

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

APPLICATIONS OF GOODNIGHT MIDSTREAM  
PERMIAN, LLC FOR APPROVAL OF  
SALTWATER DISPOSAL WELLS  
LEA COUNTY, NEW MEXICO

CASE NOS. 23614-23617



(Amended Exhibits to include revised Exhibit E-2  
and Exhibits F-1 – F-6)

November 2, 2023

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Tab 1.

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

**APPLICATIONS OF GOODNIGHT MIDSTREAM  
PERMIAN, LLC FOR APPROVAL OF  
SALTWATER DISPOSAL WELLS  
LEA COUNTY, NEW MEXICO**

**CASE NOS. 23614  
23615  
23616  
23617**

**SELF-AFFIRMED STATEMENT OF JACK E. WHEELER**

I, Jack E. Wheeler state as follows:

1. I am over the age of 18. I am an Attorney working as Vice President – Land and Legal for Empire Petroleum Corporation (“Empire”), and have personal knowledge of the matters stated herein. I have previously testified before the Oil Conservation Division (“Division”) on matters of unitization, pooling and various other matters and my credentials as a land expert have been accepted by the Division and made a matter of record. My credentials as an attorney and landman may be found in the attached resume. I graduated from the University of Houston with a Juris Doctorate Degree in 1976. I began my career as an Attorney for Texaco and have been employed in the oil and gas industry since graduation. I have been the Vice President of Land and Legal since September, 2023. I have over 45 years of oil and gas experience and have worked in all of the major oil and gas producing Basins and States including New Mexico during my career. I have been working exclusively on New Mexico land and legal matters for the past five (5) years. *See* Attachment 1.

2. My area of responsibility for Empire includes the area of Lea County in New Mexico.

3. I am familiar with the applications filed by Goodnight Midstream Permian, LLC.

4. I am familiar with the status of the lands that are subject to these applications.

5. I submit the following information in support of Empire’s opposition in the above

Exhibit A

referenced Goodnight saltwater disposal applications.

6. In Cases. 23614, 23615, 23616 and 23617, Applicant seeks an order authorizing injection of produced saltwater for purposes of disposal in the San Andres Formation (SWD: San Adres [96121]), underlying Sections 3, 4 and 10, Township 21 South, Range 36 East, NMPM, Lea County, New Mexico. Applicant seeks authority to drill and dispose into the following wells:

No. 26314: **Doc Gooden SWD #1**  
Unit J, Section 3-21S-36E, Lea County, New Mexico.

No. 26315: **Hernandez SWD #1**  
Unit P, Section 10-21S-36E, Lea County, New Mexico.

No. 26316: **Hodges SWD #1**  
Lot 11, Section 4-21S-36E, Lea County, New Mexico.

No. 26317: **Seaver SWD #1**  
Unit K, Section 10-21S-36E, Lea County, New Mexico.

7. Attached hereto as **Exhibit A-1** is a map showing the Eunice Monument South Unit boundaries.

8. Attached hereto as **Exhibit A-2** is a map showing the locations of Goodnight Midstream Permian, LLC's currently proposed saltwater disposal wells, which include the four proposed in the above-referenced applications and the Piazza SWD #0001, which is the subject of pending application No. 22626.

9. Attached hereto as **Exhibit A-3** is a map showing Goodnight Midstream Permian, LLC's ("Goodnight") (1) proposed saltwater disposal wells and (2) their currently active or permitted saltwater disposal wells, all of which are located within the boundaries of the Eunice Monument South Unit. Wells indicated in red are the proposed wells for which applications are currently pending before the Division. Wells indicated in blue are wells that have been previously permitted. The Andre Dawson #001 (30-025-50634) is the subject of a pending application in Case No. 23775 to increase the amount permitted for injection.

7. Empire acquired the Eunice Monument South Unit from XTO Holdings, LLC ("XTO") on March 12, 2021, for a purchase price of Seventeen Million Eight Hundred Thousand Dollars (\$17,800,000). Because of this substantial investment, it is imperative that Empire be allowed to

conduct Primary, Secondary and Tertiary recovery of all hydrocarbons present in the Eunice Monument South Unit.

8. Attached hereto as **Exhibit A-4** is the Unit Agreement. The subject field was discovered March 31, 1929, with the completion of the Lockhart "B-31" Well. Within five years, development had spread and it was proved to be an anticlinal structure. Within ten years, the field had produced its first one million barrels of oil and in 1979 Gulf and many others began studying the area for possible waterflood. At the time of issuance of the Order of the Commission on December 27, 1984, it was estimated that 64.2 million barrels of additional oil could be recovered from within this area. As of this date EMSU has produced 25 million barrels of oil since November 1, 1984. The approved Unit Area encompasses 14,189.84 acres with the State Lands comprising 58.32 percent of the land, which is 8,274.8 acres. The fee lands comprise 22.41 percent of the Unit and 3,180.28 acres, while the Federal Lands comprise 19.27 percent of the Unit and 2,734.76 acres. The lands subject to the Unit are evident in pdf page 100 of **Exhibit A-4**.

9. Attached as **Exhibit A-5** is a copy of the Exxon Mobil (doing business as XTO) Sales Brochure that preceded XTO's sale of the Eunice Monument South Unit (and other lands) to Empire. The Brochure identifies the Residual Oil Zone ("ROZ") as being in the San Andres formation and is approximately 300 feet thick with approximately 912,000,000 barrels of original oil in place.

10. Attached as **Exhibit A-6** is a copy of Order No. R-7765 establishing the Eunice Monument South Unit dated December 27, 1984. The applicant and original operator of the Eunice Monument South Unit was Gulf Oil Corporation which was rebranded as Chevron U.S.A. Inc. In 2004, XTO acquired Chevron's interest and was the successor operator from 2004 through 2021. Empire acquired XTO's interests in the Units and other like wells in Lea County, New Mexico, and Empire became the successor operator on March 12, 2021.

11. As reflected in Order No. R-7765, the Unitized Formation is defined as 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 the lower limit

at the base of the San Andres Formation. *Id.* at 2, ¶ 8.

12. Likewise, the Unit Agreement for the EMSU defines the “Unitized Formation” as “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. **Exhibit A-4** at pdf 4, § 2(h).

13. Thus, the Unitized Formation includes both the Grayburg and the San Andres formations.

14. The Unit Agreement defines “Unitized Substances” as “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.” *Id.* § 2(i).

15. Attached as **Exhibit A-7 and Exhibit A-8** are two nomenclature orders, Order Nos. R-7767 and R-7767-A, respectively. Order No. R-7767 establishes the Eunice Monument Oil Pool to include both the Grayburg and the San Andres formations. *Id.* at 2 ¶ 2. Order No. 7767-A refers to the Eunice Monument Grayburg-San Andres Pool; thereby, reflecting the NMOCD's recognition that the Grayburg formation and the San Andres are a single source of supply and one pool.

16. Empire's leasehold interests in the Eunice Monument South Unit and all other leases in Lea County, New Mexico extend from the surface to the top of the stratigraphic equivalent of the Wichita Albany formation at approximately 6,745' except for 17 leases. Of those 17 leases, two cover the surface to the base of the Blinebry (below the San Andres formation), one lease covers the surface to the base of the Grayburg San Andres formation and 14 leases cover the surface to the stratigraphic equivalent of the base of the Wichita Albany formation at approximately 7,750'. The original base

leases are not depth limited as indicated in the attached sample lease, attached as **Exhibit A-9**; however, various assignments have created the above depth limits. There are nineteen (19) working interest owners in the EMSU Unit with Empire owning 61% of the Unit, Apache Corporation owning 30% of the Unit, EEF Acquisition Company LLC owning 8% of the Unit and various other entities owning the remaining 1% of the Unit.

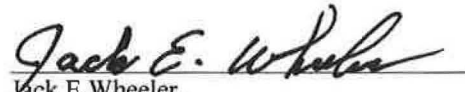
17. Goodnight Midstream Permian, LLC made previous applications during the COVID pandemic and XTO Holdings, LLC was in the process of selling the Eunice Monument South Unit so they did not expend the money necessary to protest the Applications. The four (4) Goodnight saltwater disposal wells currently injecting into our San Andres Formation have already disposed of over 34,919,013 Barrels of Water. Empire intends to file an application with the State of New Mexico Oil Conservation Division to revoke these permits and Empire has filed suit against Goodnight for trespass to protect Empire and other interest owners' correlative rights in the Eunice Monument South Unit.

18. The attachments to this Statement were prepared by me and compiled from company business records.

19. I attest that the information provided herein is correct and complete to the best of my knowledge and belief.

20. The denial of these applications is in the interests of conservation, the prevention of waste, and the protection of correlative rights.

I understand that this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date identified next to my signature below.

  
\_\_\_\_\_  
Jack E Wheeler,  
Vice President Land and Legal  
Empire Petroleum Corporation  
October 16, 2023



## Attachment

**JACK E. WHEELER SR.**

**431 Spindle Ridge Drive  
Spring, Texas 77386**

**Cell Phone: 970) 388-9120  
[jwheeler@empirepetrocorp.com](mailto:jwheeler@empirepetrocorp.com)**

**ATTORNEY, LANDMAN AND OIL AND GAS EXECUTIVE**

*Highly accomplished, meticulously organized, skilled advocate*, strategic planner, negotiator and experienced dynamic corporate oil and gas specialist with more than forty years diversified experience in the oil and gas petroleum industry providing expert legal counsel and directing company policy on a broad range of issues. Demonstrated expertise in all land and legal areas domestically and internationally; offshore and onshore; Federal Lands and Indian Lands; unleased acreage and acreage held by production. Have extensive dealings with the Bureau of Land Management (BLM), Bureau of Indian Affairs (BIA) and individual Indian Tribes.

*A proven leader, adept at strategic planning, evaluating and* integrating multi-well drilling programs and opportunities with land and legal compliance and ability to be able to communicate complete, concise, logical, objective and persuasive ideas in both oral and written communications to Senior Management. Broad legal oil and gas background in governmental regulations related to regulatory pooling and unitization statutes and horizontal spacing and density statutes. Land and legal experience has ranged from preparing stand-up drilling and title opinions to legal representation in litigation to negotiating and closing over \$4 Billion of Acquisitions.

**CAREER OVERVIEW**

**EMPIRE PETROLEUM CORPORATION**, Houston, Texas 2023 to Present  
Vice President – Land and Legal

Responsible for all Land and Legal matters related to Subsidiaries, Empire New Mexico LLC; Empire North Dakota LLC; Empire Texas LLC and Empire Louisiana LLC. Duties include overseeing work with New Mexico Oil Conservation Division, preparing title opinions on producing properties, preparation of all legal documents required for operations and similar land and legal matters.

**ATTORNEY AND OIL AND GAS CONSULTANT** 2014 to Present

Oil and Gas Attorney who provides Financial, Land, Legal, Operations, Production and Regulatory Services to Clients in the Oil and Gas Industry. Principal States of Operation have been in Colorado, Kansas, Louisiana, New Mexico and Texas. Services have included preparing Stand-up Title Opinions; preparing run sheets and Mineral Ownership Reports; preparing curative for title opinions; managing in- house land and legal departments; making regulatory filings with various State Agencies; testifying before State Oil and Gas Commissions; assisting in the preparation of 10-Q's and 10-K's; serving as an Expert Witness in Trials and Hearings, assisting in the preparation of Reserve Reports and researching surface, mineral and working interest ownership of properties.

**PATRIOT ENERGY, LLC**, Windsor, Colorado  
General Counsel Land Manager

2011 - 2013

Hired to manage assets of Company to resolve all existing land, legal and operational obligations of Oil and Gas and Real Estate Development Company. Helped to restructure debt, assisted with a joint venture agreement to have multiple horizontal wells drilled on Company minerals and helped raise third party capital to fund development of oil and gas properties and unfinished lots in sub-divisions.

Favorably settled defense of a Multi-Million Lawsuit with major Independent Oil and Gas Company. Prepared acquisition, joint operating, gas balancing and pooling agreements; complex surface damage agreements; division orders; drilling contracts; unit designations and related land and legal documents. Responsible for securing title opinions and curing title for properties and drill sites. Serve as company liaison with creditors, financial institutions, landowners, local, city, county, state and federal regulatory agencies. Work with local, State and Federal regulatory agencies to provide necessary information in order to comply with the regulatory requirements.

Served as General Counsel for Water Valley Land Company; LLC - Northern Colorado's premier resort-style lakefront/golf course development that encompassed over 1,200 acres with 2,000 homes. Infrastructure included irrigation systems, pump stations, boulevards and vast areas of open space with 400 acres of lakes plus businesses and shopping centers.

**TUSCANY OIL AND GAS**, Oklahoma City, Oklahoma  
Managing Partner and Owner

2002 - 2010

Responsible for multifaceted investment portfolio related to the acquisition, development, management and operation of several oil and gas related businesses including a workover drilling company, gas gathering system, oilfield tool rental company, oil and gas marketing company, producing oil and gas properties and pipeline construction company. Operated one hundred eighty-six (186) wells and five (5) producing water-flood properties. Operated sixty (60) mile pipeline from Stroud, Oklahoma to Cushing, Oklahoma. Had three (3) gathering systems collecting gas from over thirty (30) operators and one hundred and fifteen (115) wells. Responsible for the management of field and office personnel. Directly responsible for all legal affairs affecting diversified company. Responsible for the successful location and negotiation of financing including equity investments and asset-based debt financing with multiple banks and the USDA.

**COTTON VALLEY RESOURCES CORPORATION**  
Dallas, Texas and Oklahoma City, Oklahoma

1994-2002

Chairman, Chief Executive Officer and Founder with initial investment of \$325,000.00 built a publicly traded oil and gas company valued at over \$125 Million. Acquired interest in over nine hundred (900) producing properties located primarily in Texas, Colorado, Oklahoma, Louisiana and New Mexico with additional wells in California, Mississippi, North Dakota, Pennsylvania, Utah, Wyoming and Canada. Also acquired royalty interest in twelve hundred eight (1,208) wells. All acquisitions were either by cash payment or stock purchase. With a staff of forty-four (44) employees managed operations on approximately thirty-five (35) percent of the producing properties.

Jack E. Wheeler Sr. Resume

2

Did amalgamation with existing American Stock Exchange Public Company and private company, East Wood Equity Ventures, Inc. Successfully navigated the Company through an IPO to form Aspen Group Resources listed on Toronto Exchange. Responsible for the successful location and negotiation of financing including equity investments and asset-based debt financing. Responsible for timely and accurate preparation and filing of SEC documents including 10 - Q's, 10 - K's and creation and implementation of a company wide Sarbanes-Oxley legislation and related rules compliance and general ethics policy. Recommended and developed company policy and position on all legal issues. Responsible for tax planning and compliance; development and maintenance of operating and capital budgets.

**EL PASO NATURAL GAS, Houston, Texas** 1990- 1994  
Vice President - Assistant General Counsel and Assistant Secretary  
Senior Vice-President - Business Development

Primary attorney responsible for the negotiation and documentation of over 300 acquisitions of producing properties exceeding \$2 Billion for subsidiary, Sonat Exploration. Responsible for handling all due diligence analysis of land and title and insuring the timely delivery of information required. Coordinated with the accounting due diligence team to make all purchase price adjustments based on discovered title defects during due diligence. Following closing of each acquisition coordinated with the respective regional land department to integrate all wells and leases into their respective operational systems. In addition managed day-to-day operation within legal department while managing five in-house lawyers in Houston location and seven in-house lawyers in field offices and supervised all outside counsel. Position required the ability to be successful at communicating complex business and legal issues to senior corporate management and personnel.

Implemented revised corporate contracts procedures by drafting a multi-volume set of approved Corporate Legal Forms for use by the entire Corporation related to the drafting, review, execution and control of all land and legal contracts for the oil and gas and pipeline operations. Initiated and established corporate environmental policies by drafting the Corporate Environmental Safety Manual which instituted an environmental employee development program with an alcohol and drug testing and substance abuse control program.

**THE ST. PAUL COMPANIES, St. Paul, Minnesota** 1988-1990  
Vice President - Land and Legal for St. Paul Oil and Gas Investments

Corporate attorney responsible for negotiation, closing and documentation of annual budgeted \$750 Million in oil and gas and real estate investments. Handled all legal matters related to acquisitions, divestitures and operations. Responsible for securing title opinions and curing title for acquired properties and drill sites. Prepared acquisition, joint operating, gas balancing and pooling agreements; drilling contracts; division orders; unit designations and related land and legal documents. Designed and implemented a contract review and contract administration system for a business featuring more than five thousand seven hundred fifty (5,750) active, unique files and leases. Resolved five Take-or-Pay Contract disputes for ultimate settlements exceeding \$38 Million. Settled nineteen lawsuits having

total potential claims of \$44 Million for less than \$600,000.00. Managed a litigation portfolio of nearly one hundred (100) active lawsuits or claims in a variety of states and legal jurisdictions.

**KRITI EXPLORATION, INC.**

1984 – 1988

Stamford, Connecticut, New York City and Houston  
Vice President Land & Legal

Served as General Counsel for the U.S. and certain of the foreign subsidiaries of holding companies of Vardis Vardinogiannis who has interests in oil, publishing, real estate, shipping (Avin International S.A.) and television broadcasting. Motor Oil (Hellas) is an independent oil refinery in Corinth, Greece. Vegas Oil and Gas S.A. is an Exploration and Production Company based in Egypt with assets in the United States, Egypt and Yemen whose primary assets are the Alam El Shawish Concession, the East Ghazalat Concession and the NW Gemsa Concession in Egypt. It operates its activities in the United States as Kriti Holdings, Inc. with a primary focus on oil and gas production and the construction, sale and operation of certain real estate holdings including The Corinthian that is a 57-story residential and commercial development located at 330 East 38<sup>th</sup> Street (between Second Avenue and First Avenue) in New York City.

Responsible for handling all of the legal affairs of these various operating companies and managing the legal staff. Participated in the review, screening and evaluation of all drilling prospects and if approved handled the preparation and execution of all land and legal agreements. Provided counsel to ensure compliance with all laws and regulations. Supervised all litigation matters and selected and managed outside legal counsel. Coordinated all matters related to insurance issues including review of coverage and policies and securing and maintaining insurance certificates from all operators, suppliers and subcontractors. Negotiated and drafted various contracts and agreements including employment agreements, international concession agreements, leases, non-disclosure/confidentiality agreements, offshore operating agreements, purchase agreements, sales contracts, and subcontract agreements.

**TEXACO, INC.,** New Orleans and Houston

1980 – 1984

Corporate Attorney

Provided land and legal counsel to management on oil and gas matters including acquisitions, divestitures, operational and environmental matters, litigation, document preparation and review, FERC/gas regulatory matters, domestic exploration and production. Developed field expertise in reviewing records and determining record title ownership of counties in various states. Prepared and/or approved farmout/farmin agreements, joint-operating agreements, stand-up title opinions, unitization agreements and other legal documents and agreements. Evaluated disputes and claims and either negotiated settlements or supervised and managed litigation efforts of outside legal counsel. Represented the Company before Federal and State Governmental Agencies.

**SOUTHERN AIR TRANSPORT**, Miami, Florida  
Executive Director of International Contracts

1977 – 1980

Responsible for handling all contract negotiations for civilian Air Charter Company owned by CIA whose aircraft operated on all seven continents and in over a hundred countries. Negotiated contracts with the UN, CARITAS, the International Committee of the Red Cross and numerous governments to provide humanitarian aid and food for the helpless saving countless thousands of lives in developing countries in Africa, Asia, Eastern Europe, Latin America and South America. Job responsibilities ranged from being involved in famine and disaster relief efforts in countries such as Angola, El Salvador, Kenya and Nicaragua to supporting Chevron's drilling activities operations in the central highlands of Papua New Guinea.

**Law Clerk, Honorable William M. Schultz**, Houston, Texas  
United States Bankruptcy Judge, Southern District of Texas

1976 - 1977

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**EDUCATION**

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**Juris Doctor - Bates College of Law, University of Houston**

**Master of Arts - University of Colorado**

**Bachelor of Arts - Texas A & M University**

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**CONTINUING EDUCATION**

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**Harvard Business School Executive Education - Advance Management Program**

**Harvard Business School Executive Education - Strategic Financial Analysis for Business Evaluation**

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**LICENSURE & AFFILIATIONS**

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**AMERICAN BAR ASSOCIATION**

**ASSOCIATION OF CORPORATE COUNSEL**

**STATE BAR OF LOUISIANA**

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**MILITARY**

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**UNITED STATES ARMY**

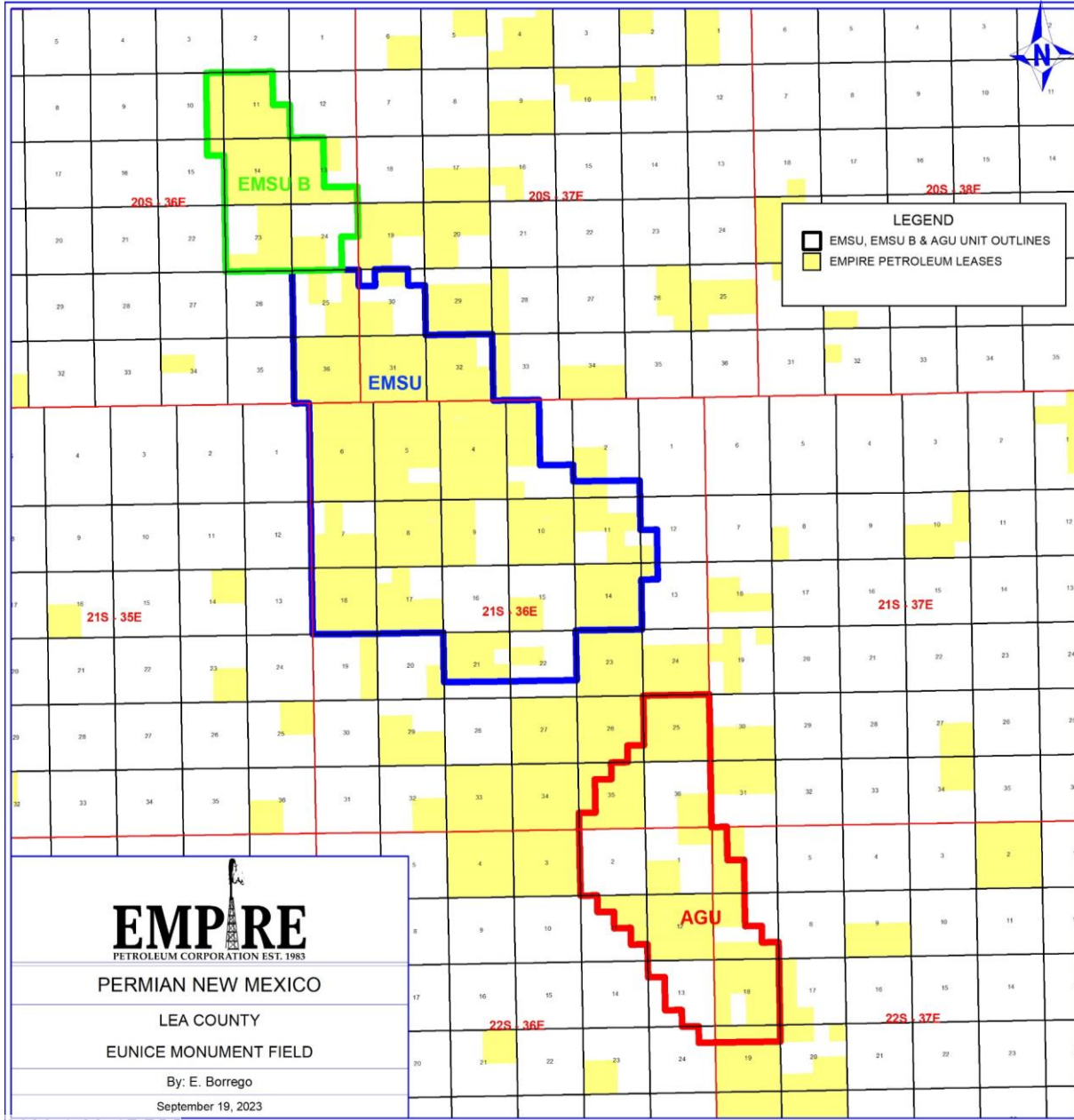
01/1970 - 12/1973

Distinguished Disabled Vietnam Combat Veteran having served with 5<sup>th</sup> Special Forces and received numerous commendations for bravery and valor including the Silver Star, RVN Gallantry Cross, Purple Heart, Bronze Star for Valor, Air Medal, Army Commendation Medal for Valor and Combat Infantryman's Badge. Rated by the Veterans Administration as One Hundred (100%) Percent disabled for wounds suffered in Vietnam.



