFALL PROFIT TAX. In order to comply with the Windfall Profit Tax Act of 1980, as amended, and applicable regulations and to ensure that interest owners of each Tract retain the Windfall Profit Tax benefits accruing to each Tract prior to dismantling this Unit, for Windfall Profit Tax purposes only, crude oil shall be allocated to individual Tracts as follows:

SECTION 15.C. IMPUTED NEWLY DISCOVERED CRUDE OIL. Each Tract contributing newly discovered crude oil to the Unit Area, that is, each Tract certified as a newly discovered property for Windfall Profit Tax purposes prior to joining the Unit (Newly Discovered Tract), shall be allocated imputed newly discovered crude oil in the proportion that the Tract Participation of such Tract bears to the total of the Tract Participations of all Newly discovered Tracts; provided, however, that imputed newly discovered crude oil allocated to any Tract under this Subsection 15.C. shall not exceed, in any month, the total number of barrels of crude oil allocable out of unit production to such Tract in accordance with its Tract Participation. In the event a Newly Discovered Tract is so allocated a number of barrels of imputed newly discovered crude oil which is less than the total number of barrels of crude oil allocable out of unit production to such Tract in accordance with its Tract Participation, then such Newly Discovered Tract shall be allocated any remaining unallocated newly discovered crude oil in the proportion that the Tract Participation of such Tract bears to the total of the Tract Participations of all Newly Discovered Tracts not previously so allocated the total number of barrels allocable out of unit production in accordance with their Tract Participations. This additional allocation process shall continue to be repeated, as outlined in the preceding sentence, until such time as:

(a) all Newly Discovered Tracts have been so allocated a number of barrels of imputed newly discovered crude oil equal to the total number of barrels of crude oil allocable out of unit production to such Tracts in accordance with their Tract Participations; or

(b) there is no imputed newly discovered crude oil remaining to be allocated,

whichever occurs first.

Any imputed newly discovered crude oil in excess of the amount of oil allocable to a Tract in accordance with this Subsection 15.C. shall be termed excess imputed newly discovered crude oil.

SECTION 15.D. IMPUTED STRIPPER CRUDE OIL. Each Tract contributing stripper crude oil to the Unit Area, that is, each Tract certified as a stripper property for Windfall Profit Tax purposes prior to joining the Unit (Stripper Tract), shall be allocated imputed stripper crude oil in the proportion that the Tract Participation of such Tract bears to the total of the Tract Participations of all Stripper Tracts; provided, however, that imputed stripper crude oil allocated to any Tract under this Subsection 15.D. shall not exceed, in any month, the total number of barrels of crude oil allocable out of unit production to such Tract in accordance with its Tract Participation. In the event a Stripper Tract is so allocated a number of barrels of imputed stripper crude oil which is less than the total number of barrels of crude oil allocable out of unit production to such Tract in accordance with its Tract Participation, then such Stripper Tract shall be allocated any remaining unallocated imputed stripper crude oil in the proportion that the Tract Participation of such Tract bears to the total of the Tract Participations of all Stripper Tracts not previously so allocated the total number of barrels allocable out of unit production in accordance with their Tract Participations. This additional allocation process shall continue to be repeated, as outlined in the preceding sentence, until such time as:

(a) all Stripper Tracts have been so allocated a number of barrels of imputed stripper crude oil equal to the total number of barrels of crude oil allocable out of unit production to such Tracts in accordance with their Tract Participations; or

(b) there is no imputed stripper crude oil remaining to be allocated,

whichever comes first.

Any imputed stripper crude oil in excess of the amount of oil allocable to a Tract in accordance with this Subsection 15.D. shall be termed excess imputed stripper crude oil.

SECTION 15.E. EXCESS IMPUTED NEWLY DISCOVERED CRUDE OIL. Each Tract shall be allocated any excess imputed newly discovered crude oil in the proportion that its Tract Participation bears to the total of the Tract Participations of all Tracts not previously allocated the total number of barrels of crude oil allocable to these Tracts out of unit production in accordance with the Tract Participations of such Tracts; provided, however, that excess imputed newly discovered crude oil allocated to each such Tract, when added to the total number of barrels of imputed newly discovered crude oil previously allocated to it, shall not exceed, in any month, the total number of barrels of oil allocable to it out of unit production in accordance with its Tract Participation.

SECTION 15.F. EXCESS IMPUTED STRIPPER CRUDE OIL. Each Tract shall be allocated any excess imputed stripper crude oil in the proportion that its Tract Participation bears to the total of the Tract Participations of all Tracts not previously allocated the total number of crude oil barrels allocable to these Tracts out of unit production in accordance with the Tract Participations of such Tracts; provided, however, that excess imputed stripper crude oil allocated to each such Tract, when added to the total number of barrels of imputed stripper crude oil previously allocated to it, shall not exceed, in any month, the total number of barrels of oil allocable to it out of unit production in accordance with its Tract Participation.

SECTION 15.G. TAKING UNITIZED SUBSTANCES IN KIND. The Unitized Substances allocated to each Tract shall be delivered in kind to the respective parties entitled thereto by virtue of the ownership of oil and gas rights therein. Each such party shall have the right to construct, maintain and operate all necessary facilities for that purpose within the Unitized Area, provided the same are so constructed, maintained and operated as not to interfere with Unit Operations. Subject to Section 17 hereof, any extra expenditure incurred by Unit Operator by reason of the delivery in kind of any portion of the Unitized Substances shall be borne by the party taking delivery. In the event any Working Interest Owner shall fail to take or otherwise adequately dispose of its proportionate share of the production from the Unitized Formation, then so long as such condition continues, Unit Operator, for the account and at the expense of the Working Interest Owner of the Tract or Tracts concerned, and in order to avoid curtailing the operation of the Unit Area, may, but shall not be required to, sell or otherwise dispose of such production to itself or to others, provided that all contracts of sale by Unit Operator of any other party's share of Unitized Substances shall be only for such reasonable periods of time as are consistent with the minimum needs of the industry under the circumstances, but in no event shall any such contract be for a period in excess of one year, and at not less than the prevailing market price in the area for like production, and the account of such Working Interest Owner shall be charged therewith as having received such production. The net proceeds, if any, of the Unitized Substances so disposed of by Unit Operator shall be paid to the Working Interest Owner of the Tract or Tracts concerned. Notwithstanding the foregoing, Unit Operator shall not make a sale into interstate commerce of any Working Interest Owner's share of gas production without first giving such Working Interest Owner sixty (60) days' notice of such intended sale.

Any Working Interest Owner receiving in kind or separately disposing of all or any part of the Unitized Substances allocated to any Tract, or receiving the proceeds therefrom if the same is sold or purchased by Unit Operator, shall be responsible for the payment of all royalty, overriding royalty and production payments due thereon, and each such party shall hold each other Working Interest Owner harmless against all claims, demands and causes of

action by owners of such royalty, overriding royalty and production payments.

If, after the Effective Date of this Agreement, there is any Tract or Tracts that are subsequently committed hereto, as provided in Section 4 (Expansion) hereof, or any Tract or Tracts within the Unit Area not committed hereto as of the Effective Date hereof but which are subsequently committed hereto under the provisions of Section 14 (Tracts Qualified for Participation) and Section 32 (Nonjoinder and Subsequent Joinder); or if any Tract is excluded from this Agreement as provided for in Section 21 (Loss of Title), the schedule of participation as shown in Exhibit "B" shall be revised by the Unit Operator; and the revised Exhibit "B", upon approval by the Land Commissioner and the A.O., shall govern the allocation of production on and after the effective date thereof until a revised schedule is approved as hereinabove provided.

SECTION 16. OUTSIDE SUBSTANCES. If gas obtained from formations not subject to this Agreement is introduced into the Unitized Formation for use in repressuring, stimulating of production or increasing ultimate recovery which shall be in conformity with a Plan of Operation first approved by the Land Commissioner and the A.O., a like amount of gas with appropriate deduction for loss or depletion from any cause may be withdrawn from unit wells completed in the Unitized Formation royalty free as to dry gas, but not royalty free as to the products extracted therefrom; provided that such withdrawal shall be at such time as may be provided in the approved Plan of Operator or as otherwise may be consented to or prescribed by the Land Commissioner and the A.O. as conforming to good petroleum engineering practices and provided further that such right of withdrawal shall terminate on the termination date of this Agreement.

SECTION 17. ROYALTY SETTLEMENT. The State of New Mexico and United States of America and all Royalty Owners who, under an existing contract, are entitled to take in kind a share of the substances produced from any Tract unitized hereunder, shall continue to be entitled to such right to take in kind their share of the Unitized Substances allocated to such Tract, and Unit Operator shall make deliveries of such Royalty share taken in kind in conformity with the applicable contracts, laws and regulations. Settlement for Royalty 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 Royalty due under the leases, except that such Royalty shall be computed on Unitized Substances as allocated to each Tract in accordance with the terms of this Agreement. With respect to Federal leases committed hereto on which the royalty rate depends upon the daily average production per well, such average production shall be determined in accordance with the operating regulations pertaining to Federal leases as though the committed Tracts were included in a single consolidated lease.

If the amount of production or the proceeds thereof accruing to any Royalty Owner (except the United States of America) in a Tract depends upon the average production per well or the average pipeline runs per well from such Tract during any period of time, then such production shall be determined from and after the effective date hereof by dividing the quantity of Unitized Substances allocated hereunder to such Tract during such period of time by the number of wells located thereon capable of producing Unitized Substances as of the Effective Date hereof, provided that any Tract not having any well so capable of producing Unitized Substances on the Effective Date hereof shall be considered as having one such well for the purpose of this provision.

All Royalty due the State of New Mexico and the United States of America and the other Royalty Owners hereunder shall be computed and paid on the basis of all Unitized Substances allocated to the

respective Tract or Tracts committed hereto, in lieu of actual production from such Tract or Tracts.

With the exception of Federal and State requirements to the contrary, Working Interest Owners may use or consume Unitized Substances for Unit Operations and no Royalty, overriding royalty, production or other payments shall be payable on account of Unitized Substances used, lost, or consumed in Unit Operations.

Each Royalty Owner (other than the State of New Mexico and the United States of America) that executes this Agreement represents and warrants that it is the owner of a Royalty Interest in a Tract or Tracts within the Unit Area as its interest appears in Exhibit "B" attached hereto. If any Royalty Interest in a Tract or Tracts should be lost by title failure or otherwise in whole or in part, during the term of this Agreement, then the Royalty Interest of the party representing himself to be the owner thereof shall be reduced proportionately and the interests of all parties shall be adjusted accordingly.

SECTION 18. RENTAL SETTLEMENT. Rentals or minimum Royalties due on the 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 for lands of the State of New Mexico subject to this Agreement shall be paid at the rate specified in the respective leases from the State of New Mexico. Rental or minimum Royalty for lands of the United States of America subject to this Agreement shall be paid at the rate specified in the respective leases from the United States of America, unless such rental or minimum Royalty is waived, suspended or reduced by law or by approval of the Secretary or his duly authorized representative.

SECTION 19. 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 Federal and State laws and regulations.

SECTION 20. DRAINAGE. The Unit Operator shall take all reasonable and prudent measures to prevent drainage of Unitized Substances from unitized land by wells on land not subject to this Agreement.

The Unit Operator, upon approval by the Working Interest Owners, the A.O. and the Land Commissioner, is hereby empowered to enter into a borderline agreement or agreements with working interest owners of adjoining lands not subject to this Agreement with respect to operation in the border area for the maximum economic recovery, conservation purposes and proper protection of the parties and interest affected.

SECTION 21. 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 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 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 State or Federal lands or leases, no payments of funds due the United States or the State of New Mexico shall be withheld, but such funds shall be deposited as directed by the A.O. or Land Commissioner (as the case may be) 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.

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

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

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

Each Working Interest Owner shall indemnify, hold harmless, and defend all other Working Interest Owners against any and all claims by any party against the interest attributed to such Working Interest Owner on Exhibit "B".

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

SECTION 22. 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 on lands committed to this Agreement are hereby expressly modified and amended to the extent necessary to make the same conform to the provisions hereof, but otherwise to remain in full force and effect, and the parties hereto hereby consent that the Secretary and the Land 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.

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 Tract subject to this Agreement, regardless of whether there is any development of any 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, producing or improved recovery operations performed hereunder shall be deemed to be performed upon and for the benefit of each Tract, and no lease shall be deemed to expire by reason of failure to drill or produce wells situated on the land therein embraced.

(c) Suspension of drilling or producing operations within the Unit Area pursuant to driection or consent of the Land Commissioner and the A.O., or their duly authorized representatives, shall be deemed to constitute such suspension pursuant to such direction or consent as to each Tract within the Unitized Area.

(d) Each lease, sublease, or contract relating to the exploration, drilling, development, or operation for oil and gas 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 lease embracing lands of the State of New Mexico which is made subject to this Agreement shall continue in force beyond the term provided therein as to the lands committed hereto until the termination hereof.

(f) Any lease embracing lands of the State of New Mexico having only a portion of its land committed hereto shall be segregated as to that portion committed and that not committed, and the terms of such lease shall apply separately to such segregated portions

commencing as of the Effective Date hereof. Provided, however, that notwithstanding any of the provisions of this Agreement to the contrary, such lease (including both segregated portions) shall continue in full force and effect beyond the term provided therein as to all lands embraced in such lease if oil or gas is, or has heretofore been discovered in paying quantities on some part of the lands embraced in such lease committed to this Agreement or, so long as a portion of the Unitized Substances produced from the Unit Area is, under the terms of this Agreement, allocated to the portion of the lands covered by such lease committed to this Agreement, or, at any time during the term hereof, as to any lease that is then valid and subsisting and upon which the lessee or the Unit Operator is then engaged in bona fide drilling, reworking, or improved recovery operations on any part of the lands embraced in such lease, then the same as to all lands embraced therein shall remain in full force and effect so long as such operations are diligently prosecuted, and if they result in the production of oil or gas, said lease shall continue in full force and effect as to all of the lands embraced therein, so long thereafter as oil or gas in paying quantities is being produced from any portion of said lands.