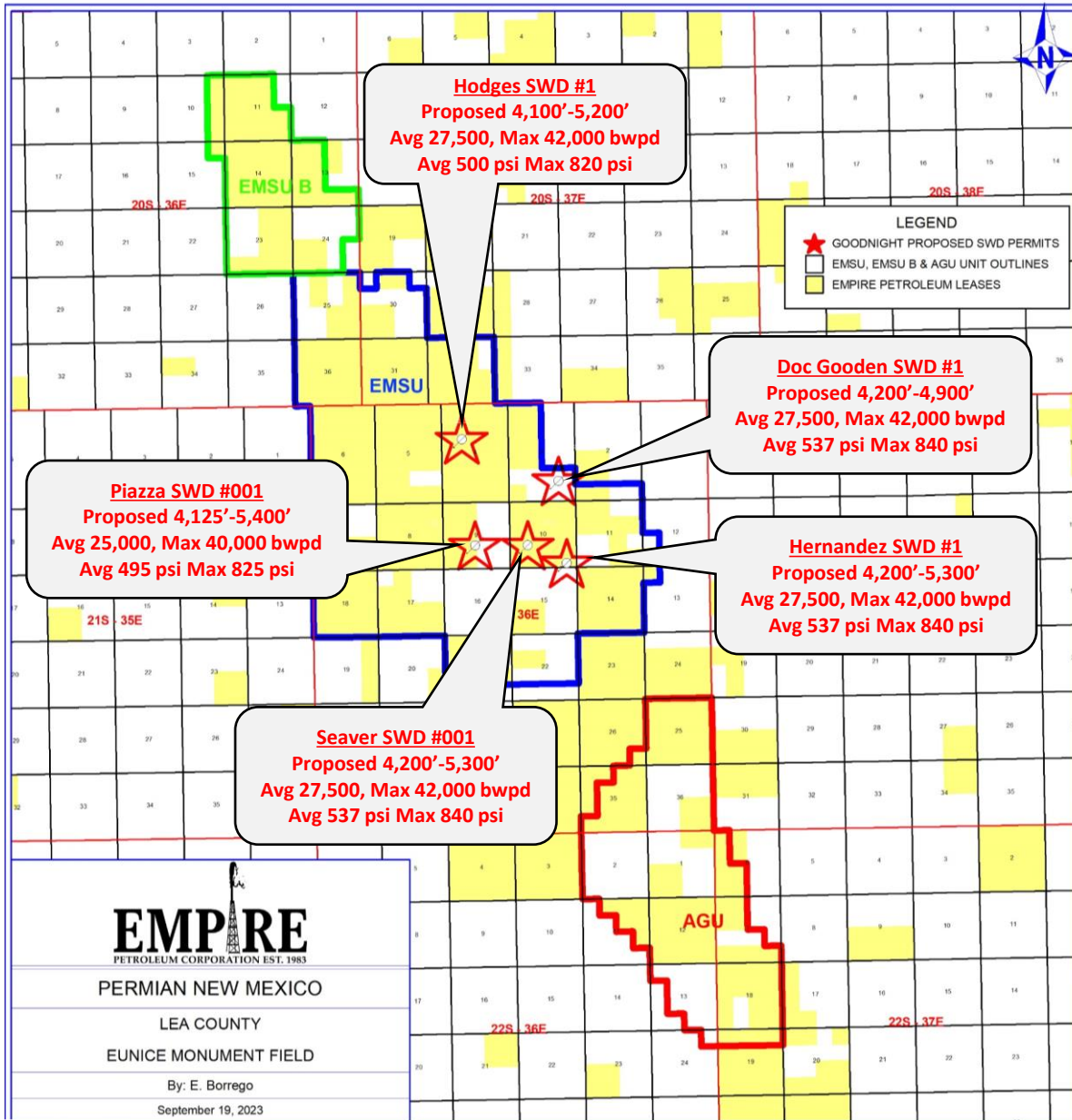
## EXHIBIT A-1

## UNIT MAP



# GOODNIGHT MIDSTREAM PERMIAN, LLC OBJECTION TO SWD APPLICATIONS

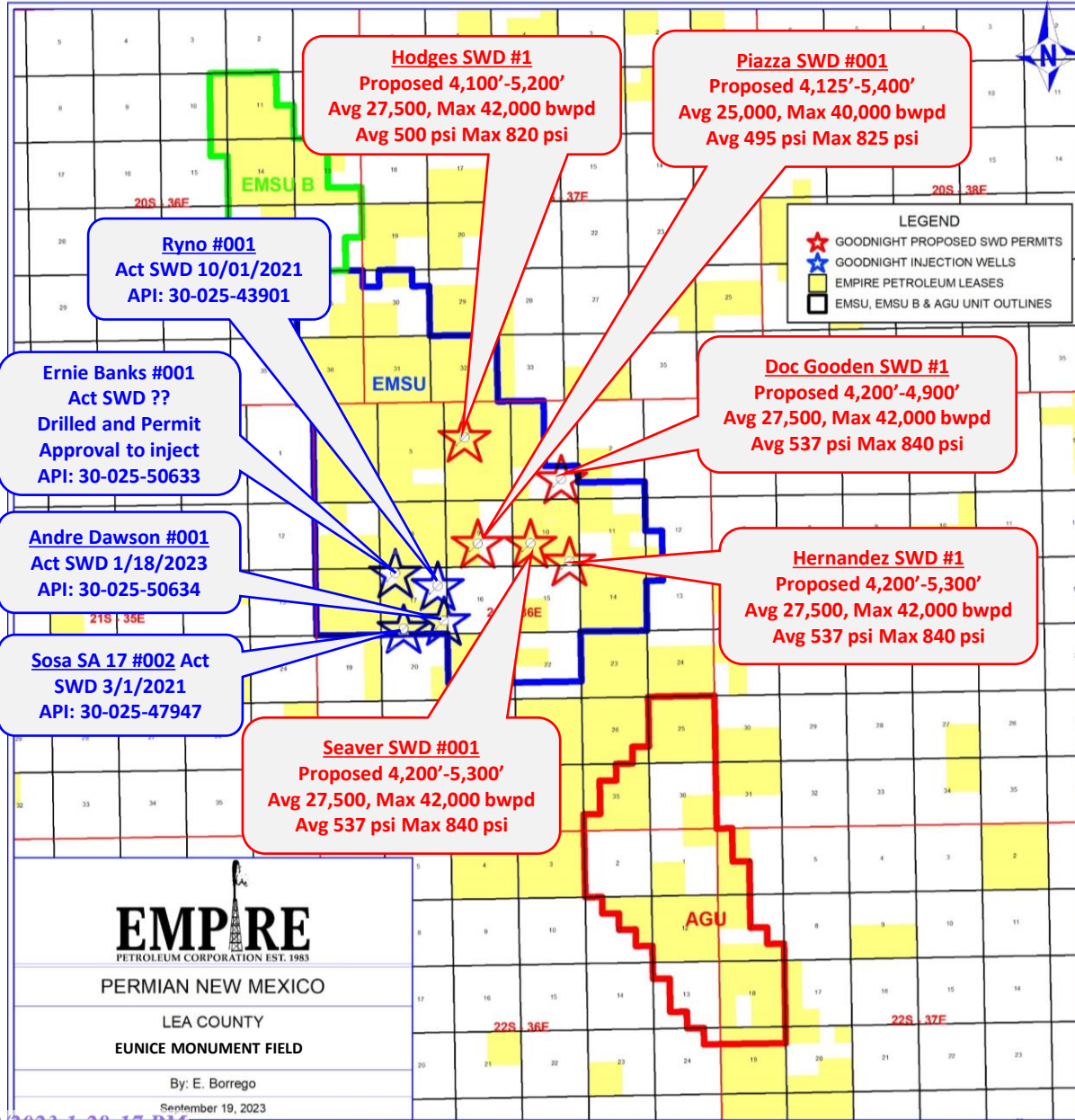
## EXHIBIT A-2





# GOODNIGHT MIDSTREAM PERMIAN, LLC ACTIVE INJECTION WELLS INTO SAN ANDRES

## EXHIBIT A-3



Wells  
# 111447  
111495  
111526  
111441

EXHIBIT A-4

UNIT AGREEMENT  
AND EXHIBITS "A" & "B"

# 3001444  
# 0141530

EUNICE MONUMENT SOUTH  
STATUTORY SECONDARY RECOVERY  
FEDERAL - STATE UNIT  
LEA COUNTY, NEW MEXICO

EFFECTIVE DATE  
FEBRUARY 1, 1985

UNIT AGREEMENT  
 EUNICE MONUMENT SOUTH UNIT  
 LEA COUNTY, NEW MEXICO

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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 identities 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 determining 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:

$$\text{Tract Participation} = 50\% \text{ A/B} + 40\% \text{ C/D} + 10\% \text{ E/F}$$

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 joining the 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 there-to 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 direction 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. NONJOINER AND SUBSEQUENT JOINER. 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 over-produced 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, therein 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 *KWB*

By *L. A. Turner*  
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, 1984, 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*



EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

FEDERAL LANDS

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	
* * * TOTAL ACRES IN THIS AREA IS 14,189.84 * * *									
001 MEYER "A-1"	T-21-S, R-36-E, NMPM SEC. 8: SW1/4 SEC. 17: SW1/4, S1/2 NW1/4 SEC. 18: NE1/4, N1/2 SE1/4	640.00	LC-031740-A HBP 02/19/31 EXCHANGED 02/01/51	USA "C"	A. E. MEYER	ATLANTIC RICHFIELD COMPANY BEDFORD, ALANN P., TRUST BEDFORD, HELEN LEARMONT BEDFORD, HENRY D BOWEN, RACHEL BEDFORD BRADLEY NOMINEE CORPORATION COLL, CHARLES H. COLL, JAMES N. COLL, JON F. COLL, MAX W. II ETZ OIL PROPERTIES, LIMITED ETZ, GEORGE H. SR., TRUST FIVE STATES LIMITED 1937 GARLAND MINERALS CORPORATION GILBERT, JOI HENCKEL, RODNEY KEC ACQUISITION CORP. LAW, MARILYN M., REVOC TRUST LYETH, PATRICIA D. MARY IRIS GOLDSTON CORPORATION MAYFIELD CORPORATION MITCHELL MINERALS CORPORATION MITCHELL, JOHN JEFFERSON MOREY, JIMMY D., REVOC TRUST ROONEY, ONEZ NORMAN TEST/TR RUDY, ELLIS SMITH, WELTON WILLIAMS, ELLEN ANNE W. WISER OIL COMPANY	0.921052 AMOCO PRODUCTION COMPANY, U.S.A. 0.018420 ATLANTIC RICHFIELD COMPANY 0.018420 CHEVRON U.S.A. INC. 0.018420 CONOCO INC. 0.018420 0.115132 0.132392 0.132412 0.132392 0.132412 0.172692 0.172692 0.460572 0.118816 0.013816 0.013816 0.574220 0.103616 0.414472 1.193684 1.193684 0.055264 0.142304 0.103620 0.207236 0.001432 0.031776 0.018420 0.276312	25.000000 25.000000 25.000000 25.000000	8.3087580
002 LOCKHART "A-18"	T-21-S, R-36-E, NMPM SEC. 18: LOTS 3,4 E1/2 SW1/4	229.97	LC-032099-A HBP 06/23/31	USA "C"	CONOCO INC. AMAX OIL & GAS INC. CHEVRON U.S.A. INC. AMOCO PRODUCTION COMPANY, U.S.A. AMOCO PRODUCTION CO. ANDREWS, SELMA E. TRUST	0.027775 AMOCO PRODUCTION COMPANY, U.S.A. 0.666670 ATLANTIC RICHFIELD COMPANY 0.716060 CHEVRON U.S.A. INC.	25.000000 25.000000 25.000000	0.9214060	

3 = NW SW  
 4 = SW SW

S2 SE

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
 EXHIBIT 'B'  
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 IN ACCORDANCE WITH THE PARTICIPATION FORMULA FOR THE UNITIZED FORMATION FOR THE  
 EUNICE MONUMENT SOUTH UNIT AREA - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

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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	
002	S1/2 SE1/4		EXCHANGED 06/01/51		ATLANTIC RICHFIELD COMPANY	BORDAGES, CECIL P., 11 BORDAGES, JOYCE BOYS CLUB OF AMERICA BRAILLE INSTITUTE OF AMERICA INC BYRD, KATHRYN M. CLINE, JEAN K. CLINE, RICHARD L. JR. CROTTY, BETTY BELL DRAKE, VIRGINIA M. ELKS NATIONAL FOUNDATION ELLIOTT OIL COMPANY ETZ OIL PROPERTIES, LIMITED ETZ, GEORGE H. SR., TRUST FARRELL, BARBARA CHRISTMAN GILMER, DOLORES GUTMAN, CHARLES GUTMAN, MAX, TRUST GUTTAG, BETTY HIGGINS TRUST INC. HYMAN, MARY JANE HYMAN, MARY JANE, TRUSTEE KING, BUFORD I., TRUSTEE LANE, VIRGINIA B. ESTATE LEONARD, PATRICK J. LEONARD, ROBERT J. LEONARD, TIMOTHY T. MARTIN, BETTY B. MCKONE, ARTHUR EUGENE MOBIL PRODUCING TEXAS & NEW MEXICO INC. NEW MEXICO BOYS RANCH NINIAN OIL COMPANY PEDLEY, DAVID M. PEDLEY, JOHN C. PEDLEY, LAWRENCE L. PEDLEY, T.A. JR. REGENTS OF THE UNIVERSITY OF COLORADO REGENTS OF THE UNIVERSITY OF NEW MEXICO	0.072910 0.072920 0.033330 0.617270 0.003480 0.003470 0.003470 0.003910 0.005210 0.033330 0.166670 0.250000 0.250000 0.001300 0.003900 0.027770 0.055560 0.027780 0.333330 0.027780 0.027780 0.041670 0.003910 0.055560 0.055550 0.055550 0.001300 0.041670 0.666660 0.033340 0.027775 0.005560 0.005560 0.005550 0.016660 0.013890 0.033340	CONOCO INC.	25.000000

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
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000						ROSS, REEDE CHRISTMAN (MRS.) SADLER, JACKSON L. SHATTUCK-ST. MARY'S SCHOOLS SMITH, JOSEPHINE M., TRUST SOCOLOW, EDITH G. AND A. WALTER SOCOLOW TEXARO OIL COMPANY	0.001300 0.027780 0.033330 0.372920 0.055560 0.013890	
003	LOCKHART "B-14"	320.00	T-21-S, R-36-E, NMPM SEC. 14: W1/2 W1/2, E1/2 E1/2 LC-032099-B HBP 06/23/31 EXCHANGED 07/01/52	USA "D"	CONOCO INC. CHEVRON U.S.A. INC. AMOCO PRODUCTION CO. ATLANTIC RICHFIELD	AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. CONOCO INC.	25.000000 25.000000 25.000000 25.000000	0.6475550
004	LOCKHART "B-13"	40.00	T-21-S, R-36-E, NMPM SEC. 13: NW1/4 NW1/4 LC-032099-B HBP 06/23/31 EXCHANGED 07/01/52	USA "D"	CONOCO INC. CHEVRON U.S.A. INC. AMOCO PRODUCTION CO. ATLANTIC RICHFIELD	AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. CONOCO INC.	25.000000 25.000000 25.000000 25.000000	0.0708830
005	MEYER "B-18"	149.91	T-21-S, R-36-E, NMPM SEC. 18: LOTS 1,2, E1/2 NW1/4 LC-031740-B HBP 10/26/34 EXCHANGED 10/01/54	USA "D"	LOIS E. MEYER	AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. CONOCO INC.	25.000000 25.000000 25.000000 25.000000	0.2547600
006	MEYER "B-17"	80.00	T-21-S, R-36-E, NMPM SEC. 17: E1/2 SE1/4 LC-031740-B HBP 10/26/34 EXCHANGED 10/01/54	USA "D"	LOIS E. MEYER	AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. CONOCO INC.	25.000000 25.000000 25.000000 25.000000	0.3231440
007	MEYER "B-4"	714.88	T-21-S, R-36-E, NMPM SEC. 4: LOT 1,2,3,6,7,8,9,10, 11,14,15,16, E1/2 SW1/4, SE1/4 LC-031740-B HBP 10/26/34 EXCHANGED 10/01/54	USA "D"	LOIS E. MEYER	AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. CONOCO INC.	25.000000 25.000000 25.000000 25.000000	6.6645060

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
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008 MEYER "B-8"	T-21-S, R-36-E, NMPM SEC. 8: NW1/4	160.00	LC-031740-B HBP 10/26/34 EXCHANGED 10/01/54	USA "D"	LOIS E. MEYER		AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. CONOCO INC.	25.000000 25.000000 25.000000 25.000000	9.0594530	
009 MEYER "B-9"	T-21-S, R-36-E, NMPM SEC. 9: E1/2 W1/2	160.00	LC-031740-B HBP 10/26/34 EXCHANGED 10/01/54	USA "D"	LOIS E. MEYER		AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. CONOCO INC.	25.000000 25.000000 25.000000 25.000000	1.3261040	
010 GILLULY "A"	T-20-S, R-36-E, NMPM SEC. 25: W1/2 NE1/4, NE1/4 SW1/4	120.00	LC-031736-A HBP 03/30/37 EXCHANGED 03/01/57	USA "C"	AMOCO PRODUCTION CO.	ANDREWS, SELMA E. TRUST BEAMS MINERALS COMPANY BRAILLE INSTITUTE OF AMERICA INC BRAUCHLI, C R CRAIG LTD DEVENPORT, JUDITH H., TRUSTEE DOLLEY, ROBERT C. GALLANT, CLARADEAN HAENNI, MARGARET B JENKINS, MARLIN H AND DR MURIEL I KEEFER, LEONARD D MACCAUGHTRY, LINA R AND LAWRENCE R ORYX ENERGY COMPANY PAYNE, JULIA H PAYNE, WESTON, TRUST UNION TEXAS PETROLEUM CORPORATION WARD, DANIEL ROBERT WARD, LINDA DOLLEY WILLETS, ELMORE A. JR.,	2.685250 0.044650 2.314750 0.011160 0.233520 0.011390 0.150000 0.125000 0.011160 0.250000 0.375000 0.250000 0.064730 0.016960 0.027680 0.323660 0.500000 0.100000 0.005090	AMOCO PRODUCTION COMPANY, U.S.A.	100.000000	0.5844610
011 GILLULY "B" FEDERAL	T-20-S, R-36-E, NMPM SEC. 25: NW1/4 SW1/4	40.00	LC-03136-B HBP 03/30/37	USA "C"	AMOCO PRODUCTION CO		AMOCO PRODUCTION COMPANY, U.S.A.	100.000000	0.0270770	

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

EXHIBIT 'B'  
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AUGUST 13, 1990

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011			EXCHANGED 03/01/57					
012	FOPEANO FEDERAL T-20-S, R-36-E, NMPM SEC. 25: S1/2 SW1/4	80.00	LC-048741-A HBP 07/01/37 RENEWAL 07/01/77	USA "C"	EXXON CORPORATION	DI FORD, RONALD K. FOPEANO, NELLIE PRINCE RIGGS, GEORGE & EDITH LIVING TRUST WILLS ROYALTY INC.	0.781300 EXXON COMPANY, U.S.A. 0.781300 0.781200 0.781200	100.000000 0.1512240

\* \* \* 12 FEDERAL LANDS TRACTS TOTALING 2,734.76 ACRES -OR- 19.27% OF AREA A \* \* \*



EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

EXHIBIT 'B'  
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STATE LANDS

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013 J.F. JANDA (NCT-C)	T-21-S, R-36-E, NMPM SEC. 15: SW1/4	160.00	B-229-1 HBP 02/28/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	1.0553500
ARNOTT-RAMSAY (NCT-C)	T-21-S, R-36-E, NMPM SEC. 21: NW1/4, N1/2 SW1/4, N1/2 NE1/4, SW1/4 NE1/4, N1/2 SE1/4	440.00	B-229-1 HBP 02/28/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	2.7396130
015 R.R. BELL (NCT-F)	T-20-S, R-36-E, NMPM SEC. 36: W1/2	320.00	B-230-1 HBP 02/28/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	3.1955070
016 R.R. BELL (NCT-D)	T-21-S, R-36-E, NMPM SEC. 6: LOTS 17,18	70.37	B-230-1 HBP 02/28/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	0.6821390
017 R.R. BELL (NCT-B)	T-21-S, R-36-E, NMPM SEC. 6: E1/2 SE1/4	80.00	B-230-1 HBP 02/28/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	3.7267870
018 BELL-RAMSEY (NCT-A)	T-21-S, R-36-E, NMPM SEC. 4: LOTS 4,5,12,13, W1/2 SW1/4	238.72	B-230-1 HBP 02/28/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	1.4595700
019 R.R. BELL (NCT-A)	T-21-S, R-36-E, NMPM SEC. 8: S1/2 SE1/4	80.00	B-230-1 HBP 02/28/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	0.4261010

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
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020 BELL-RAMSEY (NCT-A)	T-21-S, R-36-E, NMPM SEC. 9: W1/2 W1/2	160.00	B-230-1 HBP 02/28/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	0.7963470
R.R. BELL (NCT-E)	T-21-S, R-36-E, NMPM SEC. 11: N1/2 NW1/4	80.00	B-230-1 HBP 02/28/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	0.3559630
022 R.R. BELL (NCT-C)	T-21-S, R-36-E, NMPM SEC. 15: NW1/4	160.00	B-230-1 HBP 02/28/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	2.6833210
023 STATE "D"	T-21-S, R-36-E, NMPM SEC. 16: W1/2 SE1/4	80.00	B-1889-3 HBP 06/08/28	STATE OF NEW MEXICO 12.500000	GETTY OIL COMPANY		TEXACO PRODUCING, INC. 100.000000	0.9185590
024 STATE "G"	T-21-S, R-36-E, NMPM SEC. 21: SE1/4 NE1/4	40.00	B-1651-4 HBP 09/18/28	STATE OF NEW MEXICO 12.500000	GETTY OIL COMPANY		TEXACO PRODUCING, INC. 100.000000	0.2774240
025 STATE "D" BATTERY 2	T-21-S, R-36-E, NMPM SEC. 11: SW1/4	160.00	B-1537 HBP 09/25/28	STATE OF NEW MEXICO 12.500000	CONOCO INC.		CONOCO INC. 100.000000	0.4743530
026 STATE "D"	T-21-S, R-36-E, NMPM SEC. 15: E1/2	320.00	B-1537 HBP 09/25/28	STATE OF NEW MEXICO 12.500000	CONOCO INC.		CONOCO INC. 100.000000	1.9578900
027 STATE "E"	T-21-S, R-36-E, NMPM SEC. 5: N1/2 SW1/4	80.00	B-1940-2 HBP	STATE OF NEW MEXICO	ATLANTIC RICHFIELD COMPANY		ATLANTIC RICHFIELD COMPANY 100.000000	2.6806090

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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027			10/01/28	12.500000				
028 STATE "H"	T-21-S, R-36-E, NMPM SEC. 5: LOTS 9,10,15,16	160.00	B-2139-3 HBP 10/05/28	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY		ATLANTIC RICHFIELD COMPANY 100.000000	0.9344980
029 SUNSHINE	T-20-S, R-37-E, NMPM SEC. 30: LOT 4, E1/2 SW1/4	119.69	B-2194-3 HBP 10/26/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	0.4053590
030 SKELLY "B" STATE	T-21-S, R-36-E, NMPM SEC. 16: NW1/4, NW1/4 NE1/4	200.00	B-1327 HBP 11/02/28	STATE OF NEW MEXICO 12.500000	GETTY OIL COMPANY		TEXACO PRODUCING, INC. 100.000000	1.3284730
031 MEXICO "V"	T-21-S, R-36-E, NMPM SEC. 16: SW1/4 NE1/4	40.00	B-1327 HBP 11/02/28	STATE OF NEW MEXICO 12.500000	GETTY OIL COMPANY		TEXACO PRODUCING, INC. 100.000000	0.1375200
032 SKELLY "H" STATE	T-20-S, R-36-E, NMPM SEC. 25: W1/2 NW1/4	80.00	B-1328 HBP 11/02/28	STATE OF NEW MEXICO 12.500000	GETTY OIL COMPANY		TEXACO PRODUCING, INC. 100.000000	0.4271500
033 STATE "AW"	T-21-S, R-36-E, NMPM SEC. 16: NE1/4 NE1/4	40.00	B-1566-2 HBP 11/20/28	STATE OF NEW MEXICO 12.500000	GETTY OIL COMPANY		TEXACO PRODUCING, INC. 100.000000	0.1697940
034 H.T. ORCUTT (NCT-C)	T-20-S, R-36-E, NMPM SEC. 36: S1/2 SE1/4 T-21-S, R-36-E, NMPM SEC. 6: LOTS 1,2,3,6,7,8	316.45	B-244-1 HBP 11/22/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	3.5597650

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 IN ACCORDANCE WITH THE PARTICIPATION FORMULA FOR THE UNITIZED FORMATION FOR THE  
 EUNICE MONUMENT SOUTH UNIT AREA - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

STATE LANDS

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
035 H.T. ORCUTT (NCT-A)	T-21-S, R-36-E, NMPM 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 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	1.7013940
036 H.T. ORCUTT (NCT-B)	T-21-S, R-36-E, NMPM SEC. 5: LOTS 7,8	80.00	B-244-1 HBP 11/22/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	0.3610250
037 AGGIES STATE	T-20-S, R-37-E, NMPM SEC. 31: LOTS 1,2,3,4, E1/2 W1/2, NE1/4	479.48	B-935 HBP 11/22/28	STATE OF NEW MEXICO 12.500000	EXXON CORPORATION		EXXON COMPANY, U.S.A. 100.000000	1.9623150
038 STATE "A"	T-21-S, R-36-E, NMPM SEC. 8: NE1/4	160.00	A-1350-7 HBP 11/26/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC. GETTY OIL COMPANY SUM E & P COMPANY		BRUIN ENERGY LTD CARPENTER OIL & GAS COMPANY CHEVRON U.S.A. INC. ENERGY PRODUCTION CORPORATION FIVE STATES LIMITED 1987 FIVE STATES 1988-A, LTD. PAULEY, S.F. TEXACO PRODUCING, INC. 13.255000 4.805000 50.000000 0.166000 5.946000 0.414000 0.414000 25.000000	1.7700120
039 STATE "F"	T-20-S, R-37-E, NMPM SEC. 30: E1/2 SW1/4, SW1/4 SE1/4	120.00	B-1481-15 HBP 11/26/28	STATE OF NEW MEXICO 12.500000	CITIES SERVICE O&G CORPORATION		CARPENTER OIL & GAS COMPANY FIVE STATES 1988-A, LTD. PAULEY, S.F. 66.789000 29.959000 3.252000	0.2443600
ASMUSSEN STATE	T-21-S, R-36-E, NMPM SEC. 2: SW1/4 SW1/4	40.00	B-1481-15 HBP 11/26/28	STATE OF NEW MEXICO 12.500000	CITIES SERVICE O&G CORPORATION	STUMP, RICHARD & CATHERINE 0.848750	CHEVRON U.S.A. INC. PFLUGER, A. LEE, CHILDRENS TRUST PFLUGER, WILLIAM CARL 66.666666 16.666667 16.666667	0.0765490
041 STATE "C"	T-21-S, R-36-E, NMPM	160.00	B-1481-15	STATE OF	CITIES SERVICE O&G		CARPENTER OIL & GAS COMPANY 66.789000	0.7510930

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
 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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

STATE LANDS

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041	SEC. 16: SW1/4		HBP 11/26/28	NEW MEXICO 12.500000	CORPORATION		FIVE STATES 1988-A, LTD. PAULY, S.F. 29.959000 3.252000	
STATE "G"	T-21-S, R-36-E, NMPM SEC. 2: SE1/4 SW1/4	40.00	B-1481-15 HBP 11/26/28	STATE OF NEW MEXICO 12.500000	CITIES SERVICE O&G CORPORATION		CHEVRON U.S.A. INC. PFLUGER, A. LEE, CHILDRENS TRUST PFLUGER, WILLIAM CARL 50.000000 25.000000 25.000000	0.0649670
043 STATE "C"	T-21-S, R-36-E, NMPM SEC. 5: S1/2 S11/4	80.00	B-1673-6 HBP 11/30/28	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY GETTY OIL COMPANY		ATLANTIC RICHFIELD COMPANY TEXACO PRODUCING, INC. 50.000000 50.000000	1.2693240
044 STATE "I"	T-21-S, R-36-E, NMPM SEC. 3: LOTS 3,4	75.59	A-1375-17 HBP 12/05/28	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY		ALLISON, ANN D ATLANTIC RICHFIELD COMPANY BERGERE, SUE C. ESTATE CATRON, J B ESTATE CATRON, JOHN S. CATRON, THOMAS B. III EDDY, JOHN N EXXON COMPANY, U.S.A. MCWHORTER, BRENT C MCWHORTER, MARY J MOORE, JANE ELLEN WHEELER, EDITH C 0.416625 50.000000 2.750000 4.666750 1.817500 2.067500 5.588000 31.027125 0.416625 0.416625 0.416625 0.416625	0.1267880
045 STATE "L" BATTERY 2	T-21-S, R-36-E, NMPM SEC. 6: LOTS 4,5	68.38	A-1375-17 HBP 12/05/28	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY		ALLISON, ANN D ATLANTIC RICHFIELD COMPANY BERGERE, SUE C. ESTATE CATRON, J B ESTATE CATRON, JOHN S. CATRON, THOMAS B. III EDDY, JOHN N EXXON COMPANY, U.S.A. MCWHORTER, BRENT C 0.416625 50.000000 2.750000 4.666750 1.817500 2.067500 5.588000 31.027125 0.416625	0.4776890



EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
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045							MCWHORTER, MARY J MOORE, JANE ELLEN WHEELER, EDITH C	0.416625 0.416625 0.416625	
STATE "I" BATTERY 3	T-21-S, R-36-E, NMPM SEC. 11: SW1/4 NW1/4	40.00	A-1375-17 HBP 12/05/28	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY		ALLISON, ANN D ATLANTIC RICHFIELD COMPANY BERGERE, SUE C. ESTATE CATRON, J B ESTATE CATRON, JOHN S. CATRON, THOMAS B. III EDDY, JOHN N EXXON COMPANY, U.S.A. MCWHORTER, BRENT C MCWHORTER, MARY J MOORE, JANE ELLEN WHEELER, EDITH C	0.416625 50.000000 2.750000 4.666750 1.817500 2.067500 5.588000 31.027125 0.416625 0.416625 0.416625 0.416625	0.2707900
047	STATE "I" - BATTERY	T-21-S, R-36-E, NMPM SEC. 22: SE1/4 NW1/4	40.00	A-1375-17 HBP 12/05/28	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY	ALLISON, ANN D ATLANTIC RICHFIELD COMPANY BERGERE, SUE C. ESTATE CATRON, J B ESTATE CATRON, JOHN S. CATRON, THOMAS B. III EDDY, JOHN N EXXON COMPANY, U.S.A. MCWHORTER, BRENT C MCWHORTER, MARY J MOORE, JANE ELLEN WHEELER, EDITH C	0.416625 50.000000 2.750000 4.666750 1.817500 2.067500 5.588000 31.027125 0.416625 0.416625 0.416625 0.416625	0.2658670
048	WALLACE STATE	T-21-S, R-36-E, NMPM SEC. 3: LOTS 5,6,11,12,13,14	240.00	A-1375-36 HBP 12/05/28	STATE OF NEW MEXICO 12.500000	THOMAS B. CATRON, III AND JOHN S. CATRON	BERGERE, SUE C. ESTATE CATRON, THOMAS B. III, & JOHN S CATRON CHEVRON U.S.A. INC.	6.250000 6.250000 87.500000	0.2903690

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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STATE LANDS

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049 STATE "B"	T-21-S, R-36-E, NMPM SEC. 8: N1/2 SE1/4	80.00	B-452-1 HBP 12/05/28	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY		ATLANTIC RICHFIELD COMPANY 100.000000	0.7510020
050 STATE "O"	T-20-S, R-37-E, NMPM SEC. 32: W1/2 NW1/4	80.00	B-2288-3 HBP 12/13/28	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY		ATLANTIC RICHFIELD COMPANY 100.000000	0.0503670
051 HEALSEY STATE	T-21-S, R-36-E, NMPM SEC. 5: LOTS 1,2,3,4,5,6	236.76	B-1641-4 HBP 12/17/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	2.7238700
052 STATE "F"	T-21-S, R-36-E, NMPM SEC. 6: LOTS 13,14	75.17	B-1398-27 HBP 12/26/28	STATE OF NEW MEXICO 12.500000	SHELL WESTERN E&P AND EL PASO NATURAL GAS		SHELL WESTERN E&P INC. 100.000000	0.2376700
053 STATE "K"	T-20-S, R-36-E, NMPM SEC. 36: NE1/4	160.00	B-1398-28 HBP 12/26/28	STATE OF NEW MEXICO 12.500000	SHELL WESTERN E&P AND EL PASO NATURAL GAS		SHELL WESTERN E&P INC. 100.000000	5.1124120
054 STATE "EE"	T-21-S, R-36-E, NMPM SEC. 6: LOTS 9,10	80.00	B-1399-15 HBP 12/26/28	STATE OF NEW MEXICO	SHELL WESTERN E&P AND EL PASO NATURAL GAS		SHELL WESTERN E&P INC. 100.000000	0.4858390
055 STATE "G"	T-21-S, R-36-E, NMPM SEC. 6: LOTS 11,12	75.15	B-1400-13 HBP 12/26/28	STATE OF NEW MEXICO 12.500000	SHELL WESTERN E&P AND EL PASO NATURAL GAS		CHEVRON U.S.A. INC. 100.000000	0.2210970
056 STATE "AX"	T-21-S, R-36-E, NMPM	40.00	B-1616-7	STATE OF	GETTY OIL COMPANY		TEXACO PRODUCING, INC. 100.000000	0.1863220

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056	SEC. 16: SE1/4 NE1/4		HBP 12/27/28	NEW MEXICO 12.500000					
GRAHAM STATE	(NCT-"E 7-21-S, R-36-E, NMPM SEC. 6: W1/2 SE1/4	80.00	A-1543-1 HBP 12/29/28	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC. 100.000000	0.5204750	
058	STATE "C" - TRACT 11 T-21-S, R-36-E, NMPM SEC. 2: S1/2 SE1/4	80.00	B-1557 HBP 12/29/28	STATE OF NEW MEXICO 12.500000	AMOCO PRODUCTION CO.		AMOCO PRODUCTION COMPANY, U.S.A. 100.000000	0.0318850	
059	STATE "M" T-20-S, R-36-E, NMPM SEC. 36: N1/2 SE1/4	80.00	B-1674-1 HBP 12/31/28	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY		ATLANTIC RICHFIELD COMPANY 100.000000	0.8824350	
060	STATE "E" T-21-S, R-36-E, NMPM SEC. 16: E1/2 SE1/4	80.00	B-2330-4 HBP 12/31/28	STATE OF NEW MEXICO 12.500000	GETTY OIL COMPANY		TEXACO PRODUCING, INC. 100.000000	0.5596360	
061	STATE "J" T-21-S, R-36-E, NMPM SEC. 22: N1/2 NW1/4	80.00	A-1573-5 HBP 01/03/29	STATE OF NEW MEXICO 12.500000	AMOCO PRODUCTION CO.	ELLIS, SHELBY, MGT TRUST ELLIS, SHELBY, TRUST HENDERSON, DOROTHY LOUISE, TRUST HENDRICKSON, A.N., ESTATE HUNT, JEANNE EDNA, TRUST JONE, MARY EVANGELINA, TRUST SMITH, MARY EVANGELIA SMITH, WILLARD B AND HELEN JOY, TRUST THOMPSON, FRANKLIN G., FAMILY AGENCY THOMPSON, MARTIN H.	0.195310 0.195320 0.130210 1.562500 0.130210 0.195310 0.195310 0.130210 0.195310 0.195310	AMOCO PRODUCTION COMPANY, U.S.A. 100.000000	0.3919240
062	STATE "K" T-21-S, R-36-E, NMPM	40.00	B-1936-8	STATE OF	ATLANTIC RICHFIELD		ATLANTIC RICHFIELD COMPANY 100.000000	0.1581160	

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
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062	SEC. 6: SE1/4 SW1/4		HBP 01/11/29	NEW MEXICO 12.500000	COMPANY				
TURNER STATE	T-20-S, R-37-E, NMPM SEC. 32: E1/2 NW1/4, W1/2 NE1/4	160.00	B-1463-3 HBP 01/11/29	STATE OF NEW MEXICO 12.500000	BERT FIELDS, JR.			0.2324760 *	
063A TURNER STATE	SEC. 32: E1/2 NW1/4, SW1/4 NE1/4	(120.00)	HBP	STATE OF	FIRST HUTCHINGS-SEALY NAT'L BANK	0.285000	AMERADA HESS CORPORATION AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY BRUIN ENERGY LTD CARPENTER OIL & GAS COMPANY CHEVRON U.S.A. INC. CONOCO INC. ENERGY PRODUCTION CORPORATION EXXON COMPANY, U.S.A. EXXON COMPANY, U.S.A. FIVE STATES LIMITED 1987 FIVE STATES 1988-A, LTD. KOCH EXPLORATION COMPANY PAULEY, S.F. SHELL WESTERN E&P INC. TURNER, FRED JR. TRUST WISER OIL COMPANY	0.154307 0.984044 2.335492 0.062658 0.101507 4.464585 1.105212 0.000782 0.589887 57.142800 0.028104 0.037307 0.038700 0.005796 0.793480 32.142900 0.012439	(0.2034180) *
063B TURNER STATE	SEC. 32: NW1/4 NE1/4	(40.00)	HBP	STATE OF	FIRST HUTCHINGS-SEALY NAT'L BANK	0.285000	AMERADA HESS CORPORATION AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY BRUIN ENERGY LTD CARPENTER OIL & GAS COMPANY CHEVRON U.S.A. INC. CONOCO INC. ENERGY PRODUCTION CORPORATION EXXON COMPANY, U.S.A.	0.360050 2.296100 5.449475 0.146200 0.236850 10.417350 2.578825 0.001825 1.376400	(0.0290580) *

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063b							FIVE STATES LIMITED 1987 FIVE STATES 1988-A, LTD. KOCH EXPLORATION COMPANY PAULEY, S.F. SHELL WESTERN I&P INC. TURNER, FRED JR. TRUST WISER OIL COMPANY	0.065575 0.087050 0.090300 0.013525 1.851450 75.000000 0.029025
064	STATE "K" T-21-S, R-36-E, NMPM SEC. 6: NE1/4 SW1/4	40.00	B-2352-2 HBP 01/11/29	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY	ATLANTIC RICHFIELD COMPANY	100.000000	0.0678810
065	STATE "AY" T-20-S, R-37-E, NMPM SEC. 32: E1/2 NE1/4	80.00	B-2366-8 HBP 01/11/29	STATE OF NEW MEXICO 12.500000	GETTY OIL COMPANY	TEXACO PRODUCING, INC.	100.000000	0.0090050
066	STATE "P" T-20-S, R-36-E, NMPM SEC. 25: E1/2 NW1/4	80.00	B-1671-1 HBP 01/14/29	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY	ATLANTIC RICHFIELD COMPANY	100.000000	0.5127980
067	STATE "H" (NCT-1) T-20-S, R-37-E, NMPM SEC. 31: SE1/4	160.00	B-160-1 HBP 01/15/29	STATE OF NEW MEXICO 12.500000	TEXACO INC.	AMERADA HESS CORPORATION AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY BRUIN ENERGY LTD CARPENTER OIL & GAS COMPANY CHEVRON U.S.A. INC. CONOCO INC. ENERGY PRODUCTION CORPORATION EXXON COMPANY, U.S.A. FIVE STATES LIMITED 1987 FIVE STATES 1988-A, LTD. KOCH EXPLORATION COMPANY PAULEY, S.F.	1.440200 9.184400 21.797900 0.584800 0.947400 41.669400 10.315300 0.007300 5.505600 0.262300 0.348200 0.361200 0.054100	0.6355320



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067							SHELL WESTERN E&P INC. WISER OIL COMPANY	7.405800 0.116100
STATE "196"	T-20-S, R-37-E, NMPM SEC. 32: W1/2 SW1/4	80.00	B-2406-1 HBP 01/15/29	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY		ATLANTIC RICHFIELD COMPANY	100.000000 0.2202460
069 STATE "A"	T-21-S, R-36-E, NMPM SEC. 5: N1/2 SE1/4	80.00	B-2456-10 HBP 02/26/29	STATE OF NEW MEXICO 12.500000	KOCH INDUSTRIES INC.	BLAKE, TUPPER ANSEL FIVE STATES 1990-A, LTD.,	14.062500 BLOSS, WILLIAM E., REVOCABLE TRUST 23.437500 HEPWORTH, BARBARA D., AGENCY KOCH EXPLORATION COMPANY RALSTIN, BETTY PERDEW, ESTATE	1.250000 1.250000 95.000000 2.500000 0.3437780
070 STATE "J"	T-20-S, R-37-E, NMPM SEC. 32: SE1/4, E1/2 SW1/4	240.00	B-1167-49 HBP 09/15/32	STATE OF NEW MEXICO 12.500000	EL PASO NATURAL GAS AND SHELL WESTERN E&P		SHELL WESTERN E&P INC.	100.000000 0.2875220
071 HARRY LEONARD (NCT-A	T-21-S, R-36-E, NMPM SEC. 22: NE1/4, N1/2 SW1/4, N1/2 SE1/4	320.00	B-1732-1 HBP 02/28/33	STATE OF NEW MEXICO 12.500000	CHEVRON U.S.A. INC.		CHEVRON U.S.A. INC.	100.000000 0.8259870
072 STATE "B"	T-21-S, R-36-E, NMPM SEC. 11: SE1/4 NW1/4	40.00	B-2527-12 HBP 02/10/34	STATE OF NEW MEXICO 12.500000	TWO STATES OIL CO.		CHEVRON U.S.A. INC. EXXON COMPANY, U.S.A.	81.250000 18.750000 0.0732990
073 "KELLY" "G"	T-20-S, R-37-E, NMPM SEC. 30: NW1/4 SE1/4	40.00	B-2690 HBP 04/02/34	STATE OF NEW MEXICO 12.500000	GETTY OIL COMPANY		TEXACO PRODUCING, INC.	100.000000 0.0812410
074 PHILLIPS	T-20-S, R-37-E, NMPM SEC. 30: NE1/4 NW1/4,	80.00	B-2736-9 HBP	STATE OF NEW MEXICO	WILLIAM A. HUDSON AND		AMERADA HESS CORPORATION AMOCO PRODUCTION COMPANY, U.S.A.	1.440200 9.184400 0.0290170

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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074	NW1/4 NE1/4		04/10/34	12.500000	EDWARD R. HUDSON		ATLANTIC RICHFIELD COMPANY 21.797900 BRUIN ENERGY LTD 0.584800 CARPENTER OIL & GAS COMPANY 0.947400 CHEVRON U.S.A. INC. 41.669400 CONOCO INC. 10.315300 ENERGY PRODUCTION CORPORATION 0.007300 EXXON COMPANY, U.S.A. 5.505600 FIVE STATES LIMITED 1987 0.262300 FIVE STATES 1988-A, LTD. 0.348200 KOCH EXPLORATION COMPANY 0.361200 PAULEY, S.F. 0.054100 SHELL WESTERN E&P INC. 7.405800 WISER OIL COMPANY 0.116100	
075 STATE "G"	T-21-S R-36-E, NMPM SEC. 5: S1/2 SW1/4	80.00	B-3114-3 HBP 09/24/34	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY		ATLANTIC RICHFIELD COMPANY 100.000000	0.6931340
076 STATE "J"	T-21-S, R-36-E, NMPM SEC. 22: SW1/4 NW1/4	40.00	B-3114-4 HBP 09/24/34	STATE OF NEW MEXICO 12.500000	AMOCO PRODUCTION CO.		AMOCO PRODUCTION COMPANY, U.S.A. 100.000000	0.2333150
077 STATE "W"	T-20-S, R-37-E, NMPM SEC. 30: LOT 2, SE1/4 NW1/4, S1/2 NE1/4	159.47	B-3423-1 HBP 10/29/34	STATE OF NEW MEXICO 12.500000	AMARADA HESS CORP.		AMERADA HESS CORPORATION 100.000000	0.1487700
078 STATE "193"	T-20-S, R-37-E, NMPM SEC. 30: LOT 3	39.57	B-3798-1 HBP 04/22/35	STATE OF NEW MEXICO 12.500000	ATLANTIC RICHFIELD COMPANY		ATLANTIC RICHFIELD COMPANY 100.000000	0.0554910

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

STATE LANDS

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
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\* \* \* 68 STATE LANDS TRACTS TOTALING 8,274.80 ACRES -OR- 58.31% OF AREA A \* \* \*

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
 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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
* * * TOTAL ACRES IN THIS AREA IS 14,189.84 * * *							
079 WHITE (NCT-A)	T-20-S, R-36-E, NMPM SEC. 25: E1/2 NE1/4, SE1/4	240.00	HBP				0.7143180 *
079A WHITE (NCT-A)	SEC. 25: W1/2 SE1/4	(80.00)	HBP	BEAMS MINERALS COMPANY EUBANK, SUZAN TRIMBLE HEIDMANN, GEAN TRIMBLE HUDSPETH, JOHN R. KING, BUFORD I., TRUSTEE ORYX ENERGY COMPANY PAYNE, JULIA H PAYNE, WESTON, TRUST PETTWAY, MARGUERITE H. PICKENS, RUTH G., GRANDCHILDRENS JV SETH, JAMES SETH, OLIVER TEXARO OIL COMPANY UNION TEXAS PETROLEUM CORPORATION WHITE, LAWRENCE W., FAMILY TRUST	0.078100 0.195300 0.195400 0.195300 0.585900 0.234400 0.029680 0.048420 0.195300 0.781300 0.390600 0.390600 0.195300 1.171900 7.812500	CHEVRON U.S.A. INC.	100.000000 (0.1272210) *
*TOTAL 079A							12.500000
079B WHITE (NCT-A)	SEC. 25: E1/2 E1/2	(160.00)	HBP	CRAIG LTD EUBANK, SUZAN TRIMBLE HEIDMANN, GEAN TRIMBLE HUDSPETH, JOHN R. PETTWAY, MARGUERITE H. SETH, JAMES SETH, OLIVER WHITE-SMOTHERS TRUST WHITE, LAWRENCE W., FAMILY TRUST WHITE, W.W.	1.823000 0.195300 0.195300 0.195300 0.195300 0.390600 0.390600 3.645860 1.822900 3.645840	CHEVRON U.S.A. INC.	100.000000 (0.5870970) *

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
*TOTAL 079R					12.500000			
AKENS	T-21-S, R-36-E, NMPM SEC. 3: SE1/4, N1/2 SW1/4, SE1/4 SW1/4	280.00	HBP				0.4988530 *	
080A AKENS	SEC. 3: SE1/4	(160.00)	HBP	AKENS, HAFFORD AKENS, ROWLAND ANTRY, JO LAYNE ARCHER, LISTON ATLANTIC RICHFIELD COMPANY BOWER, DAVID A., IND. & AS AGENT BOWER, J.R. JR., TRUST CONE, S.E. JR. DEEN, JANIE WAIDI GIBSON, EUNICE CONE GRIMES, C. W., TRUST HART, JACK L. HURLEY, MARY FRANCES (FRAMA) JONES, EVERETT R. JR. KASTMAN, MARJORIE CONE KECK, KATHERINE CONE LON MORRIS COLLEGE MARTIN, CLOVILLA METHODIST HOME, AGENCY MOBIL PRODUCING TEXAS & NEW MEXICO INC. MOBIL PRODUCING TEXAS & NEW MEXICO INC. NISLAR, JAMES ROBERT, TRUST NISLAR, ORA LEE NISLAR, ORA LEE PENN BROTHERS, INC. PENSON, NANCY ELIZABETH PETRUST CORP OF AMERICA RANSOM, CHARLES DANIEL	0.270840 0.270840 0.156200 0.416700 2.083400 0.046200 0.135800 0.253900 0.270840 0.117200 0.302800 0.003300 0.069430 0.015400 0.253900 0.253900 0.036630 0.270835 0.036630 1.562500 3.125000 0.048830 0.048830 0.097650 0.356500 1.069700 0.166700 0.069430	BRUIN ENERGY LTD CARPENTER OIL & GAS COMPANY ENERGY PRODUCTION CORPORATION FIVE STATES LIMITED 1987 FIVE STATES 1988-A, LTD. PAULEY, S.F.	53.020000 19.219000 0.663000 23.784000 1.657000 1.657000	(0.2265520) *



EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

EXHIBIT 'B'  
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 IN ACCORDANCE WITH THE PARTICIPATION FORMULA FOR THE UNITIZED FORMATION FOR THE  
 EUNICE MONUMENT SOUTH UNIT AREA - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
080A				RANSOM, WILLIAM COLEMAN ROYALL, FRANCES K ROYALL, JOHN R TRUST U/W/ F.M. ROYALL ROYALL, JOHN R TRUST U/W/ F.M. ROYALL ROYALL, N R III TRUST U/W F M ROYALL ROYALL, N.R. III TR U/W N.R. ROYALL JR ROYALL, TUCKER K. TR U/W N.R. ROYALL JR ROYALL, TUCKER K. TRUST U/W F.M. ROYALL SOUTHERN METHODIST UNIVERSITY SPARKS, WILMA LEIGH SPINDLETOP EXPLORATION CO., INC. ST. PAUL INDUSTRIAL TRAINING SCHOOL STIEREN, GEORGIA ANN STIEREN, JENNIFER LOUISE STIEREN, MICHAEL ANDREW, A MINOR TORTUGA OIL AND GAS W.E.F. HOLDING, INC. WALKER, NORA WILLIAMS, J.H.	0.069430 0.003100 0.001730 0.000700 0.001730 0.000700 0.000700 0.001730 0.036630 0.270835 0.000500 0.036630 0.007600 0.003800 0.003800 0.013100 0.041600 0.000500 0.195300			
*TOTAL 080A				12.500000				
080B AKENS	SEC. 3: N1/2 SW1/4, SE1/4 SW1/4	(120.00)	HBP	ABRAMSON, ABRAHAM, ESTATE ANTRY, JO LAYNE ARCHER, LISTON ATLANTIC RICHFIELD COMPANY BOWER, DAVID A., IND. & AS AGENT BOWER, J.R. JR., TRUST CONE, S.E. JR. CORBETT, ALLIS V. FIVE STATES LIMITED 1987 FROTHINGHAM, JOHN L. GIBSON, EUNICE CONE GREENWOOD, RHEA S. GRIMES, C. W., TRUST HART, JACK L.	0.133900 0.156200 0.416700 2.083400 0.046200 0.135800 0.253900 0.056800 0.334800 0.334800 0.117200 0.167500 0.302800 0.003300	BRUIN ENERGY LTD CARPENTER OIL & GAS COMPANY ENERGY PRODUCTION CORPORATION FIVE STATES LIMITED 1987 FIVE STATES 1988-A, LTD. PAULEY, S.F.	53.020000 19.219000 0.663000 23.784000 1.657000 1.657000	(0.2723010) *

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
 EXHIBIT 'B'  
 SCHEDULE SHOWING THE PERCENTAGE AND KIND OF OWNERSHIP OF OIL AND GAS INTERESTS  
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 EUNICE MONUMENT SOUTH UNIT AREA - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
0808				HURLEY, MARY FRANCES (FRANA)	0.069440		
				JONES, EVERETT R. JR.	0.015400		
				KASTMAN, MARJORIE CONE	0.253900		
				KECK, KATHERINE CONE	0.253900		
				LON MORRIS COLLEGE	0.036625		
				MAHONEY, ROSEMANN	0.025100		
				METHODIST HOME, AGENCY	0.036625		
				MOBIL PRODUCING TEXAS & NEW MEXICO INC.	1.562500		
				MOBIL PRODUCING TEXAS & NEW MEXICO INC.	3.125000		
				MULDavin, ALBERT	0.133900		
				NISLAR, JAMES ROBERT, TRUST	0.048830		
				NISLAR, ORA LEE	0.048830		
				NISLAR, ORA LEE	0.097650		
				PENN BROTHERS, INC.	0.356500		
				PENSON, NANCY ELIZABETH	1.069700		
				PETRUST CORP OF AMERICA	0.166700		
				RANSOM, CHARLES DANIEL	0.069425		
				RANSOM, WILLIAM COLEMAN	0.069425		
				ROYALL, FRANCES K	0.003100		
				ROYALL, JOHN R TRUST U/W/ F.M. ROYALL	0.001730		
				ROYALL, JOHN R TRUST U/W/ F.M. ROYALL	0.000700		
				ROYALL, N R III TRUST U/W F M ROYALL	0.001730		
				ROYALL, N.R. III TR U/W N.R. ROYALL JR	0.000700		
				ROYALL, TUCKER K. TR U/W N.R. ROYALL JR	0.000700		
				ROYALL, TUCKER K. TRUST U/W F.M. ROYALL	0.001730		
				SARNOFF, CHARLES SPENCER	0.167400		
				SOUTHERN METHODIST UNIVERSITY	0.036630		
				SPINDLETOP EXPLORATION CO., INC.	0.000500		
				ST. PAUL INDUSTRIAL TRAINING SCHOOL	0.036630		
				STIEREN, GEORGIA ANN	0.007600		
				STIEREN, JENNIFER LOUISE	0.003800		
				STIEREN, MICHAEL ANDREW, A MINOR	0.003800		
				TORTUGA OIL AND GAS	0.013100		
				W.E.F. HOLDING, INC.	0.041600		
				WALKER, NORA	0.000500		
				WILLIAMS, J.H.	0.195300		