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

SECTION 23. COVENANTS RUN WITH LAND. The covenants herein shall be construed to be covenants running with the land with respect to the interest of the parties hereto and their successors in interest until this Agreement terminates, and any grant, transfer or conveyance of interest in land or leases subject hereto shall be and hereby is conditioned upon the assumption of all privileges and obligations hereunder by the grantee, transferee or other successor in interest. No assignment or transfer of any Working Interest subject hereto shall be binding upon Unit Operator until the first day of the calendar month after Unit Operator is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument or transfer; and no assignment or transfer of any Royalty Interest subject hereto shall be binding upon the Working Interest Owner responsible therefor until the first day of the calendar month after said Working Interest Owner is furnished with the original, or acceptable photostatic or certified copy, of the recorded instrument or transfer.

SECTION 24. EFFECTIVE DATE AND TERM. This Agreement shall become binding upon each party who executes or ratifies it as of the date of execution or ratification by such party and shall become effective on the first day of the calendar month next following the approval of this Agreement by the A.O., the Land Commissioner and the Commission.

If this Agreement does not become effective on or before June 1, 1986, it shall ipso facto expire on said date (hereinafter called "Expiration Date") and thereafter be of no further force or effect, unless prior thereto this Agreement has been executed or ratified by Working Interest Owners owning a combined Participation of at least seventy five percent (75%); and at least seventy-five percent (75%) of such Working Interest Owners committed to this Agreement have decided to extend Expiration Date for a period not to exceed one (1) year (hereinafter called "Extended Expiration Date"). If Expiration Date is so extended and this Agreement does not become effective on or before Extended Expiration Date, it shall ipso facto expire on Extended Expiration Date and thereafter be of no further force and effect.

Unit Operator shall file for record within thirty (30) days after the Effective Date of this Agreement, in the office of the

County Clerk of Lea County, New Mexico, where a counterpart of this Agreement has become effective according to its terms and stating further the effective date.

The terms of this Agreement shall be for and during the time that Unitized Substances are produced from the unitized land and so long thereafter as drilling, reworking or other operations (including improved recovery operations) are prosecuted thereon without cessation of more than ninety (90) consecutive days unless sooner terminated as herein provided.

This Agreement may be terminated with the approval of the Land Commissioner and the A.O. by Working Interest Owners owning eighty percent (80%) of the Unit Participation then in effect whenever such Working Interest Owners determine that Unit Operations are no longer profitable, or in the interest of conservation. Upon approval, such termination shall be effective as of the first day of the month after said Working Interest Owners' determination. Notice of any such termination shall be filed by Unit Operator in the office of the County Clerk of Lea County, New Mexico, within thirty (30) days of the effective date of termination.

Upon termination of this Agreement, the parties hereto shall be governed by the terms and provisions of the leases and contracts affecting the separate Tracts just as if this Agreement had never been entered into.

Notwithstanding any other provision in the leases unitized under this Agreement, Royalty Owners hereby grant Working Interest Owners a period of six months after termination of this Agreement in which to salvage, sell, distribute or otherwise dispose of the personal property and facilities used in connection with Unit Operations.

SECTION 25. RATE OF PROSPECTING, DEVELOPMENT AND PRODUCTION. All production and the disposal thereof shall be in conformity with allocations and quotas made or fixed by any duly authorized person or regulatory body under any Federal or State statute. The A.O. is hereby vested with authority to alter or modify from time to time, in his discretion, the rate of prospecting and development and within the limits made or fixed by the Division to alter or modify the quantity and rate of production under this Agreement, 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; provided, further, that no such alternation or modification shall be effective as to any land of the State of New Mexico as to the rate of prospecting and development in the absence of the specific written approval thereof by the Land Commissioner and as to any lands in the State of New Mexico or privately-owned lands subject to this Agreement or to the quantity and rate of production from such lands in the absence of specific written approval thereof by the Division.

Powers in this Section vested in the A.O. shall only be exercised after notice to Unit Operator and opportunity for hearing to be held not less than fifteen (15) days from notice, and thereafter subject to administrative appeal before becoming final.

SECTION 26. NONDISCRIMINATION. Unit Operator in connection with the performance of work under this Agreement relating to leases of the United States, agrees to comply with all of the provisions of Section 202(1) to (7) inclusive of Executive Order 11246, (30 F.R. 12319), which are hereby incorporated by reference in this Agreement.

SECTION 27. APPEARANCES. Unit Operator shall have the right to appear for or on behalf of any interests affected hereby before the Land Commissioner, the Department, and the Division, and to appeal from any order issued under the rules and regulations of the Land Commissioner, the Department or the Division, or to apply for relief from any of said rules and regulations or in any proceedings relative to operations before the Land Commissioner, the Department or the Division or any other legally constituted authority; provided, however, that any other interested party shall also

have the right at his or its own expense to be heard in any such proceeding.

SECTION 28. NOTICES. All notices, demands, objections or statements required hereunder to be given or rendered to the parties hereto shall be deemed fully given if made in writing and personally delivered to the party or parties or sent by postpaid certified or registered mail, addressed to such party or parties at their last known address set forth in connection with the signatures hereto or to the ratification or consent hereof or to such other address as any such party or parties may have furnished in writing to the party sending the notice, demand or statement.

SECTION 29. 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 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; provided, however, each party hereto covenants that it will not resort to any action to partition the unitized land or the Unit Equipment.

SECTION 30. EQUIPMENT AND FACILITIES NOT FIXTURES ATTACHED TO REALTY. Each Working Interest Owner has heretofore placed and used on its Tract or Tracts committed to this Agreement various well and lease equipment and other property, equipment and facilities. It is also recognized that additional equipment and facilities may hereafter be placed and used upon the Unitized Land as now or hereafter constituted. Therefore, for all purposes of this Agreement, any such equipment shall be considered to be personal property and not fixtures attached to realty. Accordingly, said well and lease equipment and personal property is hereby severed from the mineral estates affected by this Agreement, and it is agreed that any such equipment and personal property shall be and remain personal property of the Working Interest Owners for all purposes.

SECTION 31. UNAVOIDABLE DELAY. All obligations under this Agreement requiring the Unit Operator to commence or continue improved recovery operations 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 agency, unavoidable accident, uncontrollable delays in transportation, inability to obtain necessary materials or equipment in open market, or other matters beyond the reasonable control of the Unit Operator whether similar to matters herein enumerated or not.

SECTION 32. NONJOINDER AND SUBSEQUENT JOINDER. Joinder by any Royalty Owner, at any time, must be accompanied by appropriate joinder of the corresponding Working Interest Owner in order for the interest of such Royalty Owner to be regarded as effectively committed. Joinder to this Agreement by a Working Interest Owner, at any time, must be accompanied by appropriate joinder to the Unit Operating Agreement in order for such interest to be regarded as effectively committed to this Agreement.

Any oil or gas interest in the Unitized Formations not committed hereto prior to submission of this Agreement to the Land Commissioner and the A.O. for final approval may thereafter be committed hereto upon compliance with the applicable provisions of this Section and of Section 14 (Tracts Qualified for Participation) hereof, at any time up to the Effective Date hereof on the same basis of Tract Participation as provided in Section 13, by the owner or owners thereof subscribing, ratifying, or consenting in writing to this Agreement and, if the interest is a Working Interest, by the owner of such interest subscribing also to the Unit Operating Agreement.

It is understood and agreed, however, that from and after the Effective Date hereof the right of subsequent joinder as provided

in this Section shall be subject to such requirements or approvals and on such basis as may be agreed upon by Working Interest Owners owning not less than sixty-five percent (65%) of the Unit Participation then in effect, and approved by the Land Commissioner and A.O. Such subsequent joinder by a proposed Working Interest Owner must be evidenced by his execution or ratification of this Agreement and the Unit Operating Agreement and, where State or Federal land is involved, such joinder must be approved by the Land Commissioner or A.O. Such joinder by a proposed Royalty Owner must be evidenced by his execution, ratification or consent of this Agreement and must be consented to in writing by the Working Interest Owner responsible for the payment of any benefits that may accrue hereunder in behalf of such proposed Royalty Owner. Except as may be otherwise herein provided, subsequent joinder to this Agreement shall be effective as of the first day of the month following the filing with the Land Commissioner and A.O. of duly executed counterparts of any and all documents necessary to establish effective commitment of any Tract or interest to this Agreement, unless objection to such joinder by the Land Commissioner or the A.O., is duly made sixty (60) days after such filing.

SECTION 33. COUNTERPARTS. This Agreement may be executed in any number of counterparts, no one of which needs to be executed by all parties and 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 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 land within the described Unit Area. Furthermore, this Agreement shall extend to and be binding on the parties hereto, their successors, heirs and assigns.

SECTION 34. JOINDER IN DUAL CAPACITY. Execution as herein provided by any party as either a Working Interest Owner or a Royalty Owner shall commit all interests owned or controlled by such party; provided, that if the party is the owner of a Working Interest, he must also execute the Unit Operating Agreement.

SECTION 35. TAXES. Each party hereto shall, for its own account, render and pay its share of any taxes levied against or measured by the amount or value of the Unitized Substances produced from the unitized land; provided, however, that if it is required or if it be determined that the Unit Operator or the several Working Interest Owners must pay or advance said taxes for the account of the parties hereto, it is hereby expressly agreed that the parties so paying or advancing said taxes shall be reimbursed therefor by the parties hereto, including Royalty Owners, who may be responsible for the taxes on their respective allocated share of said Unitized Substances. No taxes shall be charged to the United States or to the State of New Mexico, nor to any lessor who has a contract with a lessee which requires his lessee to pay such taxes.

SECTION 36. NO PARTNERSHIP. The duties, obligations and liabilities of the parties hereto are intended to be several and not joint or collective. This Agreement is not intended to create, and shall not be construed to create, an association or trust, or to impose a partnership duty, obligation or liability with regard to any one or more of the parties hereto. Each party hereto shall be individually responsible for its own obligation as herein provided.

SECTION 37. PRODUCTION AS OF THE EFFECTIVE DATE. Unit Operator shall make a proper and timely gauge of all leases and other tanks within the Unit Area in order to ascertain the amount of merchantable oil above the pipeline connection, in such tanks as of 7:00 a.m. on the Effective Date hereof. All such oil which has then been produced in accordance with established allowables shall be and remain the property of the Working Interest Owner entitled thereto, the same as if the unit had not been formed; and the responsible Working Interest Owner shall promptly remove said oil

from the unitized land. Any such oil not so removed shall be sold by Unit Operator for the account of such Working Interest Owners, subject to the payment of all Royalty to Royalty Owners under the terms hereof. The oil that is in excess of the prior allowable of the wells from which it was produced shall be regarded as Unitized Substances produced after Effective Date hereof.

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

SECTION 38. NO SHARING OF MARKET. This Agreement is not intended to provide and shall not be construed to provide, directly or indirectly, for any cooperative refining, joint sale or marketing of Unitized Substances.

SECTION 39. STATUTORY UNITIZATION. If and when Working Interest Owners owning at least seventy-five percent (75%) Unit Participation and Royalty Owners owning at least seventy-five percent (75%) Royalty Interest have become parties to this Agreement or have approved this Agreement in writing and such Working Interest Owners have also become parties to the Unit Operating Agreement, Unit Operator may make application to the Division for statutory unitization of the uncommitted interests pursuant to the Statutory Unitization Act (Chapter 65, Article 14, N.M.S. 1953 Annotated). If such application is made and statutory unitization is approved by the Division, then effective as of the date of the Division's order approving statutory unitization, this Agreement and/or the Unit Operating Agreement shall automatically be revised and/or amended in accordance with the following:

(1) Section 14 of this Agreement shall be revised by substituting for the entire said section the following:

"SECTION 14. TRACTS QUALIFIED FOR PARTICIPATION. On and after the Effective Date hereof, all Tracts within the Unit Area shall be entitled to participation in the production of Unitized Substances."

(2) Section 24 of this Agreement shall be revised by substituting for the first three paragraphs of said section the following:

"SECTION 24. EFFECTIVE DATE AND TERM. This Agreement shall become effective on the first day of the calendar month next following the effective date of the Division's order approving statutory unitization upon the terms and conditions of this Agreement, as amended (if any amendment is necessary) to conform to the Division's order; approval of this Agreement, as so amended, by the Land Commissioner; and the A.O. and the filing by Unit Operator of this Agreement or notice thereof for record in the office of the County Clerk of Lea County, New Mexico. Unit Operator shall not file this Agreement or notice thereof for record, and hence this Agreement shall not become effective, unless within ninety (90) days after the date all other prerequisites for effectiveness of this Agreement have been satisfied, such filing is approved by Working Interest Owners owning a combined Unit Participation of at least sixty-five percent (65%) as to all Tracts within the Unit Area.

"Unit Operator shall, within thirty (30) days after the Effective Date of this Agreement, file for record in the office of the County Clerk of Lea County, New Mexico, a certificate to the effect that this Agreement has become effective in accordance with its terms, wherein identifying the Division's order approving statutory unitization and stating the Effective Date."

(3) This Agreement and/or the Unit Operating Agreement shall be amended in any and all respects necessary to conform to the Division's order approving statutory unitization.