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
 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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
*TOTAL 080B				12.500000				
00 AKENS	T-21-S, R-36-E, NMPM SEC. 3: SW1/4 SW1/4	40.00	HBP	AARCO OIL & GAS COMPANY ANTRY, JO LAYNE ARCHER, FANCHER ATLANTIC RICHFIELD COMPANY ATLANTIC RICHFIELD COMPANY BOWER, DAVID A., IND. & AS AGENT BOWER, J.R. JR., TRUST CONL. S.E. JR. CORBETT, ALLIS V. CORBETT, ALLIS V. FIVE STATES LIMITED 1987 FROTHINGHAM, JOHN L. GIBSON, EUNICE CONE GREENWOOD, RHEA S. GRIMES, C. W., TRUST H. R. STASNEY AND SONS COMPANY HART, JACK L. HURLEY, MARY FRANCES (FRANA) HYLAND, NELLE P. ESTATE INJECTION ENGINEERING SVC JONES, EVERETT R. JR. JONES, EVERETT R. JR. KASTMAN, MARJORIE CONE KECK, KATHERINE CONE LON MORRIS COLLEGE METHODIST HOME, AGENCY MOBIL PRODUCING TEXAS & NEW MEXICO INC. MULDAVIN, ALBERT NISLAR, JAMES ROBERT, TRUST NISLAR, O.L. JR. TRUST NISLAR, ORA LEE ORYX ENERGY COMPANY PENN BROTHERS, INC.	0.468750 0.078120 0.208350 0.208330 0.833340 0.023120 0.067860 0.253910 0.029300 0.091150 1.171870 1.171880 0.117190 0.585940 0.224610 0.175780 0.001660 0.034724 0.087890 0.351560 0.003850 0.003860 0.253900 0.253910 0.036620 0.036620 0.781250 0.468750 0.048830 0.048830 0.097660 1.171870 0.178250	CHEVRON U.S.A. INC. EXXON COMPANY, U.S.A.	25.000000 75.000000	0.4359440



EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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				
082				ATLANTIC RICHFIELD COMPANY ATLANTIC RICHFIELD COMPANY ATLANTIC RICHFIELD COMPANY BRADLEY NOMINEE CORPORATION BRIN, ROYAL H. JR CRUMP, JESSIE BLEVINS, FAMILY TRUSTS CRUMP, JOE & JESSIE FUND EASTLAND, LUERA MONTEZ EGE, BARBARA R. GOLDBERG, JACQUELINE BRIN, LIVING TRUST GOTTESMAN, FAY COMBEL GUTMAN, MAX, TRUST HOLMES, MARY JOSEPHINE HOUSTON, HARRIS L. JR., ESTATE HYMAN, MARY JANE HYMAN, MARY JANE, TRUSTEE KING, BUFORD I., TRUSTEE KNOX, JEAN READ READ, ALEXANDER D. READ, CURTIS S. JR. READ, DAVID W. READ, DONALD B. READ, PETER B. READ, RODERICK F. READ, WILLIAM A. SARTIN, BILLIE LOIS SOCOLOW, EDITH G. AND A. WALTER SOCLOW TEXARD OIL COMPANY WATSON, WILLIAM B., AGENT & AIF 0700, FREDRICK H.	0.439462 0.000080 3.076158 0.390700 0.032500 0.390600 0.390600 0.781250 0.021705 0.032600 0.065100 0.065100 0.781250 0.781250 0.032600 0.032500 0.048800 0.043401 0.043401 0.021707 0.043401 0.043401 0.043401 0.043401 0.043401 0.781250 0.065100 0.016200 0.437500 0.043401						
					12.500000						
083	H.L. HOUSTON "MA" T-21-S, R-36-E, NMPM SEC. 7: E1/2 NW1/4	80.00	HBP	AMOCO PRODUCTION COMPANY, U.S.A. ARCHIBSCHOPRIC OF NEW YORK ATLANTIC RICHFIELD COMPANY	1.171880 2.296880 0.048827	ATLANTIC RICHFIELD COMPANY	100.000000 0.1927570				



EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

EXHIBIT 'B'  
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 EUNICE MONUMENT SOUTH UNIT AREA - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
083				ATLANTIC RICHFIELD COMPANY	0.390620		
				ATLANTIC RICHFIELD COMPANY	3.076173		
				BRIN, ROYAL H. JR	0.032560		
				CRUMP, JESSIE BLEVINS, FAMILY TRUSTS	0.390620		
				CRUMP, JOE & JESSIE FUND	0.390630		
				EASTLAND, LUERA MONTEZ	0.390625		
				EASTLAND, LUERA MONTEZ	0.390625		
				EGE, BARBARA R.	0.021701		
				GOLDBERG, JACQUELINE BRIN, LIVING TRUST	0.032560		
				GOTTESMAN, FAY COMBEL, TRUSTEE	0.065100		
				GUTMAN, MAX, TRUST	0.065100		
				HOLMES, MARY JOSEPHINE	0.390625		
				HOLMES, MARY JOSEPHINE	0.390625		
				HOUSTON, HARRIS L. JR., ESTATE	0.390625		
				HOUSTON, HARRIS L. JR., ESTATE	0.390625		
				HYMAN, MARY JANE	0.032550		
				HYMAN, MARY JANE, TRUSTEE	0.032550		
				KING, BUFORD I., TRUSTEE	0.048830		
				KNOX, JEAN READ	0.043402		
				READ, ALEXANDER D.	0.043402		
				READ, CURTIS S. JR.	0.021703		
				READ, DAVID W.	0.043402		
				READ, DONALD B.	0.043402		
				READ, PETER B.	0.043402		
				READ, RODERICK F.	0.043402		
				READ, WILLIAM A.	0.043402		
				SARTIN, BILLIE LOIS	0.390625		
				SARTIN, BILLIE LOIS	0.390625		
				SOCLOW, EDITH G. AND A. WALTER SOCLOW	0.065100		
				TEXARO OIL COMPANY	0.016280		
				TRITON OIL & GAS CORPORATION	0.390620		
				WATSON, WILLIAM B., AGENT & AIF	0.437495		
				WATSON, WILLIAM B., AGENT & AIF	0.000005		
				0700, FREDRICK H.	0.043402		
*TOTAL 083					12.500000		

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
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AUGUST 13, 1990

PATENTED LANDS

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		
084 HOUSTON	T-21-S, R-36-E, NMPM SEC. 7: NE1/4	160.00	HBP	AMOCO PRODUCTION COMPANY, U.S.A. ARCHBISHOPRIC OF NEW YORK ATLANTIC RICHFIELD COMPANY BRADLEY NOMINEE CORPORATION BRIN, ROYAL H. JR. CRUMP, JESSIE BLEVINS, FAMILY TRUSTS CRUMP, JONES LESTER, TESTAMENTARY TRUST EASTLAND, LUERA MONTEZ EGE, BARBARA R. GOLDBERG, JACQUELINE BRIN GOTTESMAN, FAY COMBEL GUTMAN, MAX, TRUST HOLMES, MARY JOSEPHINE HOUSTON, H.L. JR. HYMAN, MARY JANE HYMAN, MARY JANE, TRUSTEE KING, BUFORD I., TRUSTEE KNOX, JEAN READ READ, ALEXANDER D. READ, CURTIS S. JR. READ, DAVID W. READ, DONALD B. READ, PETER B. READ, RODERICK F. READ, WILLIAM A. SARTIN, BILLIE LOIS SOCLOW, EDITH G. AND A. WALTER SOCLOW TEXARO OIL COMPANY WATSON, WILLIAM B., AGENT & AIF 070D, FREDRICK H.	1.171880 2.296870 3.515630 0.390630 0.032550 0.390630 0.390620 0.781250 0.021710 0.032550 0.065100 0.065100 0.781250 0.781250 0.032550 0.032550 0.048830 0.043410 0.043400 0.021710 0.043400 0.043400 0.043400 0.043400 0.043400 0.781250 0.065100 0.016270 0.437510 0.043400		AMERADA HESS CORPORATION	100.000000	1.1532710
*TOTAL 084				12.500000					
085 MOLLIE CAMPBELL	T-21-S, R-36-E, NMPM SEC. 7: LOTS 3,4, E1/2 SW1/4	150.01	HBP	ARCHER, FANCHER ASHLAND EXPLORATION INC.	0.390600 0.781300	CHEVRON U.S.A. INC.	100.000000 0.1854570		

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

EXHIBIT 'B'  
 SCHEDULE SHOWING THE PERCENTAGE AND KIND OF OWNERSHIP OF OIL AND GAS INTERESTS  
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 LEA COUNTY, NEW MEXICO

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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
085				ATLANTIC RICHFIELD COMPANY			
				ATLANTIC RICHFIELD COMPANY			
				BOWE, CATHERINE			
				BOWE, VIVIAN			
				BRIN, ROYAL H. JR			
				CAMPBELL, DELMA INEZ			
				CAMPBELL, REX			
				CRAIG LTD			
				EASTLAND, LUERA MONTEZ			
				EDWARDS, EMELY ANN			
				EXXON COMPANY, U.S.A.			
				GIBSON, EUNICE CONE			
				GOLDBERG, JACQUELINE BRIN			
				GOTTESMAN, FAY COMBEL			
				GRIFFIN, REBA CAMPBELL			
				GUTMAN, MAX, TRUST			
				H. R. STASNEY AND SONS COMPANY			
				HOLMES, MARY JOSEPHINE			
				HOME STAKE OIL & GAS CO.			
				HOMESTAKE ROYALTY CORP.			
				HOOPER, CLEM RONALD			
				HOOPER, GERALD HAMIL & DOLORES ALBERTA			
				HOUSTON, H.L. JR.			
				HYMAN, MARY JANE			
				HYMAN, MARY JANE, TRUSTEE			
				INJECTION ENGINEERING SVC			
				KELLOUGH, ROBERT BOOTH			
				KING, BUFORD I., TRUSTEE			
				PEVEHOUSE, MYRTLY			
				PICKENS, RUTH G., GRANDCHILDRENS JV			
				RANSOM, MARY VERN			
				READ, EDITH FABYAN			
				SARTIN, BILLIE LOIS			
				SEAL, WILLIAM G & MARCELLYN J SEAL			
				SIMPSON, JEAN ANDERSON			
				SOCOLOW, EDITH G. AND A. WALTER SOCOLOW			
				TEKELL, LOIS CONE			

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

EXHIBIT 'B'  
 SCHEDULE SHOWING THE PERCENTAGE AND KIND OF OWNERSHIP OF OIL AND GAS INTERESTS  
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AUGUST 13, 1990

PATENTED LANDS

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
085				TEXARD OIL COMPANY VENABLE, R.H., ESTATE WARNER, RACHEL LOUISE WILSON CHILDREN TRUST WISER OIL COMPANY WOOLDRIDGE, MACK H.	0.086000 0.195300 0.117200 0.021700 0.390600 0.027900		
*TOTAL 085					----- 12.500000		
086 A.F. HOUSTON	1-21-S, R-36-E, NMPM SEC. 7; SE1/4	160.00	HBP	ARCHER, FANCHER ASHLAND EXPLORATION INC. ATLANTIC RICHFIELD COMPANY ATLANTIC RICHFIELD COMPANY BOWE, CATHERINE BOWE, VIVIAN BRIN, ROYAL H. JR CAMPBELL, DELMA INEZ CAMPBELL, REX CRAIG LTD EASTLAND, LUERA MONTEZ EDWARDS, EMELY ANN EXXON COMPANY, U.S.A. GIBSON, EUNICE CONE GOLDBERG, JACQUELINE BRIN GOTTESMAN, FAY COMBEL GRIFFIN, REBA CAMPBELL GUTMAN, MAX, TRUST H. R. STASNEY AND SONS COMPANY HOLMES, MARY JOSEPHINE HOME STAKE OIL & GAS CO. HOMESTAKE ROYALTY CORP. HOOPER, CLEM RONALD HOOPER, GERALD HAMIL & DOLORES ALBERTA HOUSTON, H.L. JR. HYMAN, MARY JANE HYMAN, MARY JANE, TRUSTEE	0.390600 0.781300 3.180300 1.051500 0.006500 0.006500 0.032600 0.446400 0.223200 0.837100 0.223225 0.000720 0.781300 0.446400 0.032600 0.065100 0.111600 0.065100 0.027900 0.223225 0.020620 0.020620 0.223200 0.223200 0.223225 0.032500 0.032600	CHEVRON U.S.A. INC.	100.000000 0.6496850

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
086				INJECTION ENGINEERING SVC KELLOUGH, ROBERT BOOTH KING, BUFORD J., TRUSTEE PEVEHOUSE, MYRTLY PICKENS, RUTH G., GRANDCHILDRENS JV RANSOM, MARY VERN READ, EDITH FABYAN SARTIN, BILLIE LOIS SEAL, WILLIAM G & MARCELLYN J SEAL SIMPSON, JEAN ANDERSON SOCOLOW, EDITH G. AND A. WALTER SOCLOW TEKELL, LOIS CONE TEXARO OIL COMPANY VENABLE, R.H., ESTATE WARNER, RACHEL LOUISE WILSON CHILDREN TRUST WISER OIL COMPANY WOOLDRIDGE, MACK H.	0.055800 0.065100 0.258100 0.111600 0.279000 0.390600 0.390600 0.223225 0.000720 0.000720 0.065100 0.111600 0.086000 0.195300 0.117200 0.021700 0.390600 0.027900		
*TOTAL 086					12.500000		
087	E.C. ADKINS	320.00	HBP	ARCHER, FANCHER ARCHIBSCHOPRIC OF NEW YORK ATLANTIC RICHFIELD COMPANY ATLANTIC RICHFIELD COMPANY BOWER, DAVID A., IND. & AS AGENT BOWER, J.R. JR., TRUST CARBONE, JOAN A. COLONIAL ROYALTIES COMPANY CRAIG LTD CRAIG LTD CRAIG LTD DAMSON, IRIS GERBER DELOORE, MARCIA LYNN EXXON COMPANY, U.S.A. FIVE STATES LIMITED 1987	0.195310 3.937500 0.292968 2.050782 0.043370 0.127250 0.007323 0.045582 0.039060 0.058590 0.019530 0.039060 0.026043 1.562500 0.071617	ATLANTIC RICHFIELD COMPANY	100.000000 3.4570040



EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
 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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
087				GREENWALGH, EMILY C & DOLORES SLOAT	0.078120		
				GRIMES, C. W., TRUST	0.937500		
				HOME STAKE OIL & GAS CO.	0.045569		
				HOMESTAKE ROYALTY CORP.	0.045569		
				HURLEY, MARY FRANCES (FRANA)	0.130211		
				JONES, EVERETT R. JR.	0.014450		
				LAW, MARILYN M., REVOC TRUST	0.195312		
				LAWSON PETROLEUM COMPANY	0.078120		
				LYETH, PATRICIA D.	0.781250		
				MANEY, MARGUERITE C	0.004883		
				MANEY, PATRICIA ANN	0.007324		
				MOREY, JIMMY D., REVOC TRUST	0.195312		
				RANSOM, CHARLES DANIEL	0.130210		
				RANSOM, WILLIAM COLEMAN	0.130209		
				ROONEY, ONEZ NORMAN TEST/TR	0.390626		
				ROYALL, FANNIE MAY ESTATE	0.004880		
				ROYALL, JOHN R TRUST U/W F.K. ROYALL	0.000490		
				ROYALL, JOHN R TRUST U/W F.K. ROYALL	0.000977		
				ROYALL, JOHN R, TRUST U/W N R ROYALL JR	0.000652		
				ROYALL, N R III TRUST U/W M R ROYALL JR	0.000651		
				ROYALL, REBECCA	0.000217		
				ROYALL, REBECCA TRUST U/W F.K. ROYALL	0.000164		
				ROYALL, REBECCA TRUST U/W F.K. ROYALL	0.000327		
				ROYALL, TUCKER B TRUST U/W F.K. ROYALL	0.000163		
				ROYALL, TUCKER B TRUST U/W F.K. ROYALL	0.000325		
				ROYALL, TUCKER B.	0.000218		
				SCHACHNER, FRIEDA	0.039060		
				SIDFORD, FRANCES R.	0.000217		
				SIDFORD, FRANCIS R. TR U/W F.K. ROYALL	0.000163		
				SIDFORD, FRANCIS R. TR U/W F.K. ROYALL	0.000326		
				SPINDLETOP EXPLORATION CO., INC.	0.000490		
				TAIT, DONALD	0.009765		
				TAIT, JAMES I.	0.009765		
				WATSON, WILLIAM B., AGENT & AIF	0.750000		
					-----		
					12.500000		

\*TOTAL 087

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

EXHIBIT 'B'  
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 IN ACCORDANCE WITH THE PARTICIPATION FORMULA FOR THE UNITIZED FORMATION FOR THE  
 EUNICE MONUMENT SOUTH UNIT AREA - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
088 A.J. ADKINS	T-21-S, R-36-E, NMPM SEC. 10: W1/2 NW1/4, SE1/4 NW1/4, SW1/4	280.00	HBP	ARCHIBSCHOPRIC OF NEW YORK ATLANTIC RICHFIELD COMPANY CHAPARRAL ROYALTY COMPANY COLONIAL ROYALTIES LIMITED PARTNERSHIP EXXON COMPANY, U.S.A. HOME STAKE OIL & GAS CO. HOMESTAKE ROYALTY CORP. INTEGRITY OIL & GAS INC. LAW, MARILYN M., REVOC TRUST LYETH OIL TRUST MOREY, JIMMY D., REVOC TRUST PATTERSON, ELYSE SAUNDERS, TRUST B PENTAGON OIL COMPANY PETRUST CORP OF AMERICA ROONEY, ONEZ NORMAN TEST/TR SCHACHNER, FRIEDA SPEIGHT, JUNE D. SSG LIMITED PARTNERSHIP TOLES COMPANY WATSON, WILLIAM B., AGENT & AIF	4.593800 2.343800 0.005758 0.012793 1.562500 0.027766 0.027767 0.250000 0.195300 0.781300 0.195300 0.069400 0.009216 0.416700 0.390600 0.083300 0.520800 0.069500 0.069400 0.875000	EXXON COMPANY, U.S.A.	100.000000 0.9313310
*TOTAL 088				12.500000			
089 A.J. ADKINS	T-21-S, R-36-E, NMPM SEC. 10: NE1/4 NW1/4	40.00	HBP	ARCHIBSCHOPRIC OF NEW YORK ATLANTIC RICHFIELD COMPANY CHAPARRAL ROYALTY COMPANY COLONIAL ROYALTIES LIMITED PARTNERSHIP EXXON COMPANY, U.S.A. EXXON COMPANY, U.S.A. HOME STAKE OIL & GAS CO. HOMESTAKE ROYALTY CORP. INTEGRITY OIL & GAS INC. LAW, MARILYN M., REVOC TRUST LYETH, PATRICIA D. MOREY, JIMMY D., REVOC TRUST	2.296880 1.171880 0.002880 0.006400 5.468740 0.781260 0.013900 0.013900 0.125000 0.195314 0.781260 0.195316	CHEVRON U.S.A. INC. EXXON COMPANY, U.S.A.	50.000000 50.000000 0.4233130

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
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 EUNICE MONUMENT SOUTH UNIT AREA - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
089				PATTERSON, ELLYSE S., ESTATE PENTAGON OIL COMPANY PETRUST CORP OF AMERICA ROONEY, ONEZ NORMAN TEST/TR SCHACHNER, FRIEDA SPEIGHT, JUNE D. SSG LIMITED PARTNERSHIP THE TOLES COMPANY WATSON, WILLIAM B., AGENT & AIF	0.034720 0.004600 0.208320 0.390630 0.041660 0.260400 0.034720 0.034720 0.437500		
*TOTAL 089							12.500000
090 J.D. KNOX	T-21-S, R-36-E, NMPM SEC. 10: E1/2	320.00	HBP	AARCO OIL & GAS COMPANY AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY BOONE, DAN E. BOONE, DOROTHY WALKER BOONE, J.E.B. ESTATE CARR, PHILLIP E. CLIFT, HUBERT E., TSTMNTRY TRUST CLIFT, JEANNETTE C. ESTATE CONE, A L. ESTATE COOKE, ANNIE LEE CONE, ET AL GEORGE, JEANNETTE E CLIFT MADELEY, FRANCES S., ESTATE MADELEY, HURBERT WAYNE MOBIL PRODUCING TEXAS & NEW MEXICO INC. PETRUST CORP OF AMERICA PHILLIPS, L D PHILLIPS, VIRGINIA W PROTESTANT EPISCOPAL CHURCH FOUNDATION SABINE ROYALTY TRUST SPEIGHT, JUNE D. SPEIGHT, JUNE D. W.E.F. HOLDING, INC.	0.585900 0.390700 6.250000 0.019945 0.035227 0.148676 0.018648 0.065100 0.195300 0.097650 0.097650 0.130200 0.139093 0.001037 1.562600 0.312500 0.006216 0.006216 0.015542 0.390600 0.976500 0.976600 0.078100	EXXON COMPANY, U.S.A.	100.000000 1.6048760

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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		
*TOTAL 090				12.500000					
MCQUATTERS	T-21-S, R-36-E, NMPM SEC. 11: S1/2 NE1/4, NW1/4 SE1/4	120.00	HBP	AGINS, FREDERICKA ANTWEIL, ALAN JOEL BERRYMAN, E. DOYLE BRADLEY NOMINEE CORPORATION EXXON COMPANY, U.S.A. FLEISCHMANN, WILLIAM H. JR GARLAND MINERALS CORPORATION GILBERT, JOE HART, JACK L. HENCKEL, RODNEY MARY IRIS GOLDSTON CORPORATION MAYFIELD CORPORATION MITCHELL MINERALS CORPORATION MITCHELL, JOHN JEFFERSON PENN BROTHERS, INC. PENSON, NANCY ELIZABETH SEDMAYR, THEODORE, ESTATE SHELL WESTERN E&P INC. SMITH, WELTON STIEREN, JACK, ESTATE TORTUGA OIL AND GAS VON GOTARD, CONSTANCE	0.260420 0.781250 0.781250 1.171880 3.125000 0.260420 0.083980 0.009770 0.007160 0.009770 0.843750 0.843750 0.039060 0.100580 0.763910 2.292240 0.781250 0.001120 0.022460 0.032530 0.028040 0.260410	AMOCO PRODUCTION COMPANY, U.S. 12.50000	AMERADA HESS CORPORATION AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY BRUIN ENERGY LTD CARPENTER OIL & GAS COMPANY CHEVRON U.S.A. INC. CHEVRON U.S.A. INC. CONOCO INC. ENERGY PRODUCTION CORPORATION EXXON COMPANY, U.S.A. EXXON COMPANY, U.S.A. FIVE STATES LIMITED 1987 FIVE STATES 1988-A, LTD. KOCH EXPLORATION COMPANY PAULEY, S.F. SHELL WESTERN E&P INC. WISER OIL COMPANY	0.180025 1.148050 2.724737 0.073100 0.118425 25.000000 5.208675 1.289413 0.000913 0.688200 12.500000 0.032788 0.043525 0.045150 0.006762 0.925725 50.014512	0.2098480
*TOTAL 091				12.500000					
S. BERRYMAN	T-21-S, R-36-E, NMPM SEC. 11: SW1/4 SE1/4	40.00	HBP	BERRYMAN, E. DOYLE BRADLEY NOMINEE CORPORATION CARR, CARL CARR, VERNON EXXON COMPANY, U.S.A. FIVE STATES LIMITED 1987 GARLAND MINERALS CORPORATION	0.781250 1.171880 0.000140 0.000050 3.125000 0.781250 0.083980	ATLANTIC RICHFIELD COMPANY	100.000000	0.0509730	

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
092				GILBERT, JOE HART, JACK L. HART, JACK L. HENCKEL, RODNEY MANUFACTURES HANOVER TRUST CO., AGENT MARY IRIS GOLDSTON CORPORATION MAYFIELD CORPORATION MITCHELL MINERALS CORPORATION MITCHELL, JOHN JEFFERSON PENN BROTHERS, INC. PENSON, NANCY ELIZABETH SEDMAYR, JOHN E. SMITH, WELDON STIEREN, JACK, ESTATE TORTUGA OIL AND GAS WALKER, NORA	0.009770 0.003990 0.002990 0.009770 0.781250 0.843750 0.843750 0.039060 0.100580 0.763910 2.292240 0.781250 0.022460 0.032530 0.028040 0.001110			
*TOTAL 092					12.500000			
093 MARSHALL	I-21-S, R-36-E, NMPM SEC. 11: NE1/4 SE1/4 SEC. 12: NW1/4 SW1/4	80.00	HBP				0.0558570 *	
093A MARSHALL	SEC. 11: NE1/4 SE1/4	(40.00)	HBP	AGINS, FREDERICKA ANDREWS, SELMA E. TRUST ANTWEIL, ALAN JOEL BERRYMAN, E. DOYLE BOYS CLUB OF AMERICA BRAILLE INSTITUTE OF AMERICA INC ELKS NATIONAL FOUNDATION FINCH, JULIETTE R. FLEISCHMANN, WILLIAM H. JR HOME STAKE OIL & GAS CO. HOMESTAKE ROYALTY CORP. KENT, MARGUERITE M.	0.260417 1.678280 0.781250 0.781250 0.156250 1.446730 0.156250 0.781250 0.260417 0.195310 0.195310 0.781250	BRUIN ENERGY LTD CARPENTER OIL & GAS COMPANY ENERGY PRODUCTION CORPORATION FIVE STATES LIMITED 1987 FIVE STATES 1988-A, LTD. PAULEY, S.F.	53.020000 19.219000 0.663000 23.784000 1.657000 1.657000	(0.0558570) *



EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
093A				LEONARD, PATRICK J. LEONARD, ROBERT J. LEONARD, TIMOTHY T. MCKIM, RAY L. MCMILLAN, H.M. TRUST MULLEN, J. SYLVESTER, TRUST NEW MEXICO BOYS RANCH REGENTS OF THE UNIVERSITY OF NEW MEXICO SEDLMAYR, THEODORE, ESTATE SHATTUCK-ST. MARY'S SCHOOLS SMITH, CHARLES TYSON II SPEIGHT, JUNE D. VON GOTARD, CONSTANCE	0.260410 0.260420 0.260420 0.781250 0.195310 0.195310 0.156250 0.156250 0.781250 0.156250 0.781250 0.781250 0.260416			
*TOTAL 093A					12.500000			
093B MARSHALL	SEC. 12: NW1/4 SW1/4	(40.00)	HBP	AGINS, FREDERICKA ANDREWS, SELMA E. TRUST ANTWEIL, ALAN JOEL BERRYMAN, E. DOYLE BOYS CLUB OF AMERICA BRAILLE INSTITUTE OF AMERICA INC ELKS NATIONAL FOUNDATION FINCH, JULIETTE R. FLEISCHMANN, WILLIAM H. JR HOME STAKE OIL & GAS CO. HOMESTAKE ROYALTY CORP. KENT, MARGUERITE M. LEONARD, PATRICK J. LEONARD, ROBERT J. LEONARD, TIMOTHY T. MCKIM, RAY L. MCMILLAN, H.M. TRUST MULLEN, J. SYLVESTER, TRUST NEW MEXICO BOYS RANCH REGENTS OF THE UNIVERSITY OF NEW MEXICO	0.260417 1.678280 0.781250 0.781250 0.156250 1.446730 0.156250 0.781250 0.260417 0.195310 0.195310 0.781250 0.260410 0.260420 0.260420 0.781250 0.195310 0.195310 0.156250 0.156250	BRUIN ENERGY LTD CARPENTER OIL & GAS COMPANY ENERGY PRODUCTION CORPORATION FIVE STATES LIMITED 1987 FIVE STATES 1988-A, LTD. PAULEY, S.F.	53.020000 19.219000 0.663000 23.784000 1.657000 1.657000	0.000000 *

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRLS	LEASE STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPATION OF TRACT IN UNIT	
093B				RUTLAND, WILMA SEDLMAYR, THEODORE, ESTATE SHATTUCK-ST. MARY'S SCHOOLS SHULTS, JACK SHULTS, VAN SHULTS, WANDA SMITH, CHARLES TYSON II VON GOTARD, CONSTANCE	0.195320 0.781250 0.156250 0.195310 0.195310 0.195310 0.781250 0.260417			
*TOTAL 093B					12.500000			
094 MARSHALL	1-21-S, R-36-E, NMPM SEC. 11: SE1/4 SE1/4 SEC. 12: SW1/4 SW1/4	80.00	HBP				0.1536870 *	
094A MARSHALL	SEC. 11: SE1/4 SE1/4	(40.00)	HBP	ANDREWS, SELMA E. TRUST BERRYMAN, E. DOYLE BOYS CLUB OF AMERICA BRAILLE INSTITUTE OF AMERICA INC ELKS NATIONAL FOUNDATION FINCH, JULIETTE R. FIVE STATES LIMITED 1987 HOME STAKE OIL & GAS CO. HOMESTAKE ROYALTY CORP. KENT, MARGUERITE M. LEONARD, PATRICK J. LEONARD, ROBERT J. LEONARD, TIMOTHY T. MANUFACTURES HANOVER TRUST CO., AGENT MCKIM, RAY L. MCMILLAN, H.M. TRUST MULLEN, J. SYLVESTER, TRUST NEW MEXICO BOYS RANCH REGENTS OF THE UNIVERSITY OF NEW MEXICO SEDLMAYR, JOHN E.	1.678280 0.781250 0.156250 1.446730 0.156250 0.781250 0.781250 0.195310 0.195310 0.781250 0.260410 0.260420 0.260420 0.781250 0.781250 0.195310 0.195310 0.156250 0.156250 0.781250	AMERADA HESS CORPORATION AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY BRUIN ENERGY LTD CARPENTER OIL & GAS COMPANY CHEVRON U.S.A. INC. CONOCO INC. ENERGY PRODUCTION CORPORATION EXXON COMPANY, U.S.A. FIVE STATES LIMITED 1987 FIVE STATES 1988-A, LTD. KOCH EXPLORATION COMPANY PAULEY, S.F. SHELL WESTERN E&P INC. WISER OIL COMPANY	1.440200 9.184400 21.797900 0.584800 0.947400 41.669400 10.315300 0.007300 5.505600 0.262300 0.348200 0.361200 0.054100 7.405800 0.116100	(0.0623580) *

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
094A				SHATTUCK-ST. MARY'S SCHOOLS	0.156250		
				SMITH, CHARLES TYSON II	0.781250		
				SPEIGHT, JUNE D.	0.781250		
094A					12.500000		
094B MARSHALL	SEC. 12; SW1/4 SW1/4	(40.00)	HBP	ANDREWS, SELMA E. TRUST	1.678280	AMERADA HESS CORPORATION	1.440200
				BERRYMAN, E. DOYLE	0.781250	AMOCO PRODUCTION COMPANY, U.S.A.	9.184400
				BOYS CLUB OF AMERICA	0.156250	ATLANTIC RICHFIELD COMPANY	21.797900
				BRAILLE INSTITUTE OF AMERICA INC	1.446730	BRUIN ENERGY LTD	0.584800
				ELKS NATIONAL FOUNDATION	0.156250	CARPENTER OIL & GAS COMPANY	0.947400
				FINCH, JULIETTE R.	0.781250	CHEVRON U.S.A. INC.	41.669400
				FIVE STATES LIMITED 1987	0.781250	CONOCO INC.	10.315300
				HOME STAKE OIL & GAS CO.	0.195310	ENERGY PRODUCTION CORPORATION	0.007300
				HOMESTAKE ROYALTY CORP.	0.195310	EXXON COMPANY, U.S.A.	5.505600
				KENT, MARGUERITE M.	0.781250	FIVE STATES LIMITED 1987	0.262300
				LEONARD, PATRICK J.	0.260410	FIVE STATES 1988-A, LTD.	0.348200
				LEONARD, ROBERT J.	0.260420	KOCH EXPLORATION COMPANY	0.361200
				LEONARD, TIMOTHY T.	0.260420	PAULEY, S.F.	0.054100
				MANUFACTURES HANOVER TRUST CO., AGENT	0.781250	SHELL WESTERN E&P INC.	7.405800
				MCKIM, RAY L.	0.781250	WISER OIL COMPANY	0.116100
				MCMILLAN, H.M. TRUST	0.195310		
				MULLEN, J. SYLVESTER, TRUST	0.195310		
				NEW MEXICO BOYS RANCH	0.156250		
				REGENTS OF THE UNIVERSITY OF NEW MEXICO	0.156250		
				RUTLAND, WILMA	0.195320		
				SEDLMAYR, JOHN E.	0.781250		
				SHATTUCK-ST. MARY'S SCHOOLS	0.156250		
				SHULTS, JACK	0.195310		
				SHULTS, VAN	0.195310		
				SHULTS, WANDA	0.195310		
				SMITH, CHARLES TYSON II	0.781250		
*TOTAL 094B					12.500000		(0.0913290) *

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
 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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
095 COLEMAN "A"	T-21-S, R-36-E, NMPM SEC. 17: NW1/4 NW1/4	40.00	HBP	ARCHER, FANCHER ARCHIBSCHOPRIC OF NEW YORK ATLANTIC RICHFIELD COMPANY BRADLEY NOMINEE CORPORATION CARTER, ANDERSON CARTER, POWHATAN JR. CRAIG LTD EDWARDS, EMELY ANN FIRST CITY NATIONAL BANK, TRUSTEE GUTMAN, ALFRED E. GUTMAN, DANIEL I. GUTMAN, DOROTHY, TRUSTEE GUTMAN, MAX, TRUST GUTTAG, BETTY H. R. STASNEY AND SONS COMPANY HOME STAKE OIL & GAS CO. HOMESTAKE ROYALTY CORP. HORNE, MARY M., TRUST HURLEY, MARY FRANCES (FRANA) INJECTION ENGINEERING SVC JONES ROBINSON LTD KELLOUGH, ROBERT BOOTH LASCA, INC. MOBIL PRODUCING TEXAS & NEW MEXICO INC. RANSOM, CHARLES DANIEL RANSOM, WILLIAM COLEMAN SEAL, WILLIAM G & MARCELLYN J SEAL SIMPSON, JEAN ANDERSON, LIVING TRUST SOCOLOW, EDITH G. AND A. WALTER SOCLOLW SUMMERS, LOUISE TEXACO PRODUCING, INC. TEXARO OIL COMPANY VENABLE, R.H., ESTATE WENTZ HERITAGE WENTZ LEGACY WILLIS, PHILIP J. AND JACK WILLIS WILSON CHILDREN TRUST	2.148440 1.312500 0.227860 0.097660 0.097660 0.097650 0.052080 0.000720 0.195310 0.078130 0.078130 0.117190 0.234370 0.117190 0.009760 0.020620 0.020620 1.171880 0.520840 0.019530 0.390630 0.065110 0.250000 0.781250 0.520830 0.520830 0.000720 0.000720 0.078120 0.195310 1.171870 0.078130 0.195310 0.781250 0.781250 0.039060 0.021700	TEXACO PRODUCING, INC.	100.000000	0.3755530

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION  
 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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
095				WOOLDRIDGE, MACK H.	0.009770			
*TOTAL 095					12.500000			
096 COLEMAN	T-21-S, R-36-E, NMPM SEC. 17: NE1/4 NW1/4	40.00	HBP	ARCHER, FANCHER ARCHIBSCHOPRIC OF NEW YORK ATLANTIC RICHFIELD COMPANY ATLANTIC RICHFIELD COMPANY BRADLEY NOMINEE CORPORATION CARTER, ANDERSON CARTER, ANDERSON CARTER, POWHATAN JR. CARTER, POWHATAN JR. CRAIG LTD EDWARDS, EMELY ANN FIRST CITY NATIONAL BANK OF MIDLAND GOLDSTON, IRIS, ESTATE GUTMAN, ALFRED E. GUTMAN, CHARLES GUTMAN, DANIEL L. GUTMAN, MAX, TRUST GUTTAG, BETTY H. R. STASNEY AND SONS COMPANY HERPIN, NANCY ZOE GOLDSTON HOME STAKE OIL & GAS CO. HOME STAKE OIL & GAS CO. HOMESTAKE ROYALTY CORP. HOMESTAKE ROYALTY CORP. HORNE, MARY M., TRUST HORNE, MARY M., TRUST INJECTION ENGINEERING SVC JONES ROBINSON LTD KELLOUGH, ROBERT BOOTH LASCA, INC. MAYFIELD, JACK H JR. MOBIL PRODUCING TEXAS & NEW MEXICO INC.	1.992200 1.312500 0.028487 0.199413 0.097700 0.048800 0.048850 0.048800 0.048850 0.052100 0.000725 0.195300 0.195300 0.078200 0.117200 0.078100 0.234400 0.117200 0.009750 0.097700 0.010852 0.009767 0.010852 0.009768 0.586000 0.585900 0.019500 0.390600 0.065100 0.250000 0.097600 1.562500	ATLANTIC RICHFIELD COMPANY	100.000000	0.3636100





EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
097				INJECTION ENGINEERING SVC	0.019530		
				JONES, EVERETT R. JR.	0.057810		
				KELLOUGH, ROBERT BOOTH	0.065110		
				LAW, MARILYN M., REVOC TRUST	0.048828		
				LYETH, J.M. RICHARDSON JR. & MUNRO LYETH	0.195320		
				MCMILLAN, A.M., ESTATE 89	0.234380		
				MOBIL PRODUCING TEXAS & NEW MEXICO INC.	3.125000		
				MOREY, JIMMY D., REVOC TRUST	0.048827		
				PANHANDLE ROYALTY COMPANY	0.585940		
				RANSOM, CHARLES DANIEL	0.442700		
				RANSOM, WILLIAM COLEMAN	0.442700		
				ROMAN CATHOL DIOCESE OF DALLAS,	0.073240		
				ROMAN CATHOLIC DIOCESE OF DALLAS	0.073240		
				ROONEY, ONEZ NORMAN TEST/TR	0.097655		
				ROYALL, FRANCES K	0.003910		
				ROYALL, JOHN R TRUST U/W/ F.M. ROYALL	0.006510		
				ROYALL, N R III TRUST U/W F.M. ROYALL	0.006510		
				ROYALL, TUCKER K. TRUST U/W F.M. ROYALL	0.006510		
				ROYALL, N R III, EX OF N R ROYALL JR EST	0.015630		
				SEAL, WILLIAM G & MARCELLYN J SEAL	0.000720		
				SIMPSON, JEAN ANDERSON, LIVING TRUST	0.000720		
				SMITH OIL COMPANY	0.292960		
				SMITH, W. BLAKE JR.	0.292970		
				SPINDLETOP EXPLORATION CO., INC.	0.001950		
				TEXAS SCOTTISH RITE HOSPITAL FOR	0.073250		
				VENABLE, R.H., ESTATE	0.195310		
				WENTZ HERITAGE	0.781250		
				WENTZ LEGACY	0.781250		
				WHEELLOCK, MAUDE C., ESTATE	0.073240		
				WHEELLOCK, MAUDE C., ESTATE	0.073240		
				WHEELLOCK, SUSAN JANE, TRUST	0.096680		
				WILLIS, PHILIP J. AND JACK WILLIS	0.039060		
				WILSON CHILDREN TRUST	0.021700		
				WOOLDRIDGE, MACK H.	0.009770		
*TOTAL 097					12.500000		

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
098 COLEMAN	T-21-S, R-36-E, NMPM SEC. 17; W1/2 SE1/4	80.00	HBP	ADOBÉ ROYALTY, INC. AMOCO PRODUCTION COMPANY, U.S.A. ARCHER, FANCHER ARCHIBSCHOPRIC OF NEW YORK ATLANTIC RICHFIELD COMPANY BOWER, DAVID A., IND. & AS AGENT BOWER, J.R. JR., TRUST BRADLEY NOMINEE CORPORATION CRAIG LTD DEVENPORT, JUDITH H., TRUSTEE EDWARDS, EMELY ANN FINNERAN, BETTY ANN FIRST CITY NATIONAL BANK, TRUSTEE GUTMAN, ALFRED E. GUTMAN, CHARLES GUTMAN, MAX, TRUST GUTTAG, BETTY H. R. STASNEY AND SONS COMPANY HOMESTAKE ROYALTY CORP. HOMESTAKE ROYALTY CORP. HURLEY, MARY FRANCES (FRANA) INJECTION ENGINEERING SVC JONES, EVERETT R. JR. KELLOUGH, ROBERT BOOTH LASCA, INC. LAW, MARILYN M., REVOC TRUST LYETH, PATRICIA D. MOBIL PRODUCING TEXAS & NEW MEXICO INC. MOREY, JIMMY D., REVOC TRUST RANSOM, CHARLES DANIEL RANSOM, WILLIAM COLEMAN ROONEY, ONEZ NORMAN TEST/TR ROYALL, FRANCES K ROYALL, JOHN R TRUST U/W/ F.M. ROYALL ROYALL, JOHN R, TRUST U/W N R ROYALL JR ROYALL, N R III TRUST U/W F M ROYALL	0.130210 0.520830 1.731780 1.312500 0.227860 0.173430 0.508980 0.097660 0.048660 0.002370 0.000730 0.390630 0.195310 0.234370 0.117190 0.234370 0.117190 0.009770 0.020620 0.020620 0.572920 0.019530 0.057820 0.065100 0.250000 0.097650 0.390630 1.562500 0.097660 0.572920 0.572910 0.195310 0.011710 0.006510 0.002610 0.006510	SHELL WESTERN E&P INC.	100.000000	0.5722680

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
098				ROYALL, N R III TRUST U/W N R ROYALL JR ROYALL, REBECCA ROYALL, TUCKER B. SEAL, WILLIAM G & MARCELLYN J SEAL SIDFORD, FRANCES R. SIMPSON, JEAN ANDERSON, LIVING TRUST SPINDLETOP EXPLORATION CO., INC. TEXARO OIL COMPANY VENABLE, R.H., ESTATE WENTZ HERITAGE WENTZ LEGACY WILLETS, ELMORE A. JR., WILLIS, PHILIP J, AND JACK WILLIS WILSON CHILDREN TRUST WOOLDRIDGE, MACK H.	0.002610 0.003040 0.003040 0.000720 0.003040 0.000720 0.001950 0.078120 0.195310 0.781250 0.781250 0.001060 0.039060 0.021700 0.009760			
*TOTAL 098					12.500000			
099	H.C. COLLINS	280.00	HBP	ARCHER, FANCHER BEDFORD, ALANN P., TRUST BEDFORD, HELEN LEARMONT BEDFORD, HENRY DEGRAFFENREID, ESTATE BLEWETT, BARBARA TRUST BOWEN, RACHEL BEDFORD CARTER, ANDERSON CARTER, POWHATAN JR. CRAIG LTD CRUMP, JESSIE BLEVINS, FAMILY TRUSTS CRUMP, JOE & JESSIE FUND CRUZ, JUDITH, TRUST DYMESICH, REMATE JONES ETZ OIL PROPERTIES, LIMITED ETZ, GEORGE H. SR., TRUST FARDON, RACHEL B. FIVE STATES LIMITED 1987 GLAISTER, IRENE FARDON	0.097600 0.125000 0.125000 0.125000 0.002750 0.125000 0.097650 0.097650 0.062500 0.195300 0.195300 0.002750 0.010420 0.390600 0.390600 0.015620 0.156250 0.015620	ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. TEXACO PRODUCING, INC.	28.569948 57.140060 14.289992	0.6078380

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
099				GLASS, EVA PAYNE, TRUST			
				GLASS, JULIAN W.	0.013750		
				GLASS, JULIAN W. JR.	0.027500		
				H. R. STASNEY AND SONS COMPANY	0.013750		
				HESS, WANDA PRUETT	0.013750		
				INJECTION ENGINEERING SVC	0.156200		
				JOCHIMSEN, ALAN	0.027500		
				JONES, CHRISTOPHER DUKINFIELD	0.781250		
				JONES, PETER FRANCIS	0.010420		
				LAW, MARILYN M., REVOC TRUST	0.010420		
				LIGHT, ROBERT S.	0.703125		
				LYETH, PATRICIA D.	0.781250		
				MOBIL PRODUCING TEXAS & NEW MEXICO INC.	2.812500		
				MOREY, JIMMY D., REVOC TRUST	0.968800		
				PATTERSON, ELLYSE S., ESTATE	0.703125		
				PENFIELD, BOYD E.	0.065100		
				PHILLIPS, D. MICHAEL, CO-TRUSTEE	0.156250		
				PHILLIPS, JOHN W.	0.010900		
				PHILLIPS, PAUL M.	0.011000		
				PHILLIPS, PIERRE D., TRUST # 1	0.011000		
				PHILLIPS, WILMA M.	0.011000		
				RANDOLPH, JANE D.	0.005500		
				RANDOLPH, RAYMOND W.	0.065100		
				RANSOM, MARY VERN	0.065100		
				ROELKE, MARY ELIZABETH	0.097700		
				ROONEY, ONEZ NORMAN TEST/TR	0.130200		
				SNOW, BILL R.	1.406250		
				SNOW, PHILIP	0.065100		
				SPEIGHT, JUNE D.	0.065100		
				SSG LIMITED PARTNERSHIP	0.390600		
				THE TOLES COMPANY	0.065100		
				TORCH OIL & GAS COMPANY	0.065100		
				WILLIAMS, ELLEN ANNE W.	0.421200		
				WOOLDRIDGE, MACK H.	0.125000		
					0.013750		
*TOTAL 099					-----		
					12.500000		

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
100 FRONA LECK	T-21-S, R-36-E, NMPM SEC. 14: NW1/4 NE1/4	40.00	HBP	ARCHER, FANCHER BEDFORD, ALANN P., TRUST BEDFORD, HELEN LEARMONT BEDFORD, HENRY DEGRAFFENREID, ESTATE BLEWETT, BARBARA TRUST BOWEN, RACHEL BEDFORD CARTER, ANDERSON CARTER, POWHATAN JR. CRAIG LTD CRUMP, JESSIE BLEVINS, FAMILY TRUSTS CRUMP, JOE & JESSIE FUND CRUZ, JUDITH, TRUST DYMESICH, RENATE JONES ETZ OIL PROPERTIES, LIMITED ETZ, GEORGE H. SR., TRUST FARDON, RACHEL B. FIVE STATES LIMITED 1987 GLAISTER, IRENE FARDON GLASS, EVA PAYNE, TRUST GLASS, JULIAN W. GLASS, JULIAN W. JR. H. R. STASNEY AND SONS COMPANY HESS, WANDA PRUETT INJECTION ENGINEERING SVC JOCHIMSEN, ALAN JONES, CHRISTOPHER DUKINFELD JONES, PETER FRANCIS LAW, MARILYN M., REVOC TRUST LIGHT, ROBERT S. LYETH, PATRICIA D. MOBIL PRODUCING TEXAS & NEW MEXICO INC. MOREY, JIMMY D., REVOC TRUST PATTERSON, ELLYSE S., ESTATE PENFIELD, BOYED E. PHILLIPS, D. MICHAEL, CO-TRUSTEE PHILLIPS, JOHN W.	0.097600 0.125000 0.125000 0.125000 0.002730 0.125000 0.097650 0.097650 0.062500 0.195300 0.195300 0.002730 0.010420 0.390600 0.390600 0.015620 0.156250 0.015620 0.013750 0.027500 0.013750 0.013750 0.156200 0.027500 0.781250 0.010420 0.010420 0.703125 0.781250 2.812500 0.968800 0.703125 0.065100 0.156250 0.011000 0.011000	ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. TEXACO PRODUCING, INC.	28.569587 57.140248 14.290165	0.0930850



EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

TRACT NO. AND TRACT NAME	DESCRIPTION OF LAND	ACRES	LEAST STATUS	BASIC ROYALTY OWNER AND PERCENTAGE	OVERRIDING ROYALTY OWNER AND PERCENTAGE	WORKING INTEREST OWNER AND PERCENTAGE	PARTICIPATION OF TRACT IN UNIT
100				PHILLIPS, PAUL M. PHILLIPS, PIERRE D., TRUST # 1 PHILLIPS, WILMA M. RANDOLPH, JANE D. RANDOLPH, RAYMOND W. RANSOM, MARY VERN ROELKE, MARY ELIZABETH ROONEY, ONEZ NORMAN TEST/TR SNOW, BILL R. SNOW, PHILIP SPEIGHT, JUNF D. SSG LIMITED PARTNERSHIP THE TOLES COMPANY TORCH OIL & GAS COMPANY WILLIAMS, ELLEN ANNE W. WOOLDRIDGE, MACK H.	0.011000 0.011000 0.005440 0.065100 0.065100 0.097700 0.130200 1.406250 0.065100 0.065100 0.390600 0.065100 0.065100 0.421200 0.125000 0.013750		
*TOTAL 100				12.500000			
101 MCQUATTERS	T-21-S, R-36-E, NMPM SEC. 11: N1/2 NE1/4	80.00	HBP	AGINS, FREDERICKA BERRYMAN, E. DOYLE BRADLEY NOMINEE CORPORATION EXXON COMPANY, U.S.A. FIVE STATES LIMITED 1987 FLEISCHMANN, WILLIAM H. JR GARLAND MINERALS CORPORATION GILBERT, JOE HART, JACK L. HENCKEL, RODNEY MARY IRIS GOLDSTON CORPORATION MAYFIELD CORPORATION MITCHELL MINERALS CORPORATION MITCHELL, JOHN JEFFERSON PENN BROTHERS, INC. PENSON, NANCY ELIZABETH PFOUTS, MAUDE EAGLE, ESTATE	0.260420 0.781250 1.171880 3.125000 0.781250 0.260420 0.083990 0.009770 0.006000 0.009770 0.843740 0.843750 0.039060 0.100580 0.763920 2.292250 0.001130	AMOCO PRODUCTION COMPANY, U.S.A.	100.000000 0.2285420

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - A  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
101				SEDMAYR, JOHN E.	0.781250		
				SHELL WESTERN E&P INC.	0.001130		
				SMITH, WELTON	0.022460		
				STIEREN, JACK, ESTATE	0.032530		
				TORTUGA OIL AND GAS	0.028040		
				VON GOTARD, CONSTANCE	0.260410		
*TOTAL 101					12.500000		

\* \* \* 31 PATENTED LANDS TRACTS TOTALING 3,180.28 ACRES -OR- 22.41% OF AREA A \* \* \*

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - B  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

FEDERAL LANDS

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
* * * TOTAL ACRES IN THIS AREA IS 3,000.00 * * *								
102 ANDREWS FEDERAL	T-20-S, R-36-E, NMPM SEC. 23: NW 1/4, N 1/2 SW 1/4	240.00	LC-046164-(A) HBP 09/23/35 RENEWAL 09/01/85	USA "C"	AMERADA HESS CORP.	SAUNDERS, JEANNE A., TRUST	2.500000 AMERADA HESS CORPORATION	100.000000 1.7168789
103 SANDERSON "A"	T-20-S, R-36-E, NMPM SEC. 14: NE 1/4, N 1/2 SE 1/4, SE 1/4 SE 1/4, E 1/2 NW 1/4, E 1/2 NW 1/4 NW 1/4 SEC. 11: SE 1/4, S 1/2 SW 1/4	220.00	LC-031622-(A) HBP 10/30/36 EXCHANGED 10/01/56	USA "C"	HELEN T. SANDERSON	MESRSTA, LENA GRACE SANDERSON, GIRVIN H. THOMPSON, BERT L JR., ESTATE THOMPSON, FRANCES WESTERN MINERAL DEED ASSOCIATION	0.703110 AMOCO PRODUCTION COMPANY, U.S.A. 0.703110 ATLANTIC RICHFIELD COMPANY 0.703140 CHEVRON U.S.A. INC. 0.703140 CONOCO INC. 2.812500	25.000000 33.5842940 25.000000 25.000000 25.000000
104 REED "B"	T-20-S, R-36-E, NMPM SEC. 23: E 1/2, S 1/2 SW 1/4 SEC. 24: SW 1/4	560.00	LC-030143-(B) HBP 02/01/37 EXCHANGED 10/01/56	USA "D"	CONOCO, INC. ATLANTIC RICHFIELD CHEVRON U.S.A. INC.		AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. CONOCO INC.	25.000000 14.0376231 25.000000 25.000000 25.000000
105 GILLULY "A"	T-20-S, R-36-E, NMPM SEC. 24: N 1/2, W 1/2 SE 1/4	430.00	NM-62666 HBP 03/30/37 EXCHANGED 03/01/52	USA "C"	AMOCO PROD. CO.	ANDREWS, SELMA E. TRUST BEAMS MINERALS COMPANY BRAILLE INSTITUTE OF AMERICA INC BRAUCHLI, C R DOLLEY, ROBERT C. GALLANT, CLARADEAN HAENNI, MARGARET B JENKINS, MARLIN H AND OR MURIEL L JENKINS, MARVIN G KEEFER, LEONARD D MACCAUGHTRY, LINA R AND LAWRENCE R ORYX ENERGY COMPANY PAYNE, JULIA H PAYNE, WESTON, TRUST UNION TEXAS PETROLEUM CORPORATION	2.685250 AMOCO PRODUCTION COMPANY, U.S.A. 0.044650 2.314750 0.011160 0.150000 0.125000 0.011160 0.250000 0.250000 0.375000 0.250000 0.064730 0.016960 0.027680 0.323660	100.000000 16.7106492