Any and all amendments of this Agreement and/or the Unit Operating Agreement that are necessary to conform said agreements to the Division's order approving statutory unitization shall be deemed to be hereby approved in writing by the parties hereto without any necessity for further approval by said parties, except as follows:

(a) If any amendment of this Agreement has the effect of reducing any Royalty Owner's participation in the production of Unitized Substances, such Royalty Owner shall not be deemed to have hereby approved the amended agreement without the necessity of further approval in writing by said Royalty Owner; and

(b) If any amendment of this Agreement and/or the Unit Operating Agreement has the effect of reducing any Working Interest Owner's participation in the production of Unitized Substances or increasing such Working Interest Owner's share of Unit Expense, such Working Interest Owner shall not be deemed to have hereby approved the amended agreements without the necessity of further approval in writing by said Working Interest Owner.

Executed as of the day and year first above written.

GULF OIL CORPORATION

By _____
Attorney-in-Fact

Date of Execution:

June 22, 1984

THE STATE OF TEXAS §

COUNTY OF MIDLAND §

The foregoing instrument was acknowledged before me this 22nd day of June, 19 84, by L. A. Turner Attorney-in-Fact, for/of Gulf Oil Corporation, a Pennsylvania corporation, on behalf of said corporation.

My Commission Expires:

7-30-88

Carolyn D. Larson

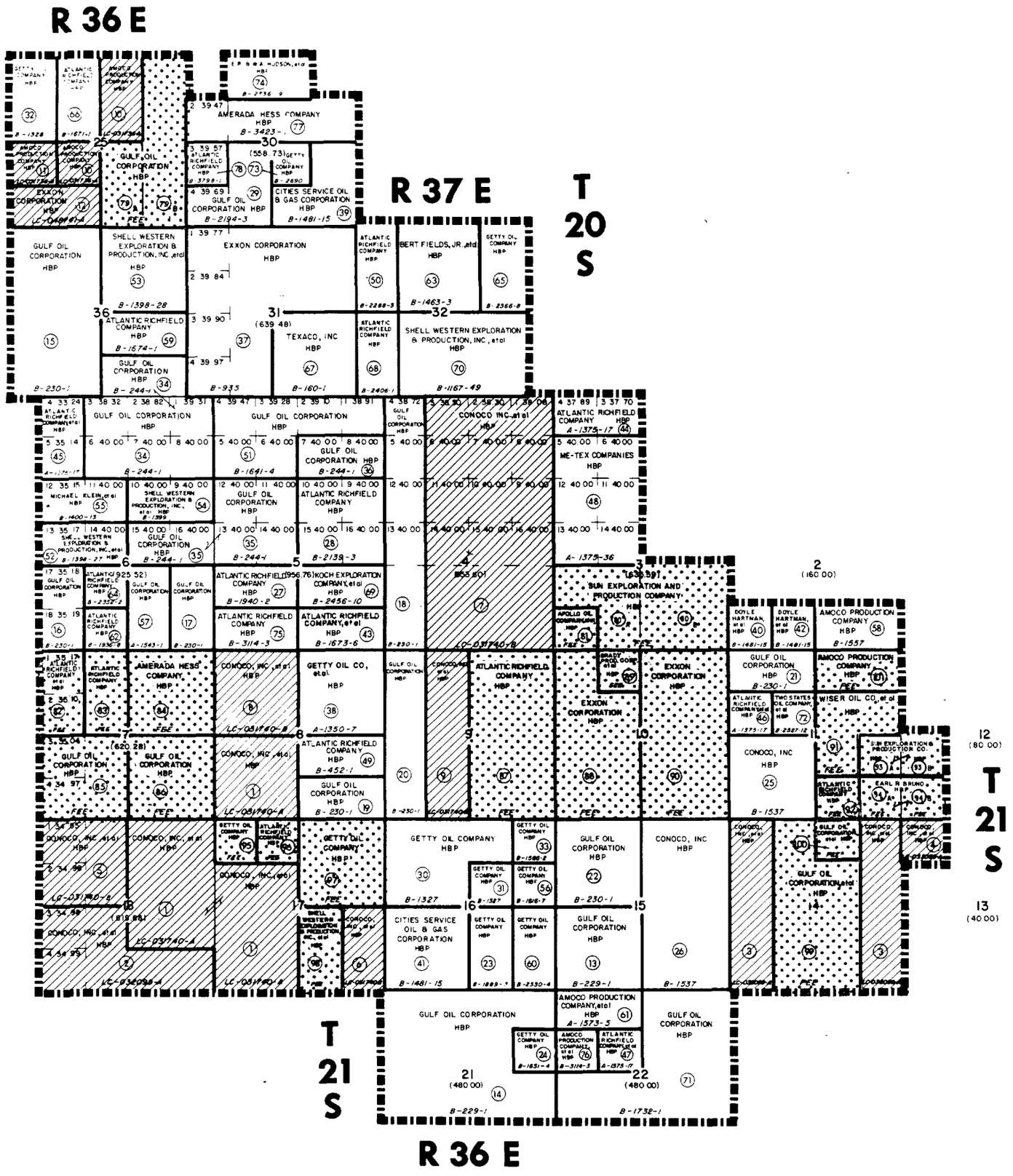

EXHIBIT "A"

EUNICE MONUMENT SOUTH UNIT AREA

LEA COUNTY, NEW MEXICO

	ACREAGE	PERCENTAGE
FEDERAL LANDS	2,734.76	19.27 %
STATE LANDS	8,274.80	58.32 %
PATENTED LANDS	3,180.28	22.41 %
TOTAL	14,189.84	100.00 %

UNIT OUTLINE (3) TRACT NUMBER

1 1/2 0 1

SCALE IN MILES

NOTE UNLESS OTHERWISE INDICATED, THE VARIOUS SECTIONS ON THIS PLAT CONTAIN 640.00 ACRES

GULF OIL CORPORATION
MIDLAND, TEXAS

EXHIBIT "B"

SCHEDULE SHOWING THE PERCENTAGE AND KIND OF OWNERSHIP OF OIL AND GAS INTERESTS IN ACCORDANCE WITH THE PARTICIPATION FORMULA FOR THE UNITIZED FORMATION FOR THE EUNICE MONUMENT SOUTH UNIT AREA LEA COUNTY, NEW MEXICO

September 27, 1984

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	SERIAL NO. AND EFFECTIVE DATE	BASIC ROYALTY OWNER AND PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTE OWNER AND PERC
Federal Lands:							
1. Meyer "A-1" (was Tract 81)	R21S-R36E, N.M.P.M. Sec. 8: SW¼ Sec. 17: SW¼, S½NW¼ Sec. 18: NE¼, N½SE¼	640.00	LC-031740-A HBP 2-19-31 Exchanged 2-1-51	U.S.A. Schedule "C"	A. E. Meyer	Atlantic Richfield Co. .92105 Helen L. Bedford .01842 Henry De Graffenreid Bedford .01842 Rachel Bedford Bowen .01842 Triton Oil & Gas Corp. .11513 Charles H. Coll .13239 Jon F. Coll .13239 James N. Coll .13241 Max W. Coll, II .13241 Etz Oil Properties, Inc. .17269 George H. Etz, Jr., Trustee of George H. Etz, Sr. Trust .17269 Ima Hays .30703 Kirby Exploration Co. .57422 Munro L. Lyeth and Patricia D. Lyeth, First of Denver A/C 11033-00-8 .41447 Onez Norman Rooney .41447 Ellis Rudy .00143 Alann P. Bedford, Trustee Alann P. Bedford Trust .01842 Southland Royalty Co. 1.38158	Conoco Inc. Amoco Producti Company Atlantic Richf Company Chevron U.S.A. Inc.

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	SERIAL NO. AND EFFECTIVE DATE	BASIC ROYALTY OWNER AND PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTA
						David M. Warren, Jr. 1.38158 Ellen Anne W. Williams .01842 Annabel Winningham .15354 The Wiser Oil Co..27631	
2. Lockhart "A-18" (was Tract 82)	T21S-R36E, N.M.P.M. Sec. 18: Lots 3,4, E½SW¼ S½ SE¼	229.97	LC-032099-A HBP 6/23/31 Exchanged 6-1-51	U.S.A. Schedule "C"	Conoco Inc. Amoco Production Company Atlantic Richfield Company Chevron U.S.A. Inc.	Amax Petroleum Corp. .05555* Amoco Production Co. .66667* Betty B. Beare .00130* Beatrice Christman Bell Estate .00782* Cecil P. Bordages, II .07291* Joyce Bordages .07292* Boys Clubs of America .03333* Braille Institute of America Agency No. 631-00 .61727* Kathryn M. Byrd .00348* Jean K. Cline .00347* Richard L. Cline, Jr. .00347* Virginia M. Drake.00521* Elks Nat'l Fdn, New England Merchants Nat'l Bank, Boston .03333* Elliott Oil Company .16667* Etz Oil Properties, Inc. .25000* George H. Etz, Jr., Trustee George H. Etz, Sr. Trust .25000* First Nat'l Bank Denver, Trustee U/W of Josephine M. Smith, Dec'd .37292* Barbara Christman Farrell .00130* Dolores Gilmer Heirs .00390* Manufacturers Hanover Trust Co. Oil Successor Trustee	Conoco Inc. 25 Amoco Production Company 25 Atlantic Richfield Company 25 Chevron U.S.A. Inc. 25

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	SERIAL NO. AND EFFECTIVE DATE	BASIC ROYALTY OWNER AND PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNI
						U/A dated 4-30-56 as amended M/B and for Charles Gutman .02777* Daniel L. Gutman, Trustee U/W of Max Gutman, Dec'd .05556* Betty Guttag .02778* Higgins Trust, Inc. .33333* Mary Jane Hyman .02778* Mary Jane Hyman, Ind. Exrx. Est. of Jack F. Hyman, Dec'd .02778* Burford I. King, Trustee 1 .04167* Patrick J. Leonard .05556* Robert J. Leonard.05555* Timothy T. Leonard .05555* Mary J. & Art V. McKone, JT .04167* Mobil Oil Corporation .33333* Mobil Oil Corp., Attn. Crude Oil & Gas Liquids Acctg. Sec. .33333* New Mexico Boys Ranch Inc. .03334* David M. Pedley .00556* John C. Pedley .00556* Lawrence L. Pedley .00555* T. A. Pedley, Jr..01666* Mrs. Reede Christman Ross .00130* Regents of Univ. of Colo. .01389* Regents of Univ. of NM .03334* Republic Nat'l Bank Dallas Test. Trustee Selma E. Andrews Tr. No. 5188-00 .71606* Jackson L. Sadler.02778* Shattuck-St. Mary's Schools .03333*		

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						Edith G. Socolow & A. Walter Socolow, Trustees U/A dated 11-24-76 .05556* Texaro Oil Company .01389* *By court decision, oil production ORRI is 6.90789% when average leasehold production per well is more than 15 BPD, and by agreement, ORRI on oil is 5% when average production per well per day is 15 bbls or less.		
3. Lockhart "B-14" (was Tract 97)	T21S-R36E, N.M.P.M. Sec. 14: W½W½ E½E½;	320.00	LC-032099-B HBP 6/23/31 Exchanged 7/1/52	U.S.A. Schedule "D"	Conoco Inc. Amoco Production Company Atlantic Richfield Company Chevron U.S.A Inc.	None	Conoco Inc. 25% Amoco Production Company 25% Atlantic Richfield Company 25% Chevron U.S.A. Inc. 25%	.647555
4. Lockhart "B-13" (was Tract 116)	T21S-R36E, N.M.P.M. Sec. 13: NW/4 NW/4	40.00	LC-032099-B HBP 6/23/31 Exchanged 7/1/52	U.S.A. Schedule "D"	Conoco Inc. Amoco Production Company Atlantic Richfield Company Chevron U.S.A. Inc.	None	Conoco Inc. 25% Amoco Production Company 25% Atlantic Richfield Company 25% Chevron U.S.A. Inc. 25%	.070883
5. Meyer "B-18" (was Tract 80)	T21S-R36E, N.M.P.M. Sec 18: Lots 1,2, E½NW¼	149.91	LC-031740-B HBP 10/26/34 Exchanged 10/1/54 Exchanged 10/1/54	U.S.A. Schedule "D"	Lois E. Meyer	None	Conoco Inc. 25% Amoco Production Company 25% Atlantic Richfield Company 25% Chevron U.S.A. Inc. 25%	.254760
6. Meyer "B-17" (was Tract 87)	T21-T36E, NM.MP.M. Sec. 17: E½SE¼	80.00	LC-031740-B HBP 10/26/34 Exchanged 10/1/54	U.S.A. Schedule "D"	Lois E. Meyer	None	Conoco Inc. 25% Amoco Production Company 25% Atlantic Richfield Company 25% Chevron U.S.A. Inc. 25%	.32314

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7. Meyer "B-4" (was Tract 48)	T21S-R36E, N.M.P.M. Sec. 4: Lot 1,2,3,6, 7,8,9,10,11, 14,15,16, E½SW¼, SE¼	714.88	LC-031740-B HBP 10/26/34 Exchanged 10/1/54	U.S.A. Schedule "D"	Lois E. Meyer	None	Conoco Inc. 25% Amoco Production Company 25% Atlantic Richfield Company 25% Chevron U.S.A. Inc. 25%	6.664506
8. Meyer "B-8" (was Tract 59)	T21S-R36E, N.M.P.M. Sec. 8: NW¼	160.00	LC-031740-B HBP 10/26/34 Exchanged 10/1/54	U.S.A. Schedule "D"	Lois E. Meyer	None	Conoco Inc. 25% Amoco Production Company 25% Atlantic Richfield Company 25% Chevron U.S.A. Inc. 25%	9.059453
9. Meyer "B-9" (was Tract 65)	T21S-R36E, N.M.P.M. Sec. 9: E½W½	160.00	LC-031740-B HBP 10/26/34 Exchanged 10/1/54	U.S.A. Scheduled "D"	Lois E. Meyer	None	Conoco Inc. 25% Amoco Production Company 25% Atlantic Richfield Company 25% Chevron U.S.A. Inc. 25%	1.326104
10. Gilluly "A" (was Tract 3)	T20S-R36E, N.M.P.M. Sec. 25: W½NE¼, NE¼SW¼	120.00	LC-031736-A HBP 3/30/37 Exchanged 3/1/57	U.S.A. Schedule "C"	Amoco Production Company	Selma E. Andrews Trust #5188 2.68525 C. R. Brauchli .01116 Roy P. and Doris M. Dolley .25000 Claradean Gallant.12500 Marvin G. Jenkins.25000 Leonard D. Keefer.37500 Julia H. Payne .01696 Julia H. Payne, individually and as Trustee u/w of Weston Payne .02768 Ethel R. Pease Trust and Ethel R. Pease, Trustee under Declaration of Trust dated 4/19/77 .25000 Union Texas Petroleum Corporation .32366 (When production is in excess of 15 BOPD, and .21580 when 15 BOPD or less) Elmer H. Wahl, Inc. .04465	Amoco Production Company 100%	.584461