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - B  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1950

FEDERAL LANDS

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
105						WARD, DANIEL ROBERT WARD, LINDA DOLLEY	0.500000 0.100000	
106	" M. SANDERSON	450.00	NM-1151 HBP 10/01/56 EXCHANGED 10/01/56	USA "C"	HELEN T. SANDERSON		AMOCO PRODUCTION COMPANY, U.S.A. ATLANTIC RICHFIELD COMPANY CHEVRON U.S.A. INC. CONOCO INC.	25.000000 25.000000 25.000000 25.000000 7.7032192

\* \* \* 5 FEDERAL LANDS TRACTS TOTALING 2,280.00 ACRES -OR- 76.00% OF AREA B \* \* \*

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - B  
 LEA COUNTY, NEW MEXICO

REVISED 4/1/91

STATE LANDS

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 and Unit
107 State "E"	T-20-S, R-36-E, NMPM Sec. 13; NW 1/4	160.00	B-1398-29 HBP 01/26/28	State of New Mexico 12.500000	Shell Western E&P El Paso Natural Gas		Shell Western E&P Inc. 100.000000	4.4693929
108 State "D"	T-20-S, R-36-E, NMPM, Sec. 13, W 1/2 SW 1/4	80.00	A-1543-1 HBP 12/29/28	State of New Mexico 12.500000	Chevron U.S.A. Inc.		Chevron U.S.A. Inc. 100.000000	3.3726432
109 State "K"	T-20-S, R-36-E, NMPM, Sec. 13, E 1/2 SW 1/4	80.00	B-2333-3 HBP 01/02/29	State of New Mexico 12.500000	Texaco Producing Co.		Chevron U.S.A. Inc. Conoco, Inc. 58.375794 41.624206	0.6429433
110 Bell State	T-20-S, R-36-E, NMPM, Sec. 13, S 1/2 SE 1/4	80.00	B-230-1 HBP 09/10/31	State of New Mexico 12.500000	Chevron U.S.A. Inc.		Chevron U.S.A. Inc. 100.000000	2.1937330

\*\*\* 4 State Lands Tracts Totals 400.00 Acres -or- 13.33% of Area B \*\*\*

LUN10408.18L/db

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - B  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
* * * TOTAL ACRES IN THIS AREA IS 3,000.00 * * *								
111 W. P BYRD	T-20-S, R-36-E, NMPM SEC. 11: NW 1/4, N 1/2 SW 1/4	240.00	HBP	AMROY COMPANY ANDERSON, R. G., CONSOLIDATED TRUST ARMSTRONG, JAMES G. BAKER, WILLIAM B, ESTATE BICKFORD, ELSIE D & HAROLD E, IRREV. TR. BYRON, JEANNINE HOOPER CARTER, DANNIE A CORDER, EULA CORRIGAN III, HUGH CORRIGAN, J. PATRICK DAMSON, BETHANY E DAMSON, LAURA C. DAMSON, N BLAIR DELTEX ROYALTY COMPANY DOWNING, CHARLES DOWNING, LELAND DUEWIGER, DOROTHY DUEWIGER, DOROTHY DUEWIGER, DOROTHY DUEWIGER, DOROTHY ELLINGHAUSEN, MARY ELIZABETH ELLINGHAUSER, MARIE, ESTATE GEDDYME RESOURCES, INC. GREENFIELD FAMILY TRUST GRIGGS, EMMA M. ESTATE HANNERS, JEROME T. HARLOW ROYALTIES, INC. HOOPER, JERRY L. HOOPER, JIMMY JOE HURLEY, G. WILLIAM HYLAND, EDWIN F JENNINGS, JANE JOHN M. MOUSER COMPANY KEC ACQUISITION CORP.		ATLANTIC RICHFIELD COMPANY	100.000000	10.8068693



EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

EXHIBIT 'B'  
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 EUNICE MONUMENT SOUTH UNIT AREA - B  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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	
111				KENDALL, RUTH C. KNOWLES, JAMES W. KOPPEL, ROLLINS M. MARFLEET, CHRISTINE MEADER, MARION L. MELINDA INVESTMENT CORPORATION MUDD, SEELEY G., TRUST NCNB TEXAS NATIONAL BANK, AS SUCCESSOR PENN ROYALTY COMPANY POMONA COLLEGE, A CORPORATION PRICE, HOSEA V. RUSHING, IRMA J. SCHNEIDER, FRANCES SCHNEIDER, FRANCES SCHNEIDER, FRANCES SCHNEIDER, FRANCES SKAGGS, JACK, ESTATE SMITH, LUCILLE T, ESTATE STONE, STJERNBERG ANN W A YEAGER GROUP, W A YEAGER GROUP, W A YEAGER GROUP, W A YEAGER GROUP, W A YEAGER GROUP, W A YEAGER GROUP, W A YEAGER GROUP, W A YEAGER GROUP, W A YEAGER GROUP, WAY ENTERPRISES, INC. WOOLDRIDGE, MACK H. WOOLDRIDGE, MACK H.	0.026045 0.347220 0.001090 0.078120 0.000120 0.082460 0.195310 0.520840 0.001830 0.032550 0.000010 0.347230 0.013020 0.004340 0.006515 0.002170 0.001090 0.045570 0.001090 0.006510 0.021702 0.086810 0.004340 0.010851 0.021702 0.021705 0.520830 0.694440 0.347220			
					12.500000			
112	M.J. BYRD T-20-S, R-36-E, NMPM SEC. 11: W 1/2 NE 1/4	80.00	HBP	AMROY COMPANY BAKER, WILLIAM B, ESTATE BARTON JR., ROY G. BICKFORD, ELSIE D & HAROLD E, IRREV. TR.	0.357780 0.045570 0.117185 0.097660	ATLANTIC RICHFIELD COMPANY	100.000000 4.7617539	

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

EXHIBIT 'B'  
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 IN ACCORDANCE WITH THE PARTICIPATION FORMULA FOR THE UNITIZED FORMATION FOR THE  
 EUNICE MONUMENT SOUTH UNIT AREA - B  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
112				CLEBOŠKI, JANICE LYNN CORDER, EULA DAMSON, BETHANY E DAMSON, LAURA C. DAMSON, N BLAIR DOWNING, CHARLES DOWNING, LELAND DUEWIGER, DOROTHY DUEWIGER, DOROTHY DUEWIGER, DOROTHY DUEWIGER, DOROTHY EAGER, GEORGE ELLINGHAUSEN, MARY ELIZABETH ELLINGHAUSER, MARIE, ESTATE GEODYNE RESOURCES, INC. GOLDBERG, BETTINE ETHEL GREENFIELD FAMILY TRUST GRIGGS, EMMA M. ESTATE HANNERS, JEROME T. HARLOW ROYALTIES, INC. HILL, HERBERT EDWARD HYLAND, EDWIN F JENNINGS, JANE KENDALL, RUTH C. MARFLEET, CHRISTINE MEADER, MARION L. MENDOZA, MICHAEL I. A. MUDD, SEELEY G., TRUST MURDOCH, M. G. NCNB TEXAS NATIONAL BANK, AS SUCCESSOR PENN ROYALTY COMPANY PETERSENS, ALICE H AF POMONA COLLEGE, A CORPORATION PRICE, HOSEA V. RIDGWAY, RUBY SCHNEIDER, FRANCES SCHNEIDER, FRANCES	0.117185 0.000160 0.016276 0.016277 0.016277 0.008682 0.008682 0.013020 0.004340 0.002170 0.006515 0.625000 0.008410 0.075490 5.859370 0.078120 0.048830 0.000010 0.039060 0.002430 0.156250 0.032550 0.008681 0.026045 0.078120 0.000730 0.078130 0.195320 0.078130 0.520830 0.010700 0.234380 0.032550 0.000020 0.937500 0.013020 0.004340		

EUNICE MONUMENT SOUTH UNIT (EMSU) APPLICATION

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 - B  
 LEA COUNTY, NEW MEXICO

AUGUST 13, 1990

PATENTED LANDS

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
112				SCHNEIDER, FRANCES			
				SCHNEIDER, FRANCES	0.006515		
				SMITH, LUCILLE T, ESTATE	0.002170		
				SMITH, NANCY TAYLOR	0.045570		
				THOMPSON, TIMOTHY IAN	0.312500		
				THOMPSON, TIMOTHY IAN	0.078130		
				THOMPSON, TIMOTHY IAN	0.078120		
				WARNER, ANNE H	0.234370		
				WITWER OIL AND GAS TRUST	1.145830		
				WOOLDRIDGE, MACK H.	0.625000		
*TOTAL 112					12.500000		

\* \* \* 2 PATENTED LANDS TRACTS TOTALING 320.00 ACRES -OR- 10.67% OF AREA B \* \* \*

*M* BOOK 440 PAGE 607

**43095**

UNIT AGREEMENT  
AND EXHIBITS "A" & "B"

EUNICE MONUMENT SOUTH  
STATUTORY SECONDARY RECOVERY  
FEDERAL - STATE UNIT  
LEA COUNTY, NEW MEXICO

EFFECTIVE DATE  
FEBRUARY 1, 1985

0141530  
3001445

BOOK 440 PAGE 608

UNIT AGREEMENT  
EUNICE MONUMENT SOUTH UNIT  
LEA COUNTY, NEW MEXICO

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UNIT AGREEMENT  
FOR THE DEVELOPMENT AND OPERATION  
OF THE  
EUNICE MONUMENT SOUTH UNIT  
LEA COUNTY, NEW MEXICO

BOOK 440 PAGE 609

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:



BOOK 440 PAGE 610

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.

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(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

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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 determining 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

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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.

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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.



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- B = the Unitotal 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

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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 joining the Unit, for Windfall Profit Tax purposes only, crude oil shall be allocated to individual Tracts as follows:

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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.



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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

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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

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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:



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(a) require at 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 direction 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

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 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

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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. NONJOINER AND SUBSEQUENT JOINER. 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



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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

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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 over-produced 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, therein identifying the Division's order approving statutory unitization and stating the Effective Date."

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(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 *KTB*

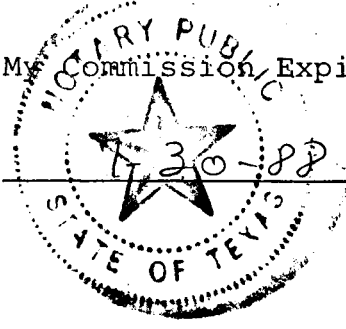
By *L. A. Turner*  
Attorney-in-Fact

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, 1984, 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*

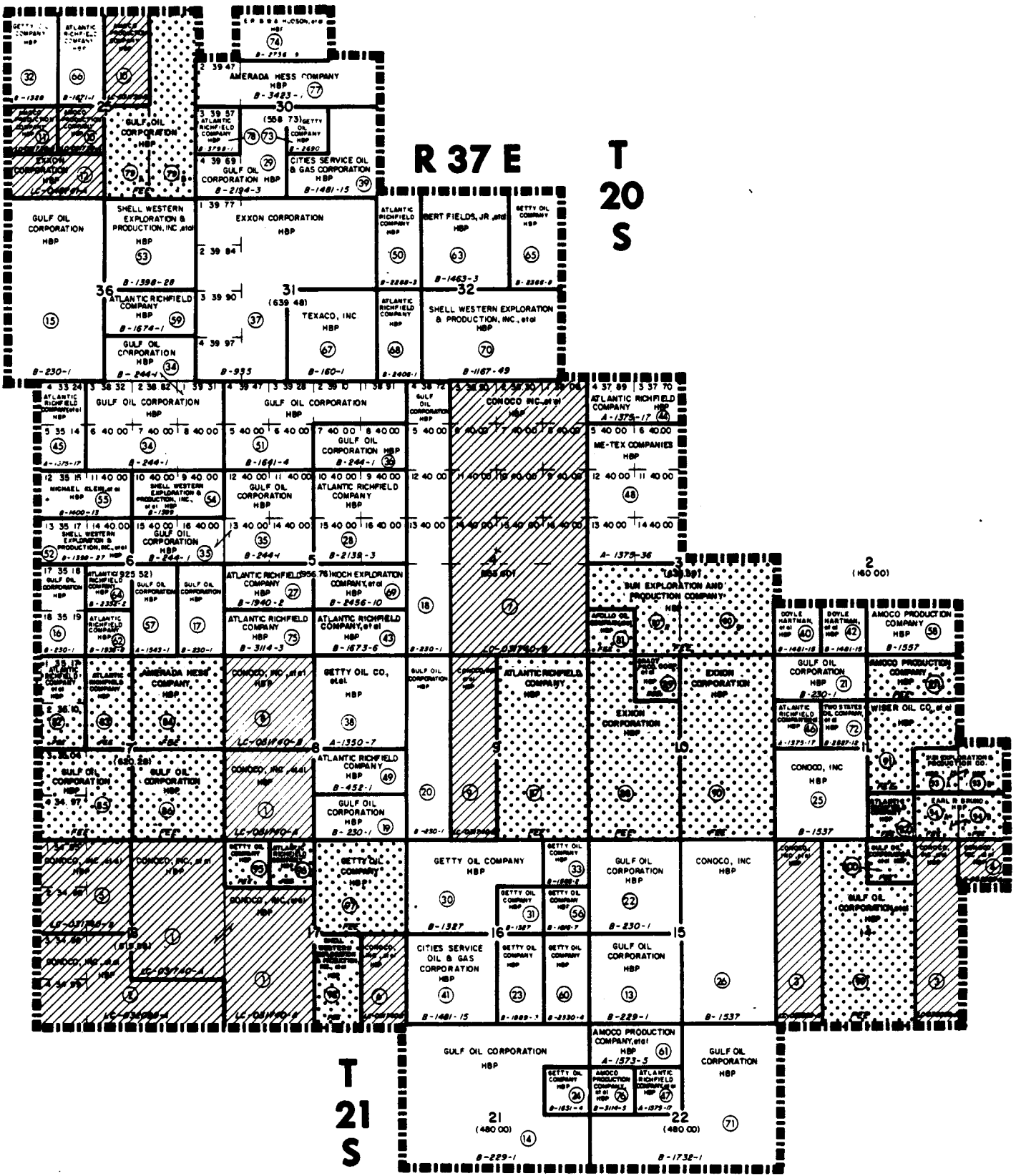


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

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12 (80 00)  
13 (40 00)

R 36 E

**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 %
<b>TOTAL</b>	<b>14,189.84</b>	<b>100.00 %</b>

 UNIT OUTLINE      ③ TRACT NUMBER



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

<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>SERIAL NO. AND EFFECTIVE DATE</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>LESSEE OF RECORD</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>
<b>Federal Lands:</b>								
1. Meyer "A-1" (was Tract 81)	R21S-R36E, N.M.P.M. Sec. 8: SW $\frac{1}{4}$ Sec. 17: SW $\frac{1}{4}$ , S $\frac{1}{2}$ NW $\frac{1}{4}$ Sec. 18: NE $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$	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. 25% Amoco Production Company 25% Atlantic Richfield Company 25% Chevron U.S.A. Inc. 25%	8.308758

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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
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 Rich- field Company Chevron U.S.A. Inc.	David M. Warren, Jr. 1.38158 Ellen Anne W. Williams .01842 Annabel Wunningham .15354 The Wiser Oil Co..27631  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%	.921406

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
						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 Gutttag .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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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
						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.		
Lockhart "B-14" (was Tract 97)	T21S-R36E, N.M.P.M. Sec. 14: W $\frac{1}{2}$ W $\frac{1}{2}$ E $\frac{1}{2}$ E $\frac{1}{2}$	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, E $\frac{1}{2}$ NW $\frac{1}{4}$	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: E $\frac{1}{2}$ SE $\frac{1}{4}$	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%	.323144

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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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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
1. Gilluly "B" Federal (was Tract 4)	T20S-R36E, N.M.P.M. Sec. 25: NW $\frac{1}{4}$ SW $\frac{1}{4}$	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: S $\frac{1}{2}$ SW $\frac{1}{4}$	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
FEDERAL TRACTS	TOTALING	2,734.76	ACRES	OR	19.27%	OF	UNIT	AREA

<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>SERIAL NO. AND EFFECTIVE DATE</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>LESSEE OF RECORD</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>
<u>STATE LANDS:</u>								
13. J.F. Janda (NCT-C) (was Tract 95)	T21S-R36E, N.M.P.M. Sec. 15: SW $\frac{1}{2}$	160.00	B-229-1 HBP 2/28/28	State of New Mexico 12 $\frac{1}{2}$	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: NW $\frac{1}{4}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ , N $\frac{1}{2}$ NE $\frac{1}{4}$ , SW $\frac{1}{4}$ NE $\frac{1}{4}$ , N $\frac{1}{2}$ SE $\frac{1}{4}$	440.00	B-229-1 HBP 2/28/28	State of New Mexico 12 $\frac{1}{2}$	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	2.739613
R.R. Bell (NCT-?) (was Tract 17)	T20S-R36E, N.M.P.M. Sec. 36: W $\frac{1}{2}$	320.00	B-230-1 HBP 2/28/28	State of New Mexico 12 $\frac{1}{2}$	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 12 $\frac{1}{2}$	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: E $\frac{1}{2}$ SE $\frac{1}{4}$	80.00	B-230-1 HBP 2/28/28	State of New Mexico 12 $\frac{1}{2}$	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 W $\frac{1}{2}$ SW $\frac{1}{4}$	238.72	B-230-1 HBP 2/28/28	State of New Mexico 12 $\frac{1}{2}$	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: S $\frac{1}{2}$ SE $\frac{1}{4}$	80.00	B-230-1 HBP 2/28/28	State of New Mexico 12 $\frac{1}{2}$	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: W $\frac{1}{2}$ W $\frac{1}{2}$	160.00	B-230-1 HBP 2/28/28	State of New Mexico 12 $\frac{1}{2}$	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.796347
R.R. Bell (NCT-E) (was Tract 71)	T21S-R36E, N.M.P.M. Sec. 11: N $\frac{1}{2}$ NW $\frac{1}{4}$	80.00	B-230-1 HBP 2/28/28	State of New Mexico 12 $\frac{1}{2}$	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.355963
22. R.R. Bell (NCT-C) (was Tract 94)	T21S-R36E, N.M.P.M. Sec. 15: NW $\frac{1}{4}$	160.00	B-230-1 HBP 2/28/28	State of New Mexico 12 $\frac{1}{2}$	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	2.683321
23. State "D" (was Tract 92)	T21S-R36E, N.M.P.M. Sec. 16: W $\frac{1}{2}$ SE $\frac{1}{4}$	80.00	B-1889-3 HBP 6/8/28	State of New Mexico 12 $\frac{1}{2}$	Getty Oil Company	None	Getty Oil Company 100%	.918559

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24. State "G" (was Tract 103)	T21S-R36E, N.M.P.M. Sec. 21: SE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00	B-1651-4 HBP 9/18/28	State of New Mexico 12 $\frac{1}{2}$	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: SW $\frac{1}{4}$	160.00	B-1537 HBP 9/25/28	State of New Mexico 12 $\frac{1}{2}$	Conoco Inc.	None	Conoco Inc. 100%	.474353
26. State "D" (was Tract 96)	T21S-R36E, N.M.P.M. Sec. 15: E $\frac{1}{2}$	320.00	B-1537 HBP 9/25/28	State of New Mexico 12 $\frac{1}{2}$	Conoco Inc.	None	Conoco Inc. 100%	1.957890
27. State "E" (was Tract 43)	T21S-R36E, N.M.P.M. Sec. 5: N $\frac{1}{2}$ SW $\frac{1}{4}$	80.00	B-1940-2 HBP 10/1/28	State of New Mexico 12 $\frac{1}{2}$	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 12 $\frac{1}{2}$	Atlantic Richfield Co.	None	Atlantic Richfield Company 100%	.934498
29. Sunshine (was Tract 10)	T20S-R37E, N.M.P.M. Sec. 30: Lot 4, E $\frac{1}{2}$ SW $\frac{1}{4}$	119.69	B-2194-3 HBP 10/26/28	State of New Mexico 12 $\frac{1}{2}$	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.405359
30. Skelly "B" State (was Tract 88)	T21S-R36E, N.M.P.M. Sec. 16: NW $\frac{1}{4}$ , NW $\frac{1}{4}$ NE $\frac{1}{4}$	200.00	B-1327 HBP 11/2/28	State of New Mexico 12 $\frac{1}{2}$	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: SW $\frac{1}{4}$ NE $\frac{1}{4}$	40.00	B-1327 HBP 11/2/28	State of New Mexico 12 $\frac{1}{2}$	Getty Oil Company	None	Getty Oil Company 100%	.137520
32. Skelly 'H' State (was Tract 1)	T20S-R36E, N.M.P.M. Sec. 25: W $\frac{1}{2}$ NW $\frac{1}{4}$	80.00	B-1328 HBP 11/2/28	State of New Mexico 12 $\frac{1}{2}$	Getty Oil Company	None	Getty Oil Company 100%	.427150
33. State "AW" (was Tract 89)	T21S-R36E, N.M.P.M. Sec. 16: NE $\frac{1}{4}$ NE $\frac{1}{4}$	40.00	B-1566-2 HBP 11/20/28	State of New Mexico 12 $\frac{1}{2}$	Getty Oil Company	None	Getty Oil Company 100%	.169794
34. H. T. Orcutt (NCT-C) (was Tract 20)	T20S-R36E, N.M.P.M. Sec. 36: S $\frac{1}{4}$ SE $\frac{1}{4}$  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 12 $\frac{1}{2}$	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	3.559765

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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 2/28/28	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, NE½	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 2/28/28	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%	1.269324
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%	.126788

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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
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: N¼SE¼	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: W¼NW¼	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%	5.112412
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.	.485839

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					and El Paso Natural Gas Co.		100%	
55. State "C" (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: W¼SE¼	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: S¼SE¼	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: N¼SE¼	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: E¼SE¼	80.00	B-2330-4 HBP 12/31/28	State of New Mexico 12½	Getty Oil Co.	None	Getty Oil Co. 100%	.559636
State "I" (was Tract 104)	T21S-R36E, N.M.P.M. Sec. 22: N¼NW¼	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%	.391924

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State "K" (was Tract 36)	T21S-R36E, N.M.P.M. Sec. 6: SE $\frac{1}{2}$ SW $\frac{1}{2}$	40.00	B-1936-8 HBP 1/11/29	State of New Mexico 12%	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%	.158116
63. Turner State	T20S-R37E, N.M.P.M. Sec. 32: E $\frac{1}{2}$ NW $\frac{1}{2}$ , W $\frac{1}{2}$ NE $\frac{1}{2}$	160.00	B-1463-3 HBP 1/11/29	State of New Mexico 12 $\frac{1}{2}$	Bert Fields, Jr.	First Hutchings-Sealy National Bank of Galveston .285	F. W. Turner, Jr. Estate 37.5% Bert Fields, Jr. 25% J. F. Shelby Estate 25% W. A. and E. R. Hudson 10.625% E. R. Hudson, Agent 1.875%	.232476*

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(A) (Was Tract 24)	Sec. 32: E $\frac{1}{2}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$ NE $\frac{1}{4}$	(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: NW $\frac{1}{4}$ NE $\frac{1}{4}$	( 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: NE $\frac{1}{4}$ SW $\frac{1}{4}$	40.00	B-2352-2 HBP 1/11/29	State of New Mexico 12 $\frac{1}{2}$	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%	.067881
65. State "AY" (was Tract 25)	T20S-R37E, N.M.P.M. Sec. 32: E $\frac{1}{2}$ NE $\frac{1}{4}$	80.00	B-2366-8 HBP 1/11/29	State of New Mexico 12 $\frac{1}{2}$	Getty Oil Co.	None	Getty Oil Co. 100%	.009005
66. State "P" (was Tract 2)	T20S-R36E, N.M.P.M. Sec. 25: E $\frac{1}{2}$ NW $\frac{1}{4}$	80.00	B-1671-1 HBP 1/14/29	State of New Mexico 12 $\frac{1}{2}$	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%	.512798
State "H"(NCT-1) (was Tract 22)	T20S-R37E, N.M.P.M. Sec. 31: SE $\frac{1}{4}$	160.00	B-160-1 HBP 1/15/29	State of New Mexico 12 $\frac{1}{2}$	Texaco Inc.	None	Texaco Inc. 100%	.635532
68. State "196" (was Tract 26)	T20S-R37E, N.M.P.M. Sec. 32: W $\frac{1}{2}$ SW $\frac{1}{4}$	80.00	B-2406-1 HBP 1/15/29	State of New Mexico 12 $\frac{1}{2}$	Atlantic Richfield Co.	None	Atlantic Richfield Co. 100%	.220246
69. State "A" (was Tract 44)	T21S-R36E, N.M.P.M. Sec. 5: N $\frac{1}{2}$ SE $\frac{1}{4}$	80.00	B-2456-10 HBP 2/26/29	State of New Mexico 12 $\frac{1}{2}$	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. Perdeu 5%	.343778