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						First Interstate Bank of Lea County, Personal Representative of the Estate of Robert W. Ward, Deceased .50000 Braille Institute of America, Inc. 2.31475 Marlin H. and Muriel L. Jenkins .25000 Sun Exploration & Production Co. .06473 Margaret B. Haenni.01116		
11. Gilluly "B" Federal (was Tract 4)	T20S-R36E, N.M.P.M. Sec. 25: NW¼SW¼	40.00	LC-031736-B HBP 3/30/37 Exchanged 3/1/57	U.S.A. Schedule "C"	Amoco Production Company	None	Amoco Production Company 100%	.027077
12. Fopeano Federal (was Tract 6)	T20S-R36E, N.M.P.M. Sec. 25: S½SW¼	80.00	LC-048741-A HBP 7/1/37 Renewal 7/1/77	U.S.A. Schedule "C"	Exxon Corporation	Robert M. Light .04246 Stanley W. Light .04246 E. W. Mendez .19955 George D. Riggs .78120 Neil T. Christensen .04246 Thayer P. Christensen.04246 Ronald K. DeFord .78130 Nellie P. Fopeano .78130 Ray Hobbs .00849 Bradley T. Light .04247 R.S. and J.W. Light .35239 Donald Light Kilgore .04247	Exxon Corporation 100%	.151224

12 FEDERAL TRACTS TOTALING 2,734.76 ACRES OR 19.27% OF UNIT AREA

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STATE LANDS:								
13. J.F. Janda (NCT-C) (was Tract 95)	T21S-R36E, N.M.P.M. Sec. 15: SW¼	160.00	B-229-1 HBP 2/28/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	1.055350
14. Arnott-Ramsay (NCT-C) (was Tract 102)	T21S-R36E, N.M.P.M. Sec. 21: NW¼, N½SW¼ N½NE¼, SW¼NE¼, N½SE¼	440.00	B-229-1 HBP 2/28/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	2.739613
15. R.R. Bell (NCT-F) (was Tract 17)	T20S-R36E, N.M.P.M. Sec. 36: W½	320.00	B-230-1 HBP 2/28/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	3.195507
16. R.R. Bell (NCT-D) (was Tract 35)	T21S-R36E, N.M.P.M. Sec. 6: Lots 17,18	70.37	B-230-1 HBP 2/28/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.682139
17. R.R. Bell (NCT-B) (was Tract 38)	T21S-R36E, N.M.P.M. Sec. 6: E½SE¼	80.00	B-230-1 HBP 2/28/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	3.726787
18. Bell-Ramsey (NCT-A) (was Tract 47)	T21S-R36E, N.M.P.M. Sec. 4: Lots 4,5, 12,13 W½SW¼	238.72	B-230-1 HBP 2/28/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	1.459570
19. R.R. Bell (NCT-A) (was Tract 63)	T21S-R36E, N.M.P.M. Sec. 8: S½SE¼	80.00	B-230-1 HBP 2/28/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.426101
20. Bell-Ramsey (NCT-A) (was Tract 64)	T21S-R36E, N.M.P.M. Sec. 9: W½W½	160.00	B-230-1 HBP 2/28/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.796347
21. R.R. Bell (NCT-E) (was Tract 71)	T21S-R36E, N.M.P.M. Sec. 11: N½NW¼	80.00	B-230-1 HBP 2/28/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.3559[illegible]
22. R.R. Bell (NCT-C) (was Tract 94)	T21S-R36E, N.M.P.M. Sec. 15: NW¼	160.00	B-230-1 HBP 2/28/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	2.6833[illegible]
23. State "D" (was Tract 92)	T21S-R36E, N.M.P.M. Sec. 16: W½SE¼	80.00	B-1889-3 HBP 6/8/28	State of New Mexico 12½	Getty Oil Company	None	Getty Oil Company 100%	.9185[illegible]

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24. State "G" (was Tract 103)	T21S-R36E, N.M.P.M. Sec. 21: SE¼NE¼	40.00	B-1651-4 HBP 9/18/28	State of New Mexico 12½	Getty Oil Company	None	Getty Oil Company 100%	.277424
25. State "D"-Battery 2 (was Tract 75)	T21S-R36E, N.M.P.M. Sec. 11: SW¼	160.00	B-1537 HBP 9/25/28	State of New Mexico 12½	Conoco Inc.	None	Conoco Inc. 100%	.474353
26. State "D" (was Tract 96)	T21S-R36E, N.M.P.M. Sec. 15: E½	320.00	B-1537 HBP 9/25/28	State of New Mexico 12½	Conoco Inc.	None	Conoco Inc. 100%	1.957890
27 State "E" (was Tract 43)	T21S-R36E, N.M.P.M. Sec. 5: N½SW¼	80.00	B-1940-2 HBP 10/1/28	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Company 100%	2.680609
28. State "H" (was Tract 42)	T21S-R36E, N.M.P.M. Sec. 5: Lots 9,10, 15, 16	160.00	B-2139-3. HBP 10/5/28	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Company 100%	.934498
29. Sunshine (was Tract 10)	T20S-R37E, N.M.P.M. Sec. 30: Lot 4, E½SW¼	119.69	B-2194-3 HBP 10/26/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.405359
30. Skelly"B" State (was Tract 88)	T21S-R36E, N.M.P.M. Sec. 16: NW¼, NW¼NE¼	200.00	B-1327 HBP 11/2/28	State of New Mexico 12½	Getty Oil Company	None	Getty Oil Co. Company 100%	1.328423
31. Mexico "V" (was Tract 117)	T21S-R36E, N.M.P.M. Sec. 16: SW¼NE¼	40.00	B-1327 HBP 11/2/28	State of New Mexico 12½	Getty Oil Company	None	Getty Oil Company 100%	.137520
32. Skelly 'H' State (was Tract 1)	T20S-R36E, N.M.P.M. Sec. 25: W½NW¼	80.00	B-1328 HBP 11/2/28	State of New Mexico 12½	Getty Oil Company	None	Getty Oil Company 100%	.427150
33. State "AW" (was Tract 89)	T21S-R36E, N.M.P.M. Sec. 16: NE¼NE¼	40.00	B-1566-2 HBP 11/20/28	State of New Mexico 12½	Getty Oil Company	None	Getty Oil Company 100%	.16979
34. H. T. Orcutt (NCT-C) (was Tract 20)	T20S-R36E, N.M.P.M. Sec. 36: S½SE¼ T21S-R36E, N.M.P.M. Sec. 6: Lots 1,2,3, 6,7,8	316.45	B-244-1 HBP 11/22/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	3.55978

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35. H. T. Orcutt (NCT-A) (was Tract 34)	T21S-R36E, N.M.P.M. Sec. 5: Lots 11,12, 13, 14 Sec. 6: Lots 15, 16	240.00	B-244-1 HBP 11/22/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	1.701394
36. H. T. Orcutt (NCT-B) (was Tract 40)	T21S-R36E, N.M.P.M. Sec. 5: Lots 7,8	80.00	B-244-1 HBP 11-22-28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.361025
37. Aggies State (was Tract 21)	T20S-R37E, N.M.P.M. Sec. 31: Lots, 1,2, 3,4 E½W½, NE¼	479.48	B-935 HBP 11-22-28	State of New Mexico 12½	Exxon Corporation	None	Exxon Corporation 100%	1.962315
38. State "A" (was Tract 60)	T21S-R36E, N.M.P.M. Sec. 8: NE¼	160.00	A-1350-7 HBP 11/26/28	State of New Mexico 12½	Gulf Oil Corporation Getty Oil Company Sun Exploration and Production Company	None	Gulf Oil Corporation 50% Getty Oil Company 25% Sun Exploration and Production Company 25%	1.770012
39. State "F" (was Tract 13)	T20S-R37E, N.M.P.M. Sec. 30: E½SE¼, SW¼SE¼	120.00	B-1481-15 HBP 11/26/28	State of New Mexico 12½	Cities Service Oil & Gas Corporation	None	Cities Service Oil & Gas Corporation 100%	.244360
40. Rasmussen State (was Tract 70)	T21S-R36E, N.M.P.M. Sec. 2:SW¼SW¼	40.00	B-1481-15 HBP 11/26/28	State of New Mexico 12½	Cities Service Oil & Gas Corporation	Pinto Exploration Company .84875	Doyle Hartman 66.6666% Carl Pfluger 33.3333%	.076549
41. State "C" (was Tract 91)	T21S-R36E, N.M.P.M. Sec. 16: SW¼	160.00	B-1481-15 HBP 11/26/28	State of New Mexico 12½	Cities Services Oil & Gas Corporation	None	Cities Service Oil & Gas Corporation 100%	.751093
42. State "G" (was Tract 113)	T21S-R36E, N.M.P.M. Sec. 2: SE¼SW¼	40.00	B-1481-15 HBP 11/26/28	State of New Mexico 12½	Cities Service Oil & Gas Corporation	None	Doyle Hartman 50% Carl Pfluger 50%	.064967
43. State "C" (was Tract 46)	T21S-R36E, N.M.P.M. Sec. 5: S½SE¼	80.00	B-1673-6 HBP 11/30/28	State of New Mexico 12½	Atlantic Richfield Co. Getty Oil Co.	None	Atlantic Richfield Company 50% Getty Oil Co. 50%	1.269274
44. State "L" (was Tract 49)	T21S-R36E, N.M.P.M. Sec. 3: Lots 3,4	75.59	A-1375-17 HBP 12/5/28	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Company 50% Catron W.I. 50%	.126778

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45. State "L" Battery 2 (was Tract 28)	T21S-R36E,N.M.P.M. Sec. 6: Lots 4,5,	68.38	A-1375-17 HBP 12/5/28	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Co. 50% Catron W.I. 50%	.477689
46. State "L" - Battery 3 (was Tract 72)	T21S-R36E, N.M.P.M. Sec. 11: SW¼NW¼	40.00	A-1375-17 HBP 12/5/28	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Co. 50% Catron W.I. 50%	.270790
47. State "L" - Battery 4 (was Tract 106)	T21S-R36E, N.M.P.M. Sec. 22: SE¼NW¼	40.00	A-1375-17 HBP 12/5/28	State of New Mexico 12½	Atlantic Richfield Company	None	Atlantic Richfield Company 50% Catron W.I. 50%	.265867
48. Wallace State (was Tract 50)	T21S-R36E, N.M.P.M. Sec. 3: Lots 5,6, 11,12,13,14	240.00	A-1375-36 HBP 12/5/28	State of New Mexico 12½	Thomas B. Catron, III and John S. Catron	Thomas B. Catron,III and John S. Catron 12.5%	Me-Tex Companies 87.5% Thomas B. Catron,III and John S. Catron 6.5% Thomas B. Catron, III Trustee U/W/O Sue C. Bergere 6.5%	.290369
49. State "B" (was Tract 62)	T21S-R36E, N.M.P.M. Sec. 8:N½SE¼	80.00	B-452-1 HBP 12/5/28	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%	.751002
50. State "O" (was Tract 23)	T20S-R37E, N.M.P.M. Sec. 32: W½NW¼	80.00	B-2288-3 HBP 12/13/28	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%	.050367
51. Healsey State (was Tract 39)	T21S-R36E, N.M.P.M. Sec. 5: Lots 1,2,3, 4,5,6	236.76	B-1641-4 HBP 12/17/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	2.723870
52. State "F" (was Tract 33)	T21S-R36E, N.M.P.M. Sec. 6: Lots 13,14	75.17	B-1398-27 HBP 12/26/28	State of New Mexico 12½	Shell Western Exploration & Production, Inc. and El Paso Natural Gas Co.	None	Shell Western Exploration & Production, Inc. 100%	.237670
53. State "K" (was Tract 18)	T20S-R36E, N.M.P.M. Sec. 36: NE¼	160.00	B-1398-28 HBP 12/26/28	State of New Mexico 12½	Shell Western Exploration & Production, Inc. and El Paso Natural Gas Co.	None	Shell Western Exploration & Production, Inc. 100%	5.1124
54. State "EE" (was Tract 32)	T21S-R36E, N.M.P.M. Sec. 6: Lots 9,10	80.00	B-1399-15 HBP 12/26/28	State of New Mexico 12½	Shell Western Exploration & Production, Inc.	None	Shell Western Exploration & Producton, Inc.	.48583