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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
						9.375%		
70. State "J" (was Tract 27)	T20S-R37E, N.M.P.M. Sec. 32: SE $\frac{1}{4}$ , E $\frac{1}{2}$ SW $\frac{1}{4}$	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: NE $\frac{1}{4}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ N $\frac{1}{2}$ SE $\frac{1}{4}$	320.00	B-1732-1 HBP 2/28/33	State of New Mexico 12 $\frac{1}{2}$	Gulf Oil Corporation	None	Gulf Oil Corporation 100%	.825987
72. State "B" (was Tract 73)	T21S-R36E, N.M.P.M. Sec. 11: SE $\frac{1}{2}$ NW $\frac{1}{4}$	40.00	B-2527-12 HBP 2/10/34	State of New Mexico 12 $\frac{1}{2}$	Two States Oil Company	None	Two States Oil Company 81.25% The Herman R. Crile Sr. Revoc- able Trust dated 9-28-76 18.75%	.073299
73. Skelly "G" (was Tract 12)	T20S-R37E, N.M.P.M. Sec. 30: NW $\frac{1}{4}$ SE $\frac{1}{4}$	40.00	B-2690 HBP 4/2/34	State of New Mexico 12 $\frac{1}{2}$	Getty Oil Company	None	Getty Oil Co. 100%	.081241
74. Phillips (was Tract 7)	T20S-R37E, N.M.P.M. Sec. 30: NE $\frac{1}{4}$ NW $\frac{1}{4}$ , NW $\frac{1}{4}$ NE $\frac{1}{4}$	80.00	B-2736-9 HBP 4/10/34	State of New Mexico 12 $\frac{1}{2}$	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: S $\frac{1}{2}$ SW $\frac{1}{4}$	80.00	B-3114-3 HBP 9/24/34	State of New Mexico 12 $\frac{1}{2}$	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: SW $\frac{1}{4}$ NW $\frac{1}{4}$	40.00	B-3114-4 HBP 9/24/34	State of New Mexico 12 $\frac{1}{2}$	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, SE $\frac{1}{4}$ NW $\frac{1}{4}$ , S $\frac{1}{2}$ NE $\frac{1}{4}$	159.47	B-3423-1 HBP 10/29/34	State of New Mexico 12 $\frac{1}{2}$	Amarada Hess Corporation	None	Amerada Hess Corporation 100%	.148770
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 12 $\frac{1}{2}$	Atlantic Richfield Co.	None	Atlantic Richfield Company 100%	.055491
66 STATE TRACTS	TOTALING	8,274.80	ACRES	OR 58.32% OF	UNIT AREA			

<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>LEASE STATUS</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>
<b>PATENTED LANDS:</b>							
79. White (NCT-A) (was Tract 5)	T20S-R36E, N.M.P.M. Sec. 25: E $\frac{1}{2}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$	240.00	HBP	See "A" and "B" below	None	Gulf Oil Corporation 100%	.714308*
A.	Sec. 25: W $\frac{1}{2}$ SE $\frac{1}{4}$	(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: E $\frac{1}{2}$ E $\frac{1}{2}$	(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 Vandenburg, Trustee U/W/O Virgil White 1.82300			(.587097)*
80. Akens (was Tract 51)	T21S-R36E, N.M.P.M. Sec. 3: SE $\frac{1}{4}$ , N $\frac{1}{2}$ SW $\frac{1}{4}$ SE $\frac{1}{4}$ SW $\frac{1}{4}$	280.00	HBP	See "A" and "B" below	None	Sun Exploration and Production Company 100%	.498853*
A.	Sec. 3: SE $\frac{1}{4}$	(160.00)		Atlantic Richfield Company 2.083400 Marjorie Cone Kastman .253900			*(.226552)

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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
				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	PARTICIPATION 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			
B.	Sec. 3: N $\frac{1}{2}$ SW $\frac{1}{4}$ ; SE $\frac{1}{2}$ SW $\frac{1}{4}$	(120.00)		Atlantic Richfield Company 2.083400			*(.272301)
				.253900 Marjorie Cone Kastman			
				.253900 S. E. Cone, Jr.			
				.133900 Abraham Abramson Est.			
				.013100 Tortuga Oil & Gas, Inc.			
				.000500 Grace M. Larson			
				.253900 Katherine Cone Keck			
				.001734 John R. Royall Tr. U/W of Fannie May Royall Dec'd.			
				.001733 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.			
				.020900 Liston Archer			
				.046200 David A. Bower, Agent			
				.156200 Jo Layne Antry			
				.356500 Penn Brothers, Inc.			
				.135800 J. R. Bower, JR.			
				.025100 Rosemann Mahoney			
				.025100 Rosemann Mahoney, Exec. of the			

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<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>LEASE STATUS</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>
				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.			

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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
81. Akens (was Tract 52)	T21S-R36E, N.M.P.M. Sec. 3: SW $\frac{1}{2}$ SW $\frac{1}{2}$	40.00	HBP	<p>.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</p> <p>Sun Exploration &amp; Production                      Company 1.171870                      Abraham Abramson Est. .468750                      Allis Varga Corbett .029300                      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                      Petrurst 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</p>	None	<p>Kenneth R. Boss                      Apollo Oil Company                      S&amp;S Engineering</p> <p>50%                      25%                      25%</p>	.435944

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<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>LEASE STATUS</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>
				.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	PARTICIPATION OF TRACT IN UNIT
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: E $\frac{1}{2}$ NW $\frac{1}{2}$	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%	.192757

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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
84. Houston (was Tract 55)	T21S-R36E, N.M.P.M. Sec. 7: NE 1/4	160.00	HBP	<p>Nat'l Bank, Trustees of the Joe and Jessie Crump Fund                      Acct. 2312 .39063                      Jacqueline Brin Goldberg.03256                      Morris &amp; 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 Calvin/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</p> <p>Amoco Production Co. 1.17188                      Atlantic Richfield Company 3.51563                      Archbishopric of New York 2.29687                      Bradley Resources Corp. .39063                      Jenson Western Title &amp; 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</p>	None	Amerada Hess Corporation 100%	1.153271

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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
85. Mollie Campbell (was Tract 56)	T21S-R36E, N.M.P.M. Sec. 7: Lots 3,4, E½SW¼	150.01	HBP	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  Home Stake Royalty Corporation .02062 Robert A. Venable, Testa- mentary 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

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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
86. A. F. Houston (was Tract 57)	T21S-R36E, N.M.P.M. Sec. 7: SE $\frac{1}{4}$	160.00	HBP	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  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

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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
				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: E $\frac{1}{2}$	320.00	HBP	Atlantic Richfield Co. 2.343750	None	Atlantic Richfield Co. 100%	3.457004
				Archbishopric of New York 3.937500			
				Emma L. Archer, Trustee .175780			
				Liston Archer .019530			
				Julia Bergman .026043			
				David A. Bower Individ. and as Agent .043370			
				J. R. Bower, Jr. .127250			
				Joan A. Carbone .007323			
				Valmore M. Carignan Est .039060			
				Colonial Royalties Co. .045582			

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<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>LEASE STATUS</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT 'IN UNIT</u>
BOOK 440 PAGE 655				Carl Costello			
				Iris G. Damson	.019530		
				Marcia Lynn Del Core	.039060		
				Emily C. Greenhalgh and Dolores Sloat, Individ. and as Exrxs U/W of Henry G. Ludwig	.026030		
				Sarah B. Ferguson	.078120		
				Fluor Oil and Gas Corporation	.026044		
				Home Stake Oil & Gas Co.	1.562500		
				Home Stake Royalty Corporation	.045569		
				Everett R. Jones, Jr.	.045569		
				Grace M. Larson	.014450		
				Lawson Petroleum Company	.000490		
				Munro L. Lyeth and Patricia D. Lyeth	.078130		
				Brian Maney	.781250		
				Kevin Maney	.004882		
				Marguerite C. Maney	.004882		
				Maureen Maney	.004883		
				Patricia A. Maney	.004883		
				Vivian G. Maney	.007324		
				Pauline K. Neppel Ind. and as Exrx. of Est. of Arthur J. Neppel	.004883		
				Gloria McFarland and Charles W. Grimes, II Trustees of C. W. Grimes Trust	.058590		
				Mary Vern Ransom	.937500		
				Onez Norman Rooney	.390630		
				Francis K. Royall	.781250		
				John R. Royall, Trustee of the John R. Royall Trust u/w/o N. R. Royall, Jr.	.002935		
				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.	.000652		
				John R. Royall, Trustee of the Tucker K. Royall Trust, u/w/o Fannie May Royall	.000651		
				Frieda W. Schachner	.004880		
				Donald Tait	.039060		
					.009765		

<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>LEASE STATUS</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>
				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: W $\frac{1}{2}$ NW $\frac{1}{4}$ , SE $\frac{1}{4}$ NW $\frac{1}{4}$ , SW $\frac{1}{4}$	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: NE $\frac{1}{4}$ NW $\frac{1}{4}$	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

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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
				Archbishopric of New York .03472			
				Onez Norman Rooney 2.29687			
				Frieda W. Schachner .78125			
				June D. Speight .04167			
				The Toles Co. .26041			
				William B. Watson, Agent and Attorney-in-Fact .03473			
90. J. D. Knox (was Tract 69)	T21S-R36E, N.M.P.M. Sec. 10: E $\frac{1}{4}$	320.00	HBP	Amoco Production Co. .390700	None	Exxon Corporation 100%	1.604876
				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			
McQuatters (was Tract 74)	T21S-R36E, N.M.P.M. Sec. 11: S $\frac{1}{4}$ NE $\frac{1}{4}$ , NW $\frac{1}{4}$ SE $\frac{1}{4}$	120.00	HBP	Alan J. Antweil .7812500	Amoco Production Co. 12.5%	Wiser Oil Co. 50%	.209848
				E. Doyle Berryman .7812500		Two States Oil Company 25%	
				Bradley Resources Corporation 1.1718750		Herman R. Crile 12.5%	
				Fluor Oil and Gas Corporation 3.1250000		Kenneth Headley 12.5%	
				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			

<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>LEASE STATUS</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>
92. M. S. Berryman (was Tract 77)	T21S-R36E, N.M.P.M. Sec. 11: SW $\frac{1}{2}$ SE $\frac{1}{4}$	40.00	HBP	Southland Royalty Company 1.9531250 Jack Stieren Estate .0325296 Tortuga Oil & Gas Co. .0280428 Nora Walker .0011217 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: NE $\frac{1}{2}$ SE $\frac{1}{4}$ Sec. 12: NW $\frac{1}{2}$ SW $\frac{1}{4}$	80.00	HBP	See "A" and "B" below	None	Sun Exploration and Production Company 100%	.055857*
A.	Sec. 11: NE $\frac{1}{2}$ SE $\frac{1}{4}$			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)

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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	
BOOK 440 FACE 659				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			(.000000)
					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,				

<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>LEASE STATUS</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>	
				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: SE $\frac{1}{4}$ SE $\frac{1}{4}$ Sec. 12: SW $\frac{1}{4}$ SW $\frac{1}{4}$	80.00	HBP	See "A" and "B" below	None	Earl R. Bruno 100%	.153687*	
A.	Sec. 11: SE $\frac{1}{4}$ SE $\frac{1}{4}$			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)	

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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
B.	Sec. 12: SW <del>4</del> SW <del>4</del>	(40.00)		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			(.091329)
				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			

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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
				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: <del>NW1/4NW1/4</del>	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 Gutttag .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

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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
				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: NE1/4NW4	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 Gutttag .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 INTEREST OWNER AND PERCENTAGE	PARTICIPATION OF TRACT IN UNIT
				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 Company 100%	1.415360

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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
				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		

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<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>LEASE STATUS</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>
				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			
Coleman (was Tract 86)	T21S-R36E, N.M.P.M. Sec. 17: W <del>5</del> SE <del>4</del>	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. Gutttag .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

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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
				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: E $\frac{1}{2}$ W $\frac{1}{2}$ SW $\frac{1}{4}$ NE $\frac{1}{4}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$	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

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<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>LEASE STATUS</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>
				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.			

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<u>TRACT NO. AND TRACT NAME</u>	<u>DESCRIPTION OF LAND</u>	<u>ACRES</u>	<u>LEASE STATUS</u>	<u>BASIC ROYALTY OWNER AND PERCENTAGE</u>	<u>OVERRIDING ROYALTY OWNER AND PERCENTAGE</u>	<u>WORKING INTEREST OWNER AND PERCENTAGE</u>	<u>PARTICIPATION OF TRACT IN UNIT</u>
100. Frona Leck (was Tract 99)	T21S-R36E, N.M.P.M. Sec. 14: NW 1/4	40.00	HBP	Coleman .07810 Charles F. Bedford .12500 Henry De Graffenreid Bedford .12500 Rachel Bedford Bowen .12500 Mary Vern Ransom .09770 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	PARTICIPATION 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: N $\frac{1}{2}$ NE $\frac{1}{4}$	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

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43094

*Minor* BOOK 440 PAGE 571

APPROVALS AND STATUTORY UNITIZATION ORDER

UNITED STATES DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

STATE OF NEW MEXICO  
COMMISSIONER OF PUBLIC LANDS  
OIL AND GAS DIVISION

STATE OF NEW MEXICO  
ENERGY AND MINERALS DEPARTMENT  
OIL CONSERVATION DIVISION

BOOK 440 E 572



# United States Department of the Interior

BUREAU OF LAND MANAGEMENT

Roswell District Office

P. O. Box 1397

Roswell, New Mexico 88201

IN REPLY  
REFER TO:  
NM061P35-85U494

November 6, 1984

Gulf Oil Exploration and Production Company  
Attention: Ray Vaden  
P.O. Drawer 1150  
Midland, TX 79702

Gentlemen:

One approved copy of the Eunice Monument South Unit Agreement, Lea County, New Mexico, is enclosed. The agreement has been assigned No. NM061P35-85U494. Approval of the agreement is subject to approval of statutory unitization by the NMOCD. The agreement will become effective the first day of the month following the date of approval by the BLM, NMOCD, and the Commission pursuant to section 24 of the unit agreement.

Sincerely yours,

District Manager

Acting

Enclosure

BOOK 440 PAGE 573

# State of New Mexico



JIM BACA  
COMMISSIONER

## Commissioner of Public Lands

November 6, 1984

P.O. BOX 1148  
SANTA FE, NEW MEXICO 87504-1148  
Express Mail Delivery Use:  
310 Old Santa Fe Trail  
Santa Fe, New Mexico 87501

Gulf Oil Exploration and Production Co.  
P. O. Box 1150  
Midland, Texas 79702

Re: Eunice Monument South Unit  
Lea County, New Mexico

ATTENTION: Mr. Ray M. Vaden

Gentlemen:

The Commissioner of Public Lands has this date granted final approval to the Eunice Monument South Unit Area, Lea County, New Mexico, along with your Initial Plan of Operation. Our approval is subject to like approval by the Bureau of Land Management and the New Mexico Oil Conservation Division.

Our approval is given with the understanding that you will obtain the New Mexico Oil Conservation Division's approval of Statutory Unitization within a reasonable time.

Enclosed are Five (5) Certificates of Approval.

Your filing fee in the amount of \$720.00 has been received.

Very truly yours,

JIM BACA  
COMMISSIONER OF PUBLIC LANDS

BY: *Ray D. Graham*  
RAY D. GRAHAM, Director  
Oil and Gas Division  
AC 505/827-5744

JB/RDG/pm  
encls.

cc:           OCD-Santa Fe, New Mexico  
              BLM-Albuquerque, New Mexico  
              BLM-Roswell, New Mexico

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## NEW MEXICO STATE LAND OFFICE

## CERTIFICATE OF APPROVAL

COMMISSIONER OF PUBLIC LANDS, STATE OF NEW MEXICO

EUNICE MONUMENT SOUTH UNIT

LEA COUNTY, NEW MEXICO

There having been presented to the undersigned Commissioner of Public Lands of the State of New Mexico for examination, the attached Agreement for the development and operation of acreage which is described within the attached Agreement, dated June 22, 1984, which has been executed, or is to be executed by parties owning and holding oil and gas leases and royalty interests in and under the property described, and upon examination of said Agreement, the Commissioner finds:

- (a) That such agreement will tend to promote the conservation of oil and gas and the better utilization of reservoir energy in said area.
- (b) That under the proposed agreement, the State of New Mexico will receive its fair share of the recoverable oil or gas in place under its lands in the area.
- (c) That each beneficiary Institution of the State of New Mexico will receive its fair and equitable share of the recoverable oil and gas under its lands within the area.
- (d) That such agreement is in other respects for the best interests of the State, with respect to state lands.

NOW, THEREFORE, by virtue of the authority conferred upon me under Sections 19-10-45, 19-10-46, 19-10-47, New Mexico Statutes Annotated, 1978 Compilation, I, the undersigned, Commissioner of Public Lands of the State of New Mexico, for the purpose of more properly conserving the oil and gas resources of the State, do hereby consent to and approve the said Agreement, and any leases embracing lands of the State of New Mexico within the area shall be and the same are hereby amended to conform with the terms thereof, and shall remain in full force and effect according to the terms and conditions of said Agreement. This approval is subject to all of the provisions of the aforesaid statutes.

IN WITNESS WHEREOF, this Certificate of Approval is executed, with seal affixed, this 6th day of November, 19 84.



*Jim Baca*  
 COMMISSIONER OF PUBLIC LANDS  
 of the State of New Mexico





BOOK 440 PAGE 576

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

CASE NO. 8397  
Order No. R-7765-A

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

NUNC PRO TUNC

BY THE COMMISSION:

It appearing to the Commission that Order No. R-7765,  
dated December 27, 1984, does not correctly state the intended  
order of the Commission due to error,

IT IS THEREFORE ORDERED THAT:

(1) Ordering Paragraph (2) on Pages 8 and 9 of Commission  
Order No. R-7765, Case No. 8397, be and the same is hereby  
corrected to read in its entirety as follows:

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

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

Sections 14 through 18: All

Section 21: N/2 and N/2 S/2

Section 22: N/2 and N/2 S/2

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Case No. 8397  
Order No. R-7765-A

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

(2) The corrections set forth in this order be entered nunc pro tunc as of December 27, 1984.

DONE at Santa Fe, New Mexico, on this 28th day of December, 1984.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

JIM BACA, Member



ED KELLEY, Member



R. L. STAMETS, Chairman  
and Secretary

S E A L

dr/

FROM: Lease Records Unit At: Midland  
 TO: Land Files At: Midland  
 SUBJECT: Transmittal to your jurisdiction of complete leasehold papers for preparation of new Land Lease File.

**KEEP ON TOP  
OF FILE**

LEASE NAME: EUNICE MONUMENT SOUTH UNIT NO. 5-20110-00

<u>FILE INDEX</u>	<u>PART NO.</u>
<u>WORKING FILE - POST UNITIZATION (After 2-1-85)</u>	<u>1</u>
<u>DEC. 1984 W.I. OWNERS MTG. - BALLOT, AFE, INVENTORY &amp; ACQUISITIONS</u>	<u>2a, 2b, 2c</u>
<u>ASSIGNMENTS &amp; SHARING AGREEMENT - ACQUIRED UNIT INTERESTS</u>	<u>3a, 3b, 3c</u>
<u>COMPUTER &amp; WORD PROCESSING EXHIBITS - ACCESS &amp; UPDATE INFORMATION</u>	<u>4</u>
<u>ORIGINAL INSTRUMENTS &amp; APPROVALS AS PRINTED &amp; AS FILED IN LEA CO.</u>	<u>5a, 5b</u>
<u>ORIGINAL RATIFICATION &amp; JOINDERS (W.I., R.I., ORRI) AS FILED IN LEA COUNTY</u>	<u>6</u>
<u>STATE, FEDERAL &amp; OCD PRELIMINARY &amp; FINAL APPROVALS</u>	<u>7</u>
<u>LEGAL CORRESPONDENCE, NEGOTIATIONS &amp; APPROVALS</u>	<u>8a, 8b</u>
<u>COPIES OF CERTIFIED LETTERS TO ROYALTY AND OVERRIDING ROYALTY OWNERS</u>	<u>9a, 9b, 9c, 9d</u>
<u>COPIES OF INSTRUMENTS MAILED 7-16-84 &amp; 7-25-84 TO W. I. OWNERS AND 7-12-84 TO R. I. OWNERS</u>	<u>10</u>
<u>COPIES OF RATIFICATION AND JOINDERS AS MAILED &amp; REMAILED</u>	<u>11a, 11b</u>
<u>ROYALTY &amp; ORRI OWNERS, JOINDER &amp; CURATIVE BY OWNER NUMBER</u>	<u>12a, 12b, 12c, 12d 12e, 12f, 12g</u>
<u>DIVISION ORDER SOURCES FOR EXHIBIT "B"</u>	<u>13a, 13b, 13c</u>
<u>STATE, FEDERAL &amp; FEE TAKE-OFFS</u>	<u>14a, 14b</u>
<u>MISCELLANEOUS TITLE INSTRUMENTS FOR TRACTS 48, 63, &amp; 81</u>	<u>15</u>
<u>EXISTING GAS COMS AND AGREEMENTS COVERING LANDS WITHIN UNIT AREA</u>	<u>16</u>
<u>INTERNAL CORRESPONDENCE - INTERDEPARTMENTAL (LAND, ENGINEERING, COMPTROLLER, CRUDE OIL, ETC.)</u>	<u>17</u>
<u>OCD HEARING FOLLOW-UP CORRESPONDENCE AND REPORTS</u>	<u>18</u>
<u>OCD HEARING TESTIMONY</u>	<u>19</u>
<u>OCD HEARING TRANSCRIPTS</u>	<u>20</u>
<u>OCD HEARING EXHIBITS</u>	<u>21a, 21b, 21c, 21d</u>
<u>TECHNICAL COMMITTEE &amp; W.I. OWNER CORRESPONDENCE - 1979 to FEBRUARY 1, 1985</u>	<u>22a, 22b, 22c 22d, 22e, 22f</u>



LE NO.:



**Chevron U.S.A. Inc.**  
P.O. Box 1635, Houston, TX 77251

CROSS - REFERENCE

was: 5-20110-00

<u>FILE NUMBER</u>	<u>DOCUMENT TYPE</u>	<u>DOCUMENT DATE</u>	<u>RECORDING DATA</u>	<u>PARTIES/NAME OF DOCUMENT</u>
UF374015	Unit	2-1-85	-	Eunice Monument South Unit
JV337051	O/Agmt	2-1-85	-	Eunice Monument South Unit
UN364385	Unit	8-23-56	-	Henry C Collins Gas Unit #1
JV337048	O/Agmt	1-3-36	-	Henry C Collins Gas Unit #1
316715	Lease			
310422	"			
310423	"			
310424	"			
310425	"			
310426	"			
310427	"			
310428	"			
310429	"			
310430	"			
310431	"			
310432	"			
312148	"			
311816	"			
316712	"			
315792	"			
316622	"			
321208	"			
316713	"			
315739	"			
313287	"			
315718	"			
314638	"			

*Chia*  
Prepared By:  
12-5-88





44362

EUNICE MONUMENT SOUTH UNIT

LEA COUNTY, NEW MEXICO

Misc BOOK 442 PAGE 346

CERTIFICATE OF EFFECTIVENESS

Pursuant to the provisions of the Unit Agreement for the Eunice Monument South Unit, in Lea County, New Mexico, said agreement being dated June 22, 1984, and recorded in Book 440, at Page 607, of the Miscellaneous Records of said county, Gulf Oil Corporation, as Unit Operator, hereby certifies as follows:

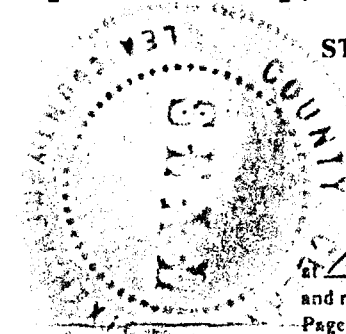
- (a) Statutory unitization upon the terms and conditions of said Unit Agreement and the Unit Operating Agreement for said unit was approved and ordered by the Oil Conservation Commission of New Mexico on December 27, 1984, by Order No. R-7765 in Case No. 8397 heard on November 7 and 8, 1984.
(b) The said Unit Agreement became effective in accordance with its terms on February 1, 1985, which date is the Effective Date as defined in said agreement.
(c) The said Unit covers the following lands as to the unitized formation:

TOWNSHIP 20 SOUTH, RANGE 36 EAST, N.M.P.M.
Section 25: All
Section 36: All

TOWNSHIP 20 SOUTH, RANGE 37 EAST, N.M.P.M.
Section 30: S/2, S/2N/2, NE/4NW/4 and NW/4NE/4
Section 31: All
Section 32: All

TOWNSHIP 21 SOUTH, RANGE 36 EAST, N.M.P.M.
Section 2: S/2S/2
Section 3: Lots 3, 4, 5, 6, 11, 12, 13, and 14 and S/2
Section 4 through 11: All
Section 12: W/2SW/4
Section 13: NW/4NW/4
Section 14 through 18: All
Section 21: N/2 and N/2S/2
Section 22: N/2 and N/2S/2

IN WITNESS WHEREOF, this certificate is executed this 12th day of February, 1985.



STATE OF NEW MEXICO
COUNTY OF LEA
FILED

FEB 14 1985

GULF OIL CORPORATION, as Unit Operator of the Eunice Monument South Unit

By: [Signature]
Attorney-in-Fact
L. A. TURNER

at 12:13 o'clock
and recorded in Book 442
Page 346

STATE OF TEXAS
Pat [Signature], County Clerk
By [Signature], Deputy

COUNTY OF MIDLAND §

The foregoing instrument was acknowledged before me this 12th day of February, 1985, by L.A. TURNER, Attorney in Fact for GULF OIL CORPORATION, a Pennsylvania corporation, on behalf of the corporation.