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					and El Paso Natural Gas Co.		100%	
55. State "G" (was Tract 31)	T21S-R36E, N.M.P.M. Sec. 6: Lots 11,12	75.15	B-1400-13 HBP 12/26/28	State of New Mexico 12½	Shell Western Exploration & Production, Inc. and El Paso Natural Gas Co.	None	John H. Hendrix 30% Bruce A. Wilbanks 28.75% Michael Klein 14.375% Suzanne H. Klein 14.375% Thomas W. Ellison 6.25% Mrs. Ethel T. Dennis 6.25%	.221097
56. State "AX" (was Tract 90)	T21S-R36E, N.M.P.M. Sec. 16: SE¼NE¼	40.00	B-1616-7 HBP 12/27/28	State of New Mexico 12½	Getty Oil Company	None	Getty Oil Co. 100%	.186322
57. Graham State (NCT-"E") (was Tract 37)	T21S-R36E, N.M.P.M. Sec. 6: W½SE¼	80.00	A-1543-1 HBP 12/29/28	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.520475
58. State "C"-Tract 11 (was Tract 114)	T21S-R36E, N.M.P.M. Sec. 2: S½SE¼	80.00	B-1557 HBP 12/29/28	State of New Mexico 12½	Amoco Production Company	None	Amoco Production Company 100%	.031885
59. State "M" (was Tract 19)	T20S-R36E, N.M.P.M. Sec. 36: N½SE¼	80.00	B-1674-1 HBP 12/31/28	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%	.882435
60. State "E" (was Tract 93)	T21S-R36E, N.M.P.M. Sec. 16: E½SE¼	80.00	B-2330-4 HBP 12/31/28	State of New Mexico 12½	Getty Oil Co.	None	Getty Oil Co. 100%	.559636
61. State "I" (was Tract 104)	T21S-R36E, N.M.P.M. Sec. 22: N½NW¼	80.00	A-1573-5 HBP 1/3/29	State of New Mexico 12½	Amoco Production Company	First National Bank of Midland, Trustee of the Dorothy Louise Henderson Trust No. 862 .13021 First National Bank of Midland, Independent Executor of the Estate of A.N. Hendrickson Trust No. 1851 1.56250 First National Bank of Midland Trustee of the Jeanne Edna Hunt Trust No. 863 .13021	Amoco Production Company 50.87% Landreth Production Corporation (carried working interest) 49.13%	.39192

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	SERIAL NO. AND EFFECTIVE DATE	BASIC ROYALTY OWNER AND PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE
						First National Bank of Midland, Trustee of the Patricia Olson Trust No. 2090-12 .01953 First National Bank of Midland, Trustee of the Deborah K. Thompson Trust No. 2094-12 .01953 First National Bank of Midland, Trustee of the Donald Thompson Trust No. 2091-12 .01953 First National Bank of Midland, Trustee of the Franklin G. Thompson Trust No. 1981-12, .09766 First National Bank of Midland, Trustee of the Franklin Thompson, Jr. Trust No. 2093-12 .01953 First National Bank of Midland, Trustee of the Thomas Thompson Trust No. 2092-12 .01953 First National Bank of Midland, trustee of the Sadie Watson Trust No. 1406 .39063 First National Bank of Midland, Trustee of the Sadie Watson Trust No. No. 1407 .39062 Martin H. Thompson .19531 Helen Joy Smith .13021	
62. State "K" (was Tract 36)	T21S-R36E, N.M.P.M. Sec. 6: SE¼SW¼	40.00	B-1936-8 HBP 1/11/29	State of New Mexico 12%	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%
63. Turner State	T20S-R37E,N.M.P.M. Sec. 32: E½NW¼, W½NE¼	160.00	B-1463-3 HBP 1/11/29	State of New Mexico 12½	Bert Fields, Jr.	First Hutchings-Sealy National Bank of Galveston .285	F. W. Turner, Jr. Estate .5% Bert Fields,Jr. 25% J. F. Shelby Estate 25% W. A. and E. R. Hudson 10.625% E. R. Hudson, Agent 1.875%

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	SERIAL NO. AND EFFECTIVE DATE	BASIC ROYALTY OWNER AND PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPATION OF TRACT IN UNIT
(A) (Was Tract 24)	Sec. 32: E½NW¼, SW¼NE¼	(120.00)					% of Tract Participation: F.W. Turner, Jr. Estate 32.1429%* Bert Fields, Jr. 28.5714%* J.F. Shelby Estate 28.5714%* W.A. and E.R. Hudson 9.1071%* E.R. Hudson Agent 1.6072%*	*(.203418)
(B) (Was Tract 118)	Sec. 32: NW¼NE¼	(40.00)					Fred Turner, Jr. Estate 75.00%* W.A. and E.R. Hudson 21.25%* E.R. Hudson, Agent 3.75%*	*(.029058)
64. State "K" (was Tract 36)	T21S-R36E, N.M.P.M. Sec. 6: NE¼SW¼	40.00	B-2352-2 HBP 1/11/29	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%	.067881
65. State "AY" (was Tract 25)	T20S-R37E, N.M.P.M. Sec. 32: E½NE¼	80.00	B-2366-8 HBP 1/11/29	State of New Mexico 12½	Getty Oil Co.	None	Getty Oil Co. 100%	.009005
66. State "P" (was Tract 2)	T20S-R36E, N.M.P.M. Sec. 25: E½NW¼	80.00	B-1671-1 HBP 1/14/29	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%	.512798
67. State "H"(NCT-I) (was Tract 22)	T20S-R37E, N.M.P.M. Sec. 31: SE¼	160.00	B-160-1 HBP 1/15/29	State of New Mexico 12½	Texaco Inc.	None	Texaco Inc. 100%	.63553
68. State "196" (was Tract 26)	T20S-R37E, N.M.P.M. Sec. 32: W½SW¼	80.00	B-2406-1 HBP 1/15/29	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%	.22024
69. State "A" (was Tract 44)	T21S-R36E, N.M.P.M. Sec. 5: N½SE¼	80.00	B-2456-10 HBP 2/26/29	State of New Mexico 12½	Koch Industries Inc.	Stephen L. Chandler 14.0625% Wells Fargo Bank, Tr. FBO Tupper Ansel Blake 14.0625% Smiser Investment Co.	Koch Exploration Co. 95% First National Bank Wichita, Trustee U/W of William E. Perdew 5%	.34377

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	SERIAL NO. AND EFFECTIVE DATE	BASIC ROYALTY OWNER AND PERCENTAGE	LESSEE OF RECORD	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICI OF TR IN U
						9.375%		
70. State "J" (was Tract 27)	T20S-R37E, N.M.P.M. Sec. 32: SE¼, E½SW¼	240.00	B-1167-49 HBP 9/15/32	State of New Mexico 12%	El Paso Natural Gas Company and Shell Western Exploration and Production, Inc.	None	Shell Western Exploration and Production, Inc. 100%	.287522
71. Harry Leonard (NCT-A) (was Tract 107)	T21S-R36E, N.M.P.M. Sec. 22: NE¼, N½SW¼ N½SE¼	320.00	B-1732-1 HBP 2/28/33	State of New Mexico 12½	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.825987
72. State "B" (was Tract 73)	T21S-R36E, N.M.P.M. Sec. 11: SE¼NW¼	40.00	B-2527-12 HBP 2/10/34	State of New Mexico 12½	Two States Oil Company	None	Two States Oil Company 81.25% The Herman R. Crile Sr. Revocable Trust dated 9-28-76 18.75%	.073299
73. Skelly "G" (was Tract 12)	T20S-R37E, N.M.P.M. Sec. 30: NW¼SE¼	40.00	B-2690 HBP 4/2/34	State of New Mexico 12½	Getty Oil Company	None	Getty Oil Co. 100%	.081241
74. Phillips (was Tract 7)	T20S-R37E, N.M.P.M. Sec. 30: NE¼NW¼, NW¼NE¼	80.00	B-2736-9 HBP 4/10/34	State of New Mexico 12½	Wm. A. and Edward R. Hudson	William A. Hudson .072917 B.D. and Edward R. Hudson .145833	W.A. and E.R. Hudson 85% E.R. Hudson, Agent 15%	.029017
75. State "G" (was Tract 45)	T21S-R36E, N.M.P.M. Sec. 5: S½SW¼	80.00	B-3114-3 HBP 9/24/34	State of New Mexico 12½	Atlantic Richfield Co.	Bradley Resources Corp. 5.46870	Atlantic Richfield Company 100%	.693134
76. State "J" (was Tract 105)	T21S-R36E, N.M.P.M. Sec. 22: SW¼NW¼	40.00	B-3114-4 HBP 9/24/34	State of New Mexico 12½	Amoco Production Co.	None	Atlantic Richfield Company 37.5% Amoco Production Co. 31.794% Landreth Production Corporation (carried working interest) 30.706%	.233315
77. State "W" (was Tract 8)	T20S-R37E, N.M.P.M. Sec. 30: Lot 2, SE¼ NW¼, S½NE¼	159.47	B-3423-1 HBP 10/29/34	State of New Mexico 12½	Amarada Hess Corporation	None	Amerada Hess Corporation 100%	.14[illegible]70
78. State "193" (was Tract 9)	T20S-R37E, N.M.P.M. Sec. 30: Lot 3	39.57	B-3798-1 HBP 4/22/35	State of New Mexico 12½	Atlantic Richfield Co.	None	Atlantic Richfield Company 100%	.05[illegible]91

66 STATE TRACTS TOTALING 8,274.80 ACRES OR 58.32% OF UNIT AREA

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
PATENTED LANDS:							
79. White (NCT-A) (was Tract 5)	T20S-R36E, N.M.P.M. Sec. 25: E½NE¼, SE¼	240.00	HBP	See "A" and "B" below	None	Gulf Oil Corporation 100%	.714308*
A.	Sec. 25: W½SE¼	(80.00)		Texaro .19530 Elmer H. Wahl .07810 Marguerite H. Pettway .19530 Susan Trimble Eubank .19530 Gean Trimble Heidmann .19540 John R. Hudspeth .19530 Union Texas Petroleum 1.17190 James Seth .39060 Oliver Seth .39060 Burford I. King, Trustee .58590 W. W. White, First National Bank of Denver, Lawrence W. White, Trust 7.81250 Weston Payne Trust .04842 Julia H. Payne .02968 Ruth G. Pickens Grandchildrens Joint Venture .78130 Sun Exploration & Production .23440			(.127211)*
B.	Sec. 25: E½E½	(160.00)		Marguerite H. Pettway .19530 Susan Trimble Eubank .19530 Gean Trimble Heidmann .19530 John R. Hudspeth .19530 James Seth .39060 Oliver Seth .39060 W. W. White and The Merchants National Bank of Cedar Rapids, Iowa 3.64586 W. W. White 3.64584 First National Bank of Denver Lawrence W. White Family Trust 1.82290 Henry Vandenburgh, Trustee U/W/O Virgil White 1.82300			(.587097)*
80. Akens (was Tract 51)	T21S-R36E, N.M.P.M. Sec. 3: SE¼, N½SW¼ SE¼SW¼	280.00	HBP	See "A" and "B" below	None	Sun Exploration and Production Company 100%	.49885*
A.	Sec. 3: SE¼	(160.00)		Atlantic Richfield Company 2.083400 Marjorie Cone Kastman .253900			*(.226542)

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				S. E. Cone, Jr. .253900 Wilma Leigh Sparks .270840 Clovilla Martin .270840 Janie Waide Dean .270840 Hafford Akens .270840 Rowland Akens .270840 Tortuga Oil & Gas, Inc. .013100 Grace M. Larson .000500 Katherine Cone Keck .253900 John R. Royall Tr. U/W of Fannie May Royall, Dec'd .001734 N. R. Royall, III Tr. U/W of Fannie May Royall, Dec'd. .001733 Tucker K. Royall Tr. U/W of Fannie May Royall, Dec'd. .001733 Liston Archer .020900 David A. Bower, Agent .046200 Jo Layne Antry .156200 Penn Brothers, Inc. .356500 J. R. Bower, Jr. .135800 Est. of O. L. Coleman, Dec'd. c/o Emma Liston Archer Trst. .395800 American State Bank, TTEE of James Robert Nislar Tr. .048825 American State Bank, TTEE of O. L. Nislar, Jr. Tr. .048825 Ora Lee Nislar .097650 First National Bank and Vena H. Long, Ind. Exec. est. of F. O. Long, Dec'd. No. 222-05963 .001000 Mobil-G. C. Corporation 1.562500 Eunice Cone Gibson .117200 Everett R. Jones, Jr. .015400 Charles W. Grimes II and Philo W. Grimes, TTEE of the C. W. Grimes Trust .302800 Mrs. Exor Megan, Gdn of Est. of Maude Eagle Pfouts NCM .000500 Mobil Oil Corporation 3.12500 Nancy Eliz. Penson 1.069700 Petrust Corp. of America			

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				.166700 James E. Wallace, Ind. Exec. of Est. of Paul H. Pewett .146500 Mrs. Mary Vern Ransom .208300 Francis K. Royall .003100 John R. Royall Trustee U/W of N. R. Royall, Jr. Dec'd. .000700 N. R. Royall, III Trustee U/W of N. R. Royall, Jr. Dec'd. .000700 Tucker K. Royall, Trustee U/W of N. R. Royall, Jr. Dec'd. .000700 Jack L. Hart .001800 Georgia A. Stieren Ind. Execx. of Est. of Jack Stieren, Dec'd. .015200 W. E. F. Holding Inc. c/o Chemical Bank Acct. No. 092-016073 .041600 Nora Walker .000500 J. H. Williams .195300			
B.	Sec. 3: N½SW¼; SE¼SW¼	(120.00)		Atlantic Richfield Company 2.083400 Marjorie Cone Kastman .253900 S. E. Cone, Jr. .253900 Abraham Abramson Est. .133900 Tortuga Oil & Gas, Inc. .013100 Grace M. Larson .000500 Katherine Cone Keck .253900 John R. Royall Tr. U/W of Fannie May Royall Dec'd. .001734 N. R. Royall III Tr. U/W of Fannie May Royall Dec'd. .001733 Tucker K. Royall Tr. U/W of Fannie May Royall Dec'd. .001733 Liston Archer .020900 David A. Bower, Agent .046200 Jo Layne Antry .156200 Penn Brothers, Inc. .356500 J. R. Bower, JR. .135800 Rosemann Mahoney .025100 Rosemann Mahoney, Exec. of the			*(.272301)

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				est. of Nellie P. Hyland, Dec'd. .000000			
				Rita S. Holch .167400			
				Charles H. Sanford, Jr. .167400			
				James D. Corbett .056800			
				John L. Frothingham .334800			
				Rhea S. Greenwood .167500			
				Albert Muldavin .133900			
				Charles Spencer Sarnoff. 167400			
				Est. of O. L. Coleman Dec'd c/o Emma Liston Archer Trst. .395800			
				American State Bank, TTEE of James Robert Nislar Tr. .048825			
				American State Bank, TTEE of O. L. Nislar, Jr. Tr. .048825			
				Ora Lee Nislar .097650			
				First National Bank and Vena H. Long, Ind. Exec. est. of F. O. Long, Dec'd. No. 222-05963 .001000			
				Mobil-G. C. Corporation 1.562500			
				Eunice Cone Gibson .117200			
				Everett R. Jones, Jr. .015400			
				Charles W. Grimes II and Philo W. Grimes, TTEE of the C. W. Grimes Trust .302800			
				Mrs. Exor Megan, Gdn. of Est. of Maude Eagle Pfouts NCM .000500			
				Mobil Oil Corporation 3.125000			
				Nancy Eliz. Penson 1.069700			
				Petrust Corp. of America .166700			
				James E. Wallace, Ind. Exec. of Est. of Paul H. Pewett .146500			
				Mrs. Mary Vern Ransom .208300			
				Francis K. Royall .003100			
				John R. Royall Trustee U/W of N. R. Royall, Jr. Dec'd. .000700			
				N. R. Royall, III Trustee U/W of N. R. Royall, Jr. Dec'd. .000700			
				Tucker K. Royall, Trustee U/W of N. R. Royall, Jr. Dec'd.			

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTER OWNER AND PERCE
				.000700		
				Jack L. Hart .001800		
				Georgia A. Stieren Ind. Execx. of Est. of Jack Stieren, Dec'd. .015200		
				W. E. F. Holding Inc. c/o Chemical Bank Acct. No. 092-016073 .041600		
				Nora Walker .000500		
				J. H. Williams .195300		
81. Akens (was Tract 52)	T21S-R36E, N.M.P.M. Sec. 3: SW¼SW¼	40.00	HBP	Sun Exploration & Production Company 1.171870	None	Kenneth R. Boss
				Abraham Abramson Est. .468750		Apollo Oil Company
				Allis Varga Corbett .029300		S&S Engineering
				Jo Layne Antry .078120		
				David Armstrong Bower, Indiv. and as Agent .023120		
				Getty Oil Company 1.171870		
				Tortuga Oil and Gas, Inc. .001630		
				Tortuga Oil and Gas, Inc. .003270		
				Tortuga Oil and Gas, Inc. .001640		
				James E. Wallace, Indep. Exec. of Est. of Paul H. Pewitt .146480		
				Penn Brothers, Inc. .178250		
				Rosemann Mahoney, Exrx. of Est. of Nelle P. Hyland .087890		
				J. R. Bower, Jr. .067860		
				Marjorie Cone Kastman .253900		
				Petrust Corp. of America.083330		
				Petroleum Landowners Corp., Ltd. .703120		
				Mary Vern Ransom .104170		
				WEF Holding Incorporated.020830		
				Emma Liston Archer, Trustee U/W of O. L. Coleman .197920		
				James D. Corbett .091150		
				Eunice Cone Gibson .117190		
				Everett R. Jones, Jr. .003850		
				Everett R. Jones, Jr. .003860		
				Nancy Elizabeth Penson .534860		
				John R. Royall, Trustee of the John R. Royall Trust, U/W of N. R. Royall, Jr. .000349		
				Liston Archer .010430		
				Atlantic Richfield Company		

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING OWNER AND
				.833340		
				Atlantic Richfield Company .208330		
				S. E. Cone, Jr. .253910		
				John L. Frothingham 1.171880		
				Rhea S. Greenwood .585940		
				Carl E. Holch & Rita S. Holch .585935		
				Katherine Adeline Cone Keck .253910		
				Grace M. Larson .000260		
				Philo W. Grimes and Charles W. Grimes, II, Trustees of the C. W. Grimes Trust .224610		
				Mobil Producing Texas and New Mexico .781250		
				Albert Muldavin .468750		
				Ora Lee Nislar .097660		
				American State Bank, Trustee of O. L. Nislar, Jr. Trust .048830		
				American State Bank, Trustee of James Robert Nislar Trust .048830		
				Mrs. Frances K. Royall .000520		
				Mrs. Frances K. Royall .001045		
				Jack Hart .001400		
				Jack Hart .000260		
				John R. Royall and Tucker R. Royall, Ind. Exec. of Est. of Fannie May Royall .002610		
				John R. Royall, Trustee of the N. R. Royall, III Trust .000348		
				John R. Royall, Trustee of the Tucker K. Royall Trust U/W of N. R. Royall, Jr. .000348		
				Charles H. Sanford, Jr. and Virginia L. Sanford .585935		
				Charles Spencer Sarnoff .585930		
				Georgia Ann Stieren, Indep. Exrx of Est. of Jack Stieren .007590		
				Nora Walker .000260		
				Elizabeth G. Williams, Personal Representative of Est. of J. H. Williams .195310		

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICI OF TR IN U
82. H.L. Houston (was Tract 53)	T21S-R36E, N.M.P.M. Sec. 7: Lots 1,2	70.27	HBP	Amoco Production Company 1.17188 Archbishopric of New York 2.29690 Atlantic Richfield Company 3.51570 Bradley Resources Corp. .39070 R. H. Brin, Jr. .03250 Jessie Blevins Crump, David C. Blevins and Ft. Worth Nat'l Bank, Trustees U/W of Jones Lester Crump, Acct. #2312 .39060 RepublicBank First Nat'l Midland and Jessie Blevins Crump, Co-Trustees, Trust #1069 .39060 Jacqueline Brin Goldberg.03260 F. C. Gottesman .06510 Daniel L. Gutman, Indep. Exec. of Est. of Max Gutman .06510 A. F. Houston 3.12500 Mary Jane Hyman .03260 Mary Jane Hyman, Trustee U/W of Jack F. Hyman .03250 B. I. King Trust #1 .04880 Edith Socolow and A. Walter Socolow, Trustees U/A dated 11-24-76 .06510 Edith Fabyn Read, Alexander Duncan Read and Howard E. Cox, Trustees U/W of William A. Read .39070 Texaro Oil Company .01620 W. B. Watson, Agent and Attorney-in-fact .43750	None	Atlantic Richfield Company 50% Getty Oil Company 50%	.500113
83. H. L. Houston "MA" (was Tract 54)	T21S-R36E, N.M.P.M. Sec. 7: E½NW¼	80.00	HBP	Atlantic Richfield Company 3.12500 Atlantic Richfield Company .39062 Bradley Resources Corp. .39062 Royal H. Brin, Jr. .03256 Jessie Blevins Crump and RepublicBank First Nat'l Midland, Co-Trustees, Trust No. 1069 .39062 Jessie B. Crump, David C. Blevins and The Fort Worth	None	Atlantic Richfield Company 100%	.1[illegible]757

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				Nat'l Bank, Trustees of the Joe and Jessie Crump Fund Acct. 2312 .39063 Jacqueline Brin Goldberg.03256 Morris & Fay C. Gottesman .06510 Daniel L. Gutman, Trustee u/w/o Max Gutman .06510 Aubrey F. Houston 1.56250 Aubrey F. Houston, Admx. of H. L. Houston Estate 1.56250 Mary Jane Hyman .03255 Mary Jane Hyman, Trustee u/w/o Jack F. Hyman .03255 Nathan Kalvin/B. I.King .04883 Midwest Oil Corp. 1.17188 Edith Fabyn Read, Alexander Duncan Read, and Howard E. Cox, Trustees u/w/o William A. Read .39062 Archbishopric of New York 2.29688 Edith G. Socolow and A. Walter Socolow .06510 Texaro Oil Company .01628 William B. Watson, Agent and Attorney-in-Fact .43750			
84. Houston (was Tract 55)	T21S-R36E, N.M.P.M. Sec. 7: NE¼	160.00	HBP	Amoco Production Co. 1.17188 Atlantic Richfield Company 3.51563 Archbishopric of New York 2.29687 Bradley Resources Corp. .39063 Jenson Western Title & Royalty Corp., c/o Bank of America, Acct. 0395307791 .39063 Royal H. Brin, Jr. .03255 Jessie Blevins Crump and RepublicBank First Nat'l Midland, Co-Trustees, Trust No. 1069 .39063 Jessie B. Crump, David C. Blevins and Fort Worth Nat'l Bank, Trustees u/w/o Jones Lester Crump .39062 Jacqueline Brin Goldberg.03255 Fay Combel Gottesman .06510 Daniel L. Gutman, Trustee u/w/o	None	Amerada Hess Corporation 100%	1.153271

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPATION OF TRACT IN UNIT
				Max Gutman .06510 Mrs. A. F. Houston, Indiv. and as Com. Admx. of Estate of H. L. Houston 3.12500 Mary Jane Hyman .03255 Mary Jane Hyman, Trustee u/w/o Jack F. Hyman .03255 Burford I. King, Trustee No. 1 .04883 Edith G. Socolow and A. Walter Socolow .06510 Texaro Oil Company .01627 William B. Watson, Agent and Attorney-in-Fact .43751			
85. Mollie Campbell (was Tract 56)	T21S-R36E, N.M.P.M. Sec. 7: Lots 3,4, E½SW¼	150.01	HBP	Home Stake Royalty Corporation .02062 Robert A. Venable, Testamentary Executor of Estate R. H. Venable .19530 Atlantic Richfield Co. 4.23180 Home Stake Oil & Gas Co. .02062 Texaro Oil Company .08600 Ashland Exploration, Inc. .78130 Emma Liston Archer, Trustee of Est. of O. L. Coleman .37110 Royal H. Brin, Jr. .03260 Mollie A. Campbell .44640 Jacqueline Brin Goldberg .03260 Clem Ronald Hooper .22320 Aubrey F. Houston .89290 Myrtle Pevehouse .11160 Mary Vern Ransom .39060 Wm. A. Read, Est. .39060 Lois Cone Tekell .11160 The Wiser Oil Company .39060 Eunice Cone Gibson .44640 Rachel Louise Warner .11720 Mary Jane Hyman .03250 Mary Jane Hyman, Trustee under the will of Jack F. Hyman, deceased .03260 Catherine Bowe Est. .00650 Vivian Bowe .00650 Fluor Oil and Gas Corporation .78130	None	Gulf Oil Corporation 100%	.185457

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPATI OF TRACT IN UNIT
				Daniel L. Gutman, Trustee under the will of Max Gutman .06510 Burford I. King, Trustee .25810 Fay Combel Gottesman .06510 Gerald Hamil and Dolores Alberta Hooper .22320 Delma Inez Campbell .44640 Edith G. Socolow and A. Walter Socolow, Trustees U/A dated 11/24/76 .06510 Liston Archer .01950 Thomas B. Wilson .02170 Robert Booth Kellough .06510 William G. and Marcellyn J. Seal .00072 Lone Star Production Co. .83710 The Ruth G. Pickens Grandchildren Joint Venture .27900 Jean Anderson Simpson .00072 Emely Ann Edwards .00072			
86. A. F. Houston (was Tract 57)	T21S-R36E, N.M.P.M. Sec. 7: SE¼	160.00	HBP	Edith G. Socolow and A. Walter Socolow, Trustees U/A dated 11/24/76 .06510 Liston Archer .01950 Thomas B. Wilson .02170 Robert Booth Kellough .06510 William G. and Marcellyn J. Seal .00072 Lone Star Production Co. .83710 The Ruth C. Pickens Grandchildren Joint Venture .27900 Jean Anderson Simpson .00072 Emely Ann Edwards .00072 Mary Jane Hyman .03250 Mary Jane Hyman, Trustee under will of Jack E. Hyman, deceased .03260 Catherine Bowe Est. .00650 Vivian Bowe .00650 Fluor Oil and Gas Corp. .78130 Daniel L. Gutman, Trustee	Atlantic Richfield Company 1.05150	Gulf Oil Corporation 100%	.649685

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				under will of Max Gutman .06510 Burford I. King, Trustee .25810 Fay Combel Gottesman .06510 Gerald Hamil Hooper and Dolores Alberta Hooper .22320 Delma Inez Campbell .44640 Royal H. Brin, Jr. .03260 Mollie A. Campbell .44640 Jacqueline Brin Goldberg .03260 Clem Ronald Hooper .22320 Aubrey F. Houston .89290 Myrtle Pevehouse .11160 Mary Vern Ransom .39060 Wm. A. Read Est. .39060 Lois Cone Tekell .11160 The Wiser Oil Company .39060 Eunice Cone Gibson .44640 Rachel Louise Warner .11720 Robert A. Venable, Testamentary Executor of the Estate of R.H. Venable .19530 Home Stake Royalty Corporation .02062 Atlantic Richfield Company 3.18030 Home Stake Oil and Gas Co. .02062 Texaro Oil Company .08600 Ashland Exploration Inc. .78130 Emma Liston Archer, Trustee of the Estate of O. L. Coleman .37110			
87. E. C. Adkins (was Tract 66)	T21S-R36E, N.M.P.M. Sec. 9: E½	320.00	HBP	Atlantic Richfield Co. 2.343750 Archbishopric of New York 3.937500 Emma L. Archer, Trustee .175780 Liston Archer .019530 Julia Bergman .026043 David A. Bower Indiv. and as Agent .043370 J. R. Bower, Jr. .127250 Joan A. Carbone .007323 Valmore M. Carignan Est .039060 Colonial Royalties Co. .045582	None	Atlantic Richfield Co. 100%	3.457[illegible]4

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING OWNER AND
				Carl Costello .019530 Iris G. Damson .039060 Marcia Lynn Del Core .026030 Emily C. Greenhalgh and Dolores Sloat, Indiv. and as Exrxs U/W of Henry G. Ludwig .078120 Sarah B. Ferguson .026044 Fluor Oil and Gas Corporation 1.562500 Home Stake Oil & Gas Co. .045569 Home Stake Royalty Corporation .045569 Everett R. Jones, Jr. .014450 Grace M. Larson .000490 Lawson Petroleum Company .078130 Munro L. Lyeth and Patricia D. Lyeth .781250 Brian Maney .004882 Kevin Maney .004882 Marguerite C. Maney .004883 Maureen Maney .004883 Patricia A. Maney .007324 Vivian G. Maney .004883 Pauline K. Neppel Ind. and as Exrx. of Est. of Arthur J. Neppel .058590 Gloria McFarland and Charles W. Grimes, II Trustees of C. W. Grimes Trust .937500 Mary Vern Ransom .390630 Onez Norman Rooney .781250 Francis K. Royall .002935 John R. Royall, Trustee of the John R. Royall Trust u/w/o N. R. Royall, Jr. .000652 John R. Royall, Trustee of the Tucker K. Royall Trust u/w/o N. R. Royall, Jr. .000652 John R. Royall, Trustee of the N. R. Royall III Trust, u/w/o N. R. Royall, Jr. .000651 John R. Royall, Trustee of the Tucker K. Royall Trust, u/w/o Fannie May Royall .004880 Frieda W. Schachner .039060 Donald Tait .009765		

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				James T. Tait .009765 W. B. Watson, Agent and Attorney-in-Fact .75000			
88. A. J. Adkins (was Tract 67)	T21S-R36E, N.M.P.M. Sec. 10: W½NW¼, SE¼NW¼, SW¼	280.00	HBP	Archbishopric of New York 4.59380 Millikin University, Decatur, Illinois, Ina Mills Trust .25000 Colonial Royalties Co. .02777 Fluor Oil and Gas Corporation 1.56250 Sue Saunders Graham .06950 Home Stake Oil & Gas Co. .02777 Home Stake Royalty Corporation .02777 Munro L. Lyeth and Patricia D. Lyeth .78130 Elyse S. Patterson .06940 Atlantic Richfield Co. 2.34380 Petrust Corporation of America .41670 Onez Norman Rooney .78120 Frieda W. Schachner .08330 June D. Speight .52080 Sally Saunders Toles .06940 W. B. Watson, Agent and Attorney-in-Fact .87500	None	Exxon Corporation 100%	.931331
89. A. J. Adkins (was Tract 68)	T21S-R36E, N.M.P.M. Sec. 10: NE¼NW¼	40.00	HBP	Atlantic Richfield Co. 1.17188 Exxon Company, USA 5.46875 Home Stake Oil and Gas Co. .01389 Home Stake Royalty Corporation .01389 Colonial Royalties Co. .01389 Fluor Oil & Gas Corp. .78125 Petrust Corporation of America .20833 Sue Saunders Graham .03472 Munro L. Lyeth and Patricia D. Lyeth .78125 Millikin University, Decatur, Illinois, Ina Mills Trust .12500 Elyse Saunders Patterson	None	Brady Production Corporation 50% Exxon Corporation 50%	.423313

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				.03472 Archbishopric of New York 2.29687 Onez Norman Rooney .78125 Frieda W. Schachner .04167 June D. Speight .26041 The Toles Co. .03473 William B. Watson, Agent and Attorney-in-Fact .43750			
90. J. D. Knox (was Tract 69)	T21S-R36E, N.M.P.M. Sec. 10: E½	320.00	HBP	Amoco Production Co. .390700 Atlantic Richfield Co. 6.250000 Aarco Oil & Gas .585900 Dan E. Boone .019945 Dorothy W. Boone .035227 J. E. B. Boone .148676 A. L. Cone .195300 Dorothy P. Carr .012432 Everett R. Carr .006216 H. E. CLift #1381 .195300 J. C. Clift #1608 .195300 Frances S. Madeley .139093 Herbert W. Madeley .001037 Mobil Producing Texas and New Mexico Inc. 1.562600 Petrust Corporation of America .312500 L. D. Phillips .006216 R. S. Phillips .006216 Protestant Episcopal .015542 Sabine Corporation .390600 June D. Speight .976500 June D. Speight-1 .976600 WEF Holding, Inc. .078100	None	Exxon Corporation 100%	1.604876
91. McQuatters (was Tract 74)	T21S-R36E, N.M.P.M. Sec. 11: S½NE¼, NW¼SE¼	120.00	HBP	Alan J. Antweil .7812500 E. Doyle Berryman .7812500 Bradley Resources Corporation 1.1718750 Fluor Oil and Gas Corporation 3.1250000 Jack Hart .0029838 Jack Hart .0041728 Manufacturer's Hanover Trust Co., Exec. of Est. of Constance A. Fleischman .7812500 Nancy E. Penson 2.2922410 Penn Brothers, Inc. .7639083 J. E. Sedlmayr .7812500	Amoco Production Co. 12.5%	Wiser Oil Co. 50% Two States Oil Company 25% Herman R. Crile 12.5% Kenneth Headley 12.5%	.20984

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				Southland Royalty Company 1.9531250 Jack Stieren Estate .0325296 Tortuga Oil & Cas Co. .0280428 Nora Walker .0011217			
92. M. S. Berryman (was Tract 77)	T21S-R36E, N.M.P.M. Sec. 11: SW¼SE¼	40.00	HBP	Alan J. Antweil .7812500 Dora J. Aronson .0002850 E. Doyle Berryman .7812500 Bradley Resources Corporation 1.1718800 Carl Carr .0001400 Vernon Carr .0000500 Jack Hart .0022400 Manufacturers Hanover Trust Co. Exec. of Est. of Constance A. Fleischman .7812500 Fluor Oil and Gas Corporation 3.1250000 Penn Brothers, Inc. .7639100 Nancy E. Penson 2.2922400 Jack Hart .0039900 John E. Sedlmayr .7812500 Harry Smith Est. .0001800 Southland Royalty Company 1.9531200 Jack Stieren Estate .0325300 Tortuga Oil & Gas Co. .0280400 Nora Walker .0011100 Dora J. Aronson, Irwin Grossman and William J. Colen, Trustees U/W of S. M. Aronson .0002850	None	Atlantic Richfield Company 100%	.050973
93. Marshall (was Tract 78)	T21S-R36E, N.M.P.M. Sec. 11: NE¼SE¼ Sec. 12: NW¼SW¼	80.00	HBP	See "A" and "B" below	None	Sun Exploration and Production Company 100%	.055857*
A.	Sec. 11: NE¼SE¼			Selma E. Andrews Trust #5188 1.678280 Alan J. Antweil .781250 E. Doyle Berryman .781250 Boys Club of America .156250 Elks National Foundation Boston .156250 Juliette Rathbone Finch .781250 The Home Stake Oil & Gas Company .195310 The Home Stake Royalty Corp. .195310 Marguerite McKim Kent .781250			(.055857)

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				Patrick J. Leonard .260410 Robert J. Leonard .260420 Timothy T. Leonard .260420 Manufacturers Hanover Trust Co. as agent for William H. Fleischmann, Jr., Constanace Von Gontard, and Fredericka Agins .781250 Raymond Lee McKim .781250 Juanita McMillan, Betty Kelly, David Loeffler, Co-Trustees for H. M. McMillan .195310 J. S. Mullen, Jr. .195310 New Mexico Boys Ranch, Inc. .156250 Braille Institute of America, Inc. 1.446730 Lillian Ramsgate Sedlmayr, Exrx. of Estate of Theodore Sedlmayr .781250 Shattuck School .156250 Charles Tyson Smith, II .781250 Regents of University of New Mexico .156250 June D. Speight .781250			
B.	Sec. 12: NW¼SW¼	(40.00)		Selma E. Andrews Trust #5188 1.678280 Alan J. Antweil .781250 E. Doyle Berryman .781250 Boys Club of America .156250 Elks National Foundation Boston .156250 Juliette Rathbone Finch .781250 The Home Stake Oil & Gas Company .195310 The Home Stake Royalty Corp. .195310 Marguerite McKim Kent .781250 Patrick J. Leonard .260410 Robert J. Leonard .260420 Timothy T. Leonard .260420 Manufacturers Hanover Trust Co. as agent for William H. Fleischmann, Jr., Constance Von Gontard, and Fredericka Agins .781250 Raymond Lee McKim .781250 Juanita McMillan, Betty Kelly,			(.000000)

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				David Loeffler, Co-Trustees for H. M. McMillan .195310 J. S. Mullen, Jr. .195310 New Mexico Boys Ranch, Inc. .156250 Braille Institute of America, Inc. 1.446730 Lillian Ramsgate Sedlmayr, Exrx. of Estate of Theodore Sedlmayr .781250 Shattuck School .156250 Wanda Shults .1953125 Wilma Rutland .1953125 Van Shults .1953125 Jack Shults .1953125 Charles Tyson Smith, II .781250 Regents of University of New Mexico .156250			
94. Marshall (was Tract 79)	T21S-R36E, N.M.P.M. Sec. 11: SE¼SE¼ Sec. 12: SW¼SW¼	80.00	HBP	See "A" and "B" below	None	Earl R. Bruno 100%	.153687*
A.	Sec. 11: SE¼SE¼			Selma E. Andrews Trust #5188 1.678280 Alan J. Antweil .781250 E. Doyle Berryman .781250 Boys Club of America .156250 Elks National Foundation Boston .156250 Juliette Rathbone Finch .781250 William H. Fleischmann, Jr. . 260410 The Home Stake Oil & Gas Company .195310 The Home Stake Royalty Corp. .195310 Manufacturers Hanover Trust Co. as agent for William H. Fleischmann, Jr., Constance Von Gontard, and Fredericka Agins .781250 Marguerite McKim Kent .781250 Patrick J. Leonard .260410 Robert J. Leonard .260420 Timothy T. Leonard .260420 Raymond Lee McKim .781250 Juanita McMillan, Betty Kelly,			(.062358)

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				David Loeffler, Co-Trustees for H. M. McMillan .195310 J. S. Mullen, Jr. .195310 New Mexico Boys Ranch, Inc. .156250 Braille Institute of America, Inc. 1.446730 Lillian Ramsgate Sedlmayr, Exrx. of Estate of Theodore Sedlmayr .781250 Shattuck School .156250 Charles Tyson Smith,II .781250 Regents of University of New Mexico .156250 June D. Speight .781250			
B.	Sec. 12: SW¼SW¼	(40.00)		Selma E. Andrews Trust #5188 1.678280 Alan J. Antweil .781250 E. Doyle Berryman .781250 Boys Club of America .156250 Elks National Foundation Boston .156250 Juliette Rathbone Finch .781250 The Home Stake Oil & Gas Company .195310 The Home Stake Royalty Corp. .195310 Marguerite McKim Kent .781250 Patrick J. Leonard .260410 Robert J. Leonard .260420 Manufacturers Hanover Trust Co. as agent for William H. Fleischmann, Jr., Constance Von Gontard, and Fredericka Agins .781250 Timothy T. Leonard .260420 Raymond Lee McKim .781250 Juanita McMillan, Betty Kelly, David Loeffler, Co-Trustees for H. M. McMillan .195310 J. S. Mullen, Jr. .195310 New Mexico Boys Ranch, Inc. .156250 Braille Institute of America, Inc. 1.446730 Lillian Ramsgate Sedlmayr, Exrx. of Estate of Theodore Sedlmayr .781250 Shattuck School .156250			(.091329)

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPATI OF TRACT IN UNIT
				Wanda Shults .1953125 Wilma Rutland .1953125 Van Shults .1953125 Jack Shults .1953125 Charles Tyson Smith, II .781250 Regents of University of New Mexico .156250			
95. Coleman "A" (was Tract 83)	T21S-R36E, N.M.P.M. Sec. 17: NW¼NW¼	40.00	HBP	Archbishopric of New York 1.31250 Liston Archer .15630 Atlantic Richfield Co. .22786 Bradley Resources Corp. .09770 Powhatan Carter,Jr. .09765 Anderson Carter .09765 Emma Liston Archer, Trustee Est. of O. L. Coleman 1.83590 Charles J. Cooper/Fonda .05205 Emely Ann Edwards .00072 Daniel L. Gutman .07810 Manufacturers Hanover Trust Co. Oil Successor Trustee U/A dated 4-30-56 as amended M/B and for Charles Gutman .11720 Alfred E. Gutman .07820 Betty Guttag .11720 Daniel L. Gutman, Ind. Exec. & Trustee of Est. of Max Gutman .23440 Wentz Heritage .78125 The Home Stake Oil & Gas Co. .02170 The Home Stake Royalty Corp. .01954 Mary M. Horne Trust, Mary M. Hodge & Charles R. Cravens, Jr., Co-Trustees 1.17190 Jones Robinson Company .39060 Robert Booth Kellough .06510 Wentz Legacy .78125 First City Nat'l Bank Trustee Acct. #5-292-02-8 .19530 Mobil Oil Corp. 1.56250 Mary Vern Ransom 1.71870 William G. Seal .00072 Roland V. Siddall .03900 Jean Anderson Simpson .00072 A. Walter Socolow and	None	Getty Oil Co. 100%	.375553

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACI IN UNIT
				Edith Socolow, Trustees U/A dated 11-24-76 .07810 Robert L. Summers .19530 Texaro Oil Co. .07810 Robert Allen Venable, Ind. Exec. & Tr. U/W of R. H. Venable .19530 Philip J. Willis and Jack Willis, Joint Tenants ..03910 Thomas B. Wilson .02169 Lasca, Inc. .25000 Nancy Z. G. Herpin .09770 Jack H. Mayfield, Jr. .09770 Jack H. Mayfield, Jr., Margaret Bell, and Lanode Goldston, Attys. in Fact for Iris Goldston .19530			
96. Coleman (was Tract 84)	T21S-R36E, N.M.P.M. Sec. 17: NE¼NW¼	40.00	HBP	Atlantic Richfield Co. .227900 Archbishopric of New York 1.31250 Emma L. Archer, Trustee of Est. of O. L. Coleman 1.83590 Liston Archer .15630 Bradley Resources Corporation .09770 Anderson Carter .09765 Powhatan Carter, Jr. .09765 Emely Ann Edwards .000725 Mary A. Fonda .05210 Alfred F. Gutman .07820 Daniel L. Gutman .07810 Daniel L. Gutman, Indep. Exec. of Est. of Max Gutman .23440 Betty Guttag .117200 Manufacturers Hanover Trust Co. Oil Successor Trustee U/A dated 4-30-56 as amended M/B and for Charles Gutman .117200 Nancy Z. G. Herpin .097700 Mary M. Hodge & Charles R. Cravens, Jr., Co-Trustees of Mary M. Horne Trust, .586000 Mary M. Hodge & Charles R. Cravens, Jr., Co-Trustees of Mary M. Horne Trust, .585900 Home Stake Royalty Corporation .010852	None	Atlantic Richfield Company 100%	.363610

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING OWNER AND
				Home Stake Royalty Corp..009768 Home Stake Oil & Gas Co..010852 Home Stake Oil & Gas Co..009767 Jones Robinson Company .390600 Robert Booth Kellough .065100 Lasca, Inc. .250000 Jack H. Mayfield, Jr. .097600 Jack H. Mayfield, Jr., Margaret Bell and Lenode Goldston, Attys. in Fact for Iris Goldston .195300 First City Nat'l Bank, Trustee Trust Acct. 0292-02-8 .19530 Mobil Producing Texas and New Mexico Inc. 1.562500 Mary Vern Ransom 1.718700 R. V. Siddall .039000 Jean Anderson Simpson .000723 Edith Socolow and A. Walter Socolow, Trustees U/A dated 11-24-76 .078100 R. L. Summers .195300 Texaro Oil Company .078100 R. A. Venable, Indep. Exec. of Est. of R. H. Venable .195300 Wentz Heritage .781250 Wentz Legacy .781250 Jack Willis .019550 Philip J. Willis .019550 Thomas B. Wilson .021691 William G. Seal .000722		
97. Coleman (was Tract 85)	T21S-R36E, N.M.P.M. Sec. 17: NE¼	160.00	HBP	Adobe Royalty, Inc. .13021 Amoco Production Co. .52083 Emma Liston Archer, Trustee of Est. of O. L. Coleman .91150 Liston Archer .03906 Atlantic Richfield Co. .38410 Jane C. Blackford .049805 J. R. Bower, Jr. .50898 David Armstrong Bower, Agent .17344 Bradley Resources Corp..09765 Charles J. Cooper/Fonda.05208 Emely Ann Edwards .00072 Farmer Union Company .29297 Home Stake Oil and Gas Co. .02062 Home Stake Royalty Corp.	None	Getty Oil

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACI IN UNIT
				02062			
				InterFirst Bank, Corsicana N.A., J. L. Collins, Dec'd #638.00 .29297			
				InterFirst Bank, Corsicana N.A., Trustee for Susan Jane Wheelock, Tr. #247 .096679			
				Everett R. Jones, Jr. .05781			
				Robert Booth Kellough .06511			
				Betty W. Kennaugh, individually, and as co-independent executor and Trustee of the Maude C. Wheelock estate .073243			
				Grace M. Larson .00195			
				Wentz Legacy .78125			
				Munro Lyeth & Patricia D. Lyeth .19532			
				B. W. Vetter and Charles C. Killin, Trustees of the Hattie Hill McVey Intervivos Trust .29297			
				First City Nat'l Bank, Trustee Acct #0292-02-8 .19531			
				Mobil Oil Corp 3.12500			
				Panhandle Royalty Company .58594			
				Mary Vern Ransom 1.24999			
				William C. Ransom .07812			
				Republic National Bank & Trust Co., A.N. McMillan Est. 89 .23438			
				Onez Norman Rooney .19531			
				Frances K. Royall .00391			
				N. R. Royall, III, Indep. Exec. of Est. of N. R. Royall, Jr., Dec'd .01563			
				John R. Royall, Trustee U/W of Fannie May Royall, Dec'd .00651			
				Tucker K. Royall, Trustee of the T. K. Royall Trust U/W of Fannie May Royall, Dec'd .00651			
				N. R. Royall, III, Trustee U/W of Fannie May Royall, Dec'd .00651			
				William G. Seal .00072			
				Roland V. Siddall .03906			
				Jean Anderson Simpson .00072			
				W. Blake Smith .29297			

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPA OF TRAC IN UNI
				Smith Oil Company .29296 Robert A. Venable .19531 Robert L. Wheelock, Jr., individually, and as co-independent executor and Trustee of the Maude C. Wheelock Estate .07324 Wentz Heritage .78125 Philip Willis and Jack Willis .03906 Thomas B. Wilson .02170			
98. Coleman (was Tract 86)	T21S-R36E, N.M.P.M. Sec. 17: W½SE¼	80.00	HBP	Adobe Royalty Co. .13021 Amoco Production Co. .52083 Archbishopric of New York 1.31250 Emma Liston Archer, Trustee of Est. of O. L. Coleman 1.65365 Liston Archer .07813 Atlantic Richfield Co. .22786 J. R. Bower, Jr. .50898 Bradley Resources Corporation .09766 First Denver Trt-Min, Munro & Patricia Lyeth .39063 M. A. Fonda .05209 Alfred E. Gutman .23437 D. L. Gutman, Trustee .23437 B. G. Guttag .11719 Manufacturers Hanover Trust Co. Oil Successor Trustee U/A dated 4-30-56 as amended M/B and for Charles Gutman .11719 D. A. Bower, Agent .17343 Home Stake Oil & Gas Co. .01085 Home Stake Royalty Corporation .01085 E. R. Jones, Jr. .05782 Robert B. Kellough .06510 Grace M. Larson .00195 Lasca, Inc. .25000 M. S. Latta .39063 MNB Trust #0292028 .19531 Mobil Producing Texas and New Mexico Inc. 1.56250 Mary Vern Ransom 1.71875 Frances K. Royall .01171	None	Shell Western Exploration & Production Inc. 100%	.572268

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACI IN UNIT
				John R. Royall, Trustee of the John R. Royall Trust u/w/o N. R. Royall, Jr. .00261 John R. Royall, Trustee of the N. R. Royall III Trust, u/w/o N. R. Royall, Jr. .00261 John R. Royall, Trustee of the Tucker K. Royall Trust, u/w/o N. R. Royall, Jr. .00261 John R. Royall, Trustee of the John R. Royall Trust, u/w/o Fannie May Royall .00651 John R. Royall, Trustee of the N. R. Royall III Trust, u/w/o Fannie May Royall .00651 John R. Royall, Trustee of the Tucker K. Royall Trust, u/w/o Fannie May Royall .00651 Onez Norman Rooney .39062 Roland V. Siddall .03906 Texaro Oil Co. .07812 Robert A. Venable .19531 Wentz Heritage .78125 Wentz Legacy .78125 Phillip and Jack Willis .03906 Home Stake Oil & Gas Co. .00977 Home Stake Royalty Corp. .00977 William G. Seal .00072 Emely Ann Edwards .00073 Jean Anderson Simpson .00072 Thomas B. Wilson .02170			
99. H. C. Collins (was Tract 98)	T21S-R36E, N.M.P.M. Sec. 14: E½W½ SW¼NE¼, W½SE¼	280.00	HBP	Paul M. Phillips .01100 ETZ Oil Properties Ltd. .39060 Pierre D. Phillips .01100 Raymond W. Randolph .06510 Jane D. Randolph .06510 Philip R. Snow .06510 Bill R. Snow .06510 Mary Elizabeth Roelke .13020 Wilma M. Phillips and Curtis Darling, Co-Personal Representatives of the Estate of Ross M. Phillips .01100 Toles Company .06510 Donald M. Phillips .01090 Christopher Dukinfield Jones .01042	None	Gulf Oil Corporation 57.14% Atlantic Richfield Company 28.57% Getty Oil Co. 14.29%	.607838

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				Peter Francis Jones .01042 Rachel B. Fardon .01562 Irene Fardon Glaister .01562 Renate Jones Dymesich, Guardian for Wendelin Elizabeth Jones .01042 Boyed E. Penfield .15625 Robert S. Light .78125 Ethel Rushing Est. .78125 Liston Archer .01950 John W. Phillips .01100 Anderson Carter .09765 June D. Speight .39060 Jessie B. Crump, David C. Belvins and The Fort Worth National Bank, Trustee of Joe and Jessie Crump Fund Acct. 2312 .19530 The First National Bank of Midland and Jessie Blevins Crump, Co-Trustees No. 1069 .19530 Helen Learmont Bedford .12500 Phyllis C. Smythe .06250 George H. Etz, Jr., Trustee .39060 Grace Johnson .15625 Ellen Ann W. Williams .12500 Onez Norman Rooney 2.81250 Eva Payne Glass Est. .02750 Felmont Oil Corporation.42120 Elyse Saunders Patterson .06510 Sue Saunders Graham .06510 Munro L. Lyeth and Patricia D. Lyeth 2.81250 The Pennsylvania Bank and Trust Co., Trustee of the Estate of Albert Walter Goal .05500 Mrs. Ernest Frances Bradfield .01375 Powhatan Carter, Jr. .09765 Superior Oil Company .96880 Julian W. Glass, Jr. .01375 Wanda Pruett Hess .15620 Emma Liston Archer, Trustee of the Estate of O. L.		

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPA OF TRAC IN UNI
				Coleman .07810 Charles F. Bedford .12500 Henry De Graffenreid Bedford .12500 Rachel Bedford Bowen .12500 Mary Vern Ransom .09770			
100. Frona Leck (was Tract 99)	T21S-R36E, N.M.P.M. Sec. 14: NW¼NE¼	40.00	HBP	Superior Oil Company .96880 Julian W. Glass, Jr. .01375 Wanda Pruett Hess .15620 Emma Liston Archer, Trustee of the Estate of O. L. Coleman .07810 Charles F. Bedford .12500 Henry De Graffenreid Bedford .12500 Rachel Bedford Bowen .12500 Mary Vern Ransom .09770 Ellen Ann W. Williams .12500 Onez Norman Rooney 2.81250 Eva Payne Glass Est. .02750 Felmont Oil Corporation .42120 Elyse Saunders Patterson .06510 Sue Saunders Graham .06510 Munro L. Lyeth and Patricia D. Lyeth 2.81250 The Pennsylvania Bank and Trust Co., Trustee of the Estate of Albert Walter Goal .05500 Jacques Peter Adoue, Thomas J. Reilly, W. W. Bland and Texas Commerce Bank, N.A., Trustees u/w of F. D. Jones .06250 Mrs. Ernest Frances Bradfield .01375 Powhatan Carter, Jr. .09765 Anderson Carter .09765 June D. Speight .39060 Jessie B. Crump, David C. Blevins and the Fort Worth National Bank, Trustees of the Joe and Jessie Crump Fund Acct. #2312 .19530 RepublicBank First Nat'l	None	Gulf Oil Corporation 57.14% Atlantic Richfield Company 28.57% Getty Oil Co. 14.29%	.093085

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				Midland and Jessie Blevins Crump, Co-Trustees Trust No. 1069 .19530 Helen Learmont Bedford .12500 Phyllis C. Smythe .06250 George H. Etz, Jr., Trustee .39060 Grace Johnson .15625 Donald M. Phillips .01100 Boyed E. Penfield .15625 Robert S. Light .78125 Ethel Rushing .78125 Liston Archer .01950 John W. Phillips .01100 Paul M. Phillips .01100 ETZ Oil Properties, Ltd. .39060 Pierre D. Phillips .01100 Raymond W. Randolph .06510 Jane D. Randolph .06510 Philip R. Snow .06510 Bill R. Snow .06510 Mary Elizabeth Roelke .13020 Wilma M. Phillips and Curtis Darling, Co-Personal Representatives of the Estate of Ross M. Phillips .01090 Toles Company .06510			
101. McQuatters (was Tract 115)	T21S-R36E, N.M.P.M. Sec. 11: N½NE¼	80.00	HBP	Alan J. Antweil .78125 E. Doyle Berryman .78125 Bradley Resources Corporation 1.17188 Manufacturers Hanover Trust Co. Agent for William H. Fleischmann, Jr., Constance Von Gontard, and Fredricka Agins .78125 Fluor Oil and Gas Corporation 3.12500 First National Bank in Dallas and Vena H. Long Independent Executors of the Estate of Frank O. Long .00224 Nancy Elizabeth Penson 2.29225 Mrs. Exor Megan, Guardian of the Estate of Maude Eagle Pfouts .00113	None	Amoco Production Company 100%	.228542

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPAT OF TRACT IN UNIT
				Jack L. Hart .00376 Penn Brothers, Inc. .76392 John E. Sedlmayr .78125 Southland Royalty Company 1.95312 Georgia Ann Stieren, Independent Executrix of the Estate of Jack Stieren .03253 Tortuga Oil & Gas, Inc. .02804 Nora Walker .00113		
23	PATENTED TRACTS TOTALING	3,180.28	ACRES OR	22.41% OF UNIT AREA			

SUMMARY

	ACRES	PERCENTAGE
Federal Lands	2,734.76	19.27%
State Lands	8,274.80	58.32%
Patented Lands	3,180.28	22.41%
	14,189.84	100.00%