My Commission Expires:



[Signature]
Notary Public in and for
Midland County, Texas

44362





## NEW MEXICO STATE LAND OFFICE

### CERTIFICATE OF APPROVAL

COMMISSIONER OF PUBLIC LANDS, STATE OF NEW MEXICO

EUNICE MONUMENT SOUTH UNIT


LEA COUNTY, NEW MEXICO

There having been presented to the undersigned Commissioner of Public Lands of the State of New Mexico for examination, the attached Agreement for the development and operation of acreage which is described within the attached Agreement, dated June 22, 1984, which has been executed, or is to be executed by parties owning and holding oil and gas leases and royalty interests in and under the property described, and upon examination of said Agreement, the Commissioner finds:

- (a) That such agreement will tend to promote the conservation of oil and gas and the better utilization of reservoir energy in said area.
- (b) That under the proposed agreement, the State of New Mexico will receive its fair share of the recoverable oil or gas in place under its lands in the area.
- (c) That each beneficiary Institution of the State of New Mexico will receive its fair and equitable share of the recoverable oil and gas under its lands within the area.
- (d) That such agreement is in other respects for the best interests of the State, with respect to state lands.

NOW, THEREFORE, by virtue of the authority conferred upon me under Sections 19-10-45, 19-10-46, 19-10-47, New Mexico Statutes Annotated, 1978 Compilation, I, the undersigned, Commissioner of Public Lands of the State of New Mexico, for the purpose of more properly conserving the oil and gas resources of the State, do hereby consent to and approve the said Agreement, and any leases embracing lands of the State of New Mexico within the area shall be and the same are hereby amended to conform with the terms thereof, and shall remain in full force and effect according to the terms and conditions of said Agreement. This approval is subject to all of the provisions of the aforesaid statutes.

IN WITNESS WHEREOF, this Certificate of Approval is executed, with seal affixed, this 6th day of November, 1984.

  
 \_\_\_\_\_  
 COMMISSIONER OF PUBLIC LANDS  
 of the State of New Mexico



BOOK 440 PAGE 579

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.

-2-

Case No. 8397  
Order No. R-7765

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(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

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Case No. 8397  
Order No. R-7765

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.

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Case No. 8397  
Order No. R-7765

(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.



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Case No. 8397  
Order No. R-7765

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(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.

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(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.

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Order No. R-7765

(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

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Order No. R-7765

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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

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TOWNSHIP 20 SOUTH, RANGE 37 EAST, NMPMSection 30: S/2, S/2 N/2, NE/4 NW/4, and NW/4  
NE/4  
Section 31: All  
Section 32: AllTOWNSHIP 21 SOUTH, RANGE 36 EAST, NMPMSection 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

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Order No. R-7765

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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



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Order No. R-7765

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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.

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Order No. R-7765

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

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

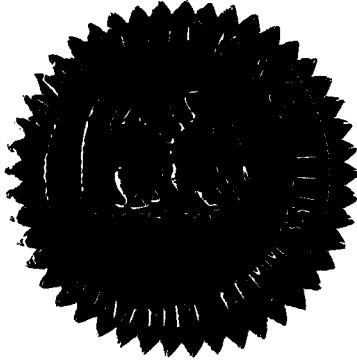
Jim Baca, Member



Ed Kelley, Member



R. L. Stamets, Chairman  
and Secretary



S E A L

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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. 8398  
Order No. R-7766

APPLICATION OF GULF OIL CORPORATION  
FOR A WATERFLOOD PROJECT, 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, in Commission Case 8398, seeks authority to institute a waterflood project in its Eunice Monument South Unit, by the injection of water into the unitized interval which shall include the formations which extend from an upper limit of 100 feet below mean sea level or the top of the Grayburg formation, whichever is higher, to a lower limit being the base of the San Andres formation in the proposed unitized area, all as shown on Exhibit "A" attached to this order.

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

(4) Gulf proposes to utilize an 80-acre five spot injection pattern using a well number system and proposed

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Case No. 8398

Order No. R-7766

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Unit injection wells all as shown and identified on Exhibit "B" attached hereto.

(5) Said injection wells shall be conversions of existing wells or newly drilled wells as noted on said Exhibit "B".

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

(7) The producing formations in the proposed project area are in an advanced stage of depletion and the area is suitable for waterflooding.

(8) There are five wells within or adjacent to the proposed project which may not have been completed or plugged in a manner which will assure that their wellbores will not serve as a conduit for movement of injected fluid out of the injection interval.

(9) The five possible problem wells are identified and described on Exhibit "C" attached hereto.

(10) Prior to instituting injection within one-half mile of any of the five possible "problem wells" Gulf shall first contact the Oil Conservation Division's District Supervisor at Hobbs to develop a plan acceptable to the Director of said Division for repairing or replugging such wells, for monitoring for determination of fluid movement from the injected interval, or for the drilling of replacement producing wells to lower reservoir pressure and fluid levels in order to protect neighboring properties and to protect other oil or gas zones or fresh water.

(11) The operator should otherwise 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 from injection, production, or plugged and abandoned wells.

(12) The injection wells or injection pressurization system should be so equipped as to limit injection pressure at the wellhead to no more than 0.2 psi per foot of depth from the surface to the top injection perforation in any injection well, but the Division Director should have authority to increase said pressure limitation, should circumstances warrant.

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Case No. 8398  
Order No. R-7766

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(13) The subject application should be approved and the project should be governed by the provisions of Rule 701 through 708 of the Commission Rules and Regulations.

IT IS THEREFORE ORDERED THAT:

(1) The applicant, Gulf Oil Corporation, is hereby authorized to institute a waterflood project in the Eunice Monument South Unit Area for the acreage described on Exhibit "A" attached hereto and made a part hereof, by the injection of water into the unitized interval which shall include the formations 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 being the base of the San Andres formation said geologic markers having been as found to occur at 3,666 feet to 5,283 feet, respectively, in the Continental Oil Company's Meyer B-4 Well No. 23 located 660 feet from the South line and 1980 feet from the East line of Section 4, Township 21 South, Range 36 East, Lea County, New Mexico.

(2) Applicant, Gulf Oil Corporation, is hereby authorized to utilize for injection purposes the wells identified and described on Exhibit "B" attached hereto and made a part hereof.

(3) The injection wells herein authorized and/or the injection pressurization system shall be so equipped as to limit injection pressure at the wellhead to no more than 0.2 psi per foot of depth from the surface to the top injection perforation, provided however, the Division Director may authorize a higher surface injection pressure upon satisfactory showing that such pressure will not result in fracturing of the confining strata.

(4) Injection into each of said wells shall be through plastic or cement-lined tubing, set in a packer which shall be located as near as practicable to the uppermost perforations, or, in the case of open-hole completions, as near as practicable to the casing-shoe; that the casing-tubing annulus shall be loaded with an inert fluid and equipped with an approved pressure gauge or attention attracting leak detection device.

(5) Prior to injection into any well located within one-half mile of any of the five wells listed on Exhibit "C" attached to this order, the applicant shall consult with the supervisor of the Oil Conservation Division's district office at Hobbs to develop a plan acceptable to

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Case No. 8398  
Order No. R-7766

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the Director of said Division, for the repairing, plugging, or replugging of said wells or for the monitoring for determination of fluid movement from the injected interval or for the drilling of producing wells to lower reservoir pressure and fluid levels in the vicinity of said wells in order to protect neighboring properties and to protect other oil or gas zones or fresh water.

(6) The operator shall immediately notify the supervisor of the Division's Hobbs District Office of the failure of the tubing or packer in any of said injection wells, the leakage of water or oil from around any producing well, or the leakage of water or oil from any plugged and abandoned well within the project area, and shall take such timely steps as may be necessary or required to correct such failure or leakage.

(7) The authorized subject waterflood project is hereby designated the Eunice Monument South Unit Waterflood Project and shall be governed by the provisions of Rules 701 through 708 of the Commission Rules and Regulations.

(8) Monthly progress reports of the waterflood projects herein authorized shall be submitted to the Commission in accordance with Rules 704 and 1120 of the Commission Rules and Regulations.

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



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LEA COUNTY, NEW MEXICO

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

Sections 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

CASE NO. 8398  
ORDER NO. R-7766  
EXHIBIT "A"

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Order No. R-7766

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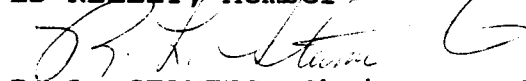
DONE at Santa Fe, New Mexico, on the day and year  
hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

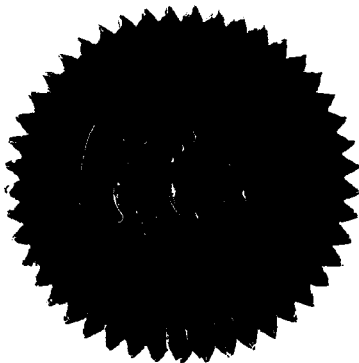
JIM BACA, Member



ED KELLEY, Member



R. L. STAMETS, Chairman and  
Secretary



S E A L

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LEA COUNTY, NEW MEXICO

UNIT WELL NO.	UNIT LETTER	SECTION-TOWNSHIP-RANGE		NEW WELL
		SOUTH	EAST	
101	C	30	20 37	N
102	A	25	20 36	
104	C	25	20 36	
106	E	25	20 36	
108	G	25	20 36	
110	E	30	20 37	
112	G	30	20 37	
114	I	30	20 37	
116	K	30	20 37	
118	I	25	20 36	
120	K	25	20 36	
122	M	25	20 36	
124	O	25	20 36	
126	M	30	20 37	
128	O	30	20 37	
130	A	32	20 37	N
132	C	32	20 37	
134	A	31	20 37	
136	C	31	20 37	
138	A	36	20 36	
140	C	36	20 36	
142	E	36	20 36	
144	G	36	20 36	
146	E	31	20 37	
148	G	31	20 37	
150	E	32	20 37	
152	G	32	20 37	
154	I	32	20 37	N
156	K	32	20 37	
158	I	31	20 37	
160	K	31	20 37	
162	I	36	20 36	
164	K	36	20 36	
166	M	36	20 36	
168	O	36	20 36	
170	M	31	20 37	
172	O	31	20 37	
174	M	32	20 37	
176	O	32	20 37	

CASE NO. 8398  
ORDER NO. R-7766  
EXHIBIT "B"

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LEA COUNTY, NEW MEXICO

179	D	3	21	36	
181	B	4	21	36	
183	D	4	21	36	
185	B	5	21	36	
187	D	5	21	36	
189	B	6	21	36	
191	D	6	21	36	
193	F	6	21	36	
195	H	6	21	36	
197	F	5	21	36	
199	H	5	21	36	
201	F	4	21	36	
203	H	4	21	36	
205	F	3	21	36	N
207	L	3	21	36	
209	J	4	21	36	
211	L	4	21	36	
213	J	5	21	36	
215	L	5	21	36	
217	J	6	21	36	
219	L	6	21	36	N
221	N	6	21	36	
223	P	6	21	36	
225	N	5	21	36	
227	P	5	21	36	
229	N	4	21	36	
231	P	4	21	36	
233	N	3	21	36	
235	R	3	21	36	N
237	T	3	21	36	
239	R	4	21	36	
241	T	4	21	36	
243	R	5	21	36	
245	T	5	21	36	
247	R	6	21	36	

CASE NO. 8398  
ORDER NO. R-7766  
EXHIBIT "B"

LEA COUNTY, NEW MEXICO

249	T	6	21	36
251	V	6	21	36
253	X	6	21	36
255	V	5	21	36
257	X	5	21	36
259	V	4	21	36
261	X	4	21	36
263	V	3	21	36
265	X	3	21	36
267	V	2	21	36
269	X	2	21	36
271	B	11	21	36
273	D	11	21	36
275	B	10	21	36
277	D	10	21	36
279	B	9	21	36
281	D	9	21	36
283	B	8	21	36
285	D	8	21	36
287	B	7	21	36
289	D	7	21	36
291	F	7	21	36
293	H	7	21	36
295	F	8	21	36
297	H	8	21	36
299	F	9	21	36
301	H	9	21	36
303	F	10	21	36
305	H	10	21	36
307	F	11	21	36
309	H	11	21	36
310	L	12	21	36
312	J	11	21	36
314	L	11	21	36
316	J	10	21	36
318	L	10	21	36
320	J	9	21	36
322	L	9	21	36
324	J	8	21	36

CASE NO. 8398  
ORDER NO. R-7766  
EXHIBIT "B"

BOOK 440 PAGE 600

LEA COUNTY, NEW MEXICO

326	L	8	21	36
328	J	7	21	36
330	L	7	21	36
332	N	7	21	36
334	P	7	21	36
336	N	8	21	36
338	P	8	21	36
340	N	9	21	36
342	P	9	21	36
344	N	10	21	36
346	P	10	21	36
348	N	11	21	36
350	P	11	21	36
352	D	13	21	36
354	B	14	21	36
356	D	14	21	36
358	B	15	21	36
360	D	15	21	36
362	B	16	21	36
364	D	16	21	36
366	B	17	21	36
368	D	17	21	36
370	B	18	21	36
372	D	18	21	36
374	F	18	21	36
376	H	18	21	36
378	F	17	21	36
380	H	17	21	36
382	F	16	21	36
384	H	16	21	36
386	F	15	21	36
388	H	15	21	36
390	F	14	21	36
392	H	14	21	36
394	J	14	21	36
396	L	14	21	36
398	J	15	21	36
400	L	15	21	36
402	J	16	21	36
404	L	16	21	36

N

CASE NO. 8398  
ORDER NO. R-7766  
EXHIBIT "B"



LEA COUNTY, NEW MEXICO

406	J	17	21	36
408	L	17	21	36
410	J	18	21	36
412	L	18	21	36
414	N	18	21	36
416	P	18	21	36
418	N	17	21	36
420	P	17	21	36
422	N	16	21	36
424	P	16	21	36
426	N	15	21	36
428	P	15	21	36
430	N	14	21	36
432	P	14	21	36
434	B	22	21	36
436	D	22	21	36
438	B	21	21	36
440	D	21	21	36
442	F	21	21	36
444	H	21	21	36
446	F	22	21	36
448	H	22	21	36
450	J	22	21	36
454	J	21	21	36
456	L	21	21	36
452	L	22	21	36

CASE 8398  
ORDER NO. R-8398  
EXHIBIT "B"

- (1) Amoco Production Co. State "C" Tr. 11 Well No. 3  
located 1980 feet from the South line and 1980 feet from  
the East line of Section 2, Township 21 South, Range 36  
East;
- (2) Amoco Production Co. State "C" Tr. 11 Well No. 4  
located 3300 feet from the South line and 1980 feet from  
the East line of Section 2, Township 21 South, Range 36  
East;
- (3) Texas Crude Oil Co. Kincheloe 2 State Well No. 1  
located 1980 feet from the South line and 1980 feet from  
the West line of Section 2, Township 21 South, Range 36  
East;
- (4) El Paso Natural Gas Co. Coleman Well No. 1  
located 2310 feet from the South line and 2310 feet from  
the East line of Section 17, Township 21 South, Range 36  
East;
- (5) Texaco Inc. New Mexico "H" NCT-1 Well No. 28, a dry  
hole, located 990 feet from the South line and 660  
feet from the East line of Section 31, Township 20 South,  
Range 37 East;

all in Lea County, New Mexico.

CASE NO. 8398  
Order No. R-7766  
EXHIBIT "C"

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 8399  
Order No. R-7767

NOMENCLATURE

APPLICATION OF GULF OIL CORPORATION  
FOR POOL EXTENSION AND CONTRACTION,  
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, is the operator of the Eunice Monument South Unit with horizontal limits including that acreage described on Exhibit "A" attached to this order.

(3) The applicant, seeks the upward extension of the vertical limits of the Eunice-Monument Pool to include either the top of the Grayburg formation or to a subsea datum of minus 100 feet, whichever is higher, and the concomitant amendment of the vertical limits of the Eumont

BOOK 440 PAGE 4

Gas Pool by contracting its lower limits to either the base of the Queen formation or to a subsea datum of minus 100 feet, whichever is higher, underlying said unit.

(4) The proposed amendment of pool vertical limits is necessary to permit the applicant to successfully carry out secondary recovery operations within the full oil column underlying said unit.

(5) No party appeared and objected to the proposed amendment of vertical limits.

(6) Granting this application will serve to prevent waste and will not violate correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) Within the area designated as the Eunice Monument South Unit Area, as shown on Exhibit "A" attached hereto, the vertical limits of the Eumont Gas Pool are hereby amended to be from the top of the Yates formation to a lower unit described as the base of the Queen formation or 100 feet below mean sea level, whichever is higher; the geologic markers having been previously found to occur at 2747 feet and 3666 feet, respectively, in Continental Oil Company's No. 23 Meyer B-4 Well (located at 660 feet from the South line and 1980 feet from the East line of Section 4, Township 21 South, Range 36 East, 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.

(2) Within the area designated as the Eunice Monument South Unit Area, as shown on Exhibit "A" attached hereto, the vertical limits of the Eunice Monument Oil Pool are hereby amended to be 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 3666 feet and 5283 feet, respectively, in Continental Oil Company's No. 23 Meyer B-4 well (located at 660 feet from the South line and 1980 feet from the East line of Section 4, Township 21 South, Range 36 East, 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.

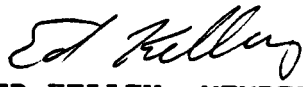
(3) The effective date of this order and the changes to vertical limits included herein shall be January 1, 1985.

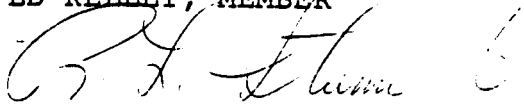
(4) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

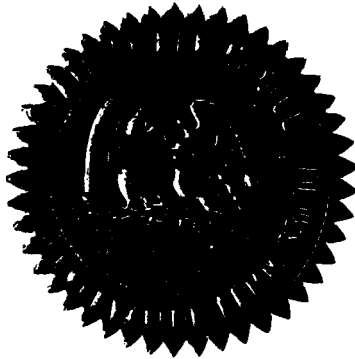
DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

JIM BACA, Member

  
ED KELLEY, MEMBER

  
R. L. STAMETS, Chairman  
and Secretary



S E A L

BOOK 440 PAGE 5

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  
Sections 14 through 18: All  
Section 21: N/2 and N/2 S/2  
Section 22: N/2 and N/2 S/2

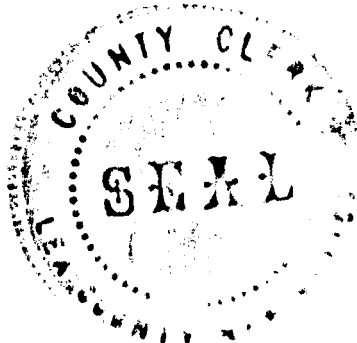
CASE NO. 8399  
ORDER NO. R-7767  
EXHIBIT "A"

43094

STATE OF NEW MEXICO  
COUNTY OF LEA  
FILED

JAN 24 1985

at 9:58 o'clock AM  
and recorded in Book 440  
Page 571  
Pat Snipes, County Clerk  
By PS Deputy





# EMSU, EMSU B and AGU Upside Potential – Infill Drilling and ROZ

Energy lives here™



# Location Map

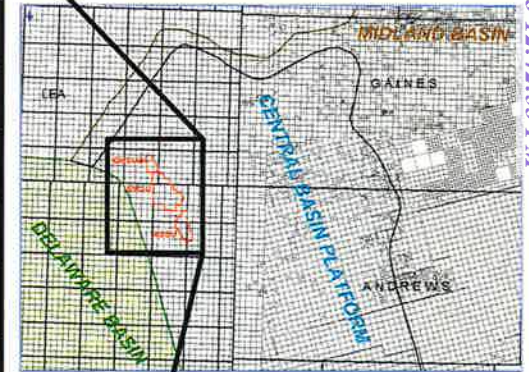
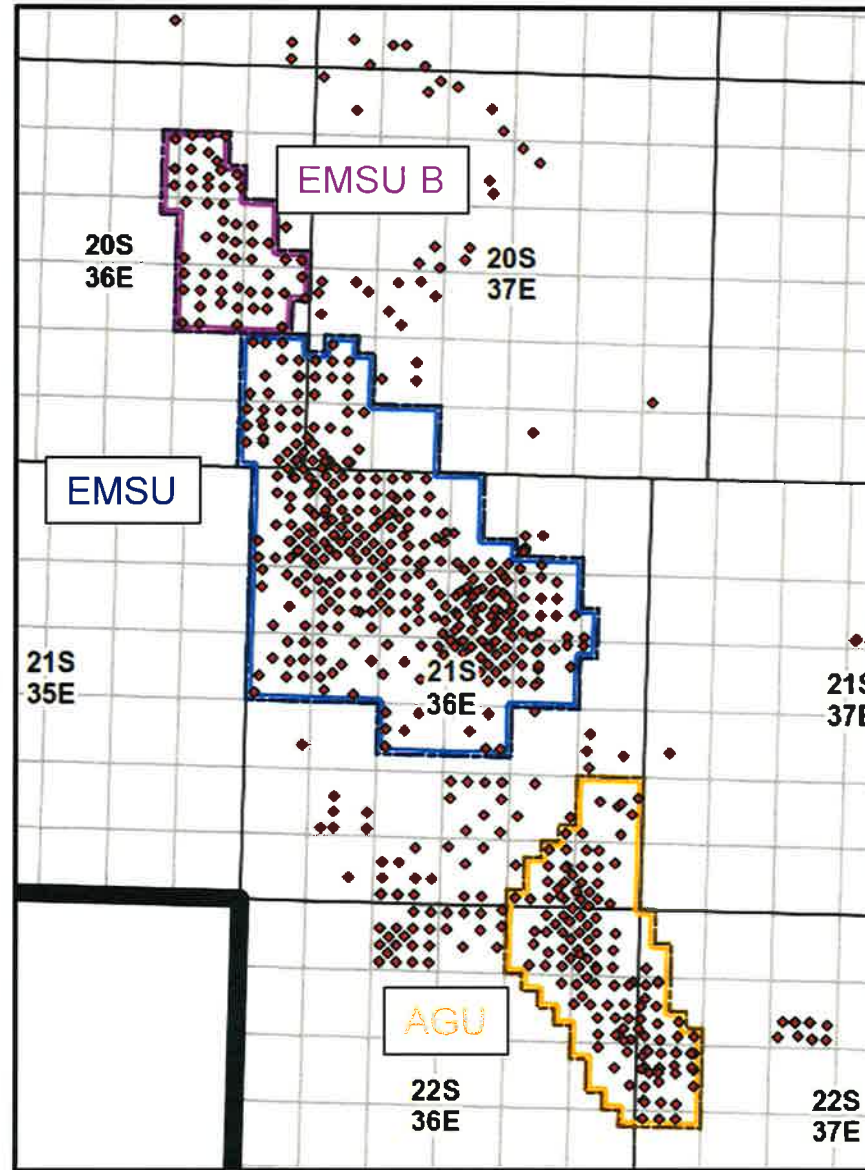
## Description

- Three existing units; EMSU, EMSU B, AGU all have infill drill well and ROZ potential
- Significant "outside leases" are also part of Eunice asset but do not contain significant contiguous ROZ acreage

## Incentive

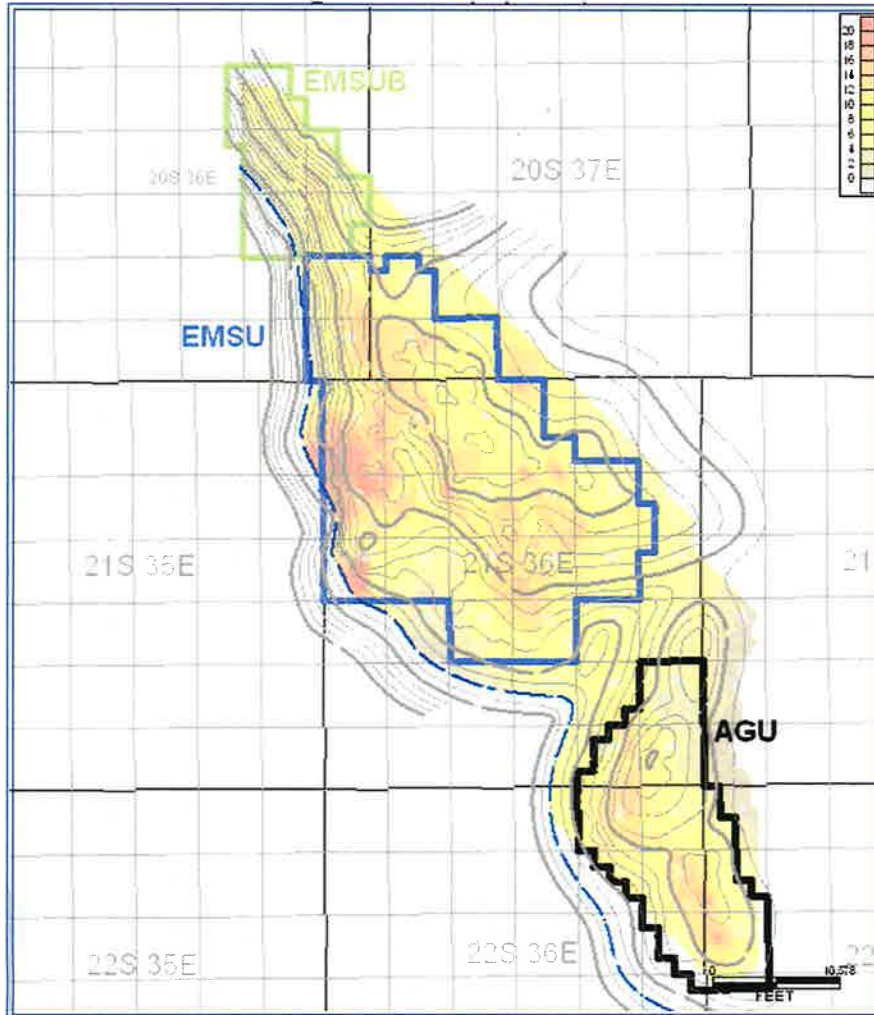
- EMSU, EMSU B and AGU have approximately 50 infill drill well locations
- EMSU, EMSU B and AGU hold a combined 23,400 ac of ROZ potential
- ROZ interval approximately 350' thick with average oil saturation of ~25%

- XTO Operated Wells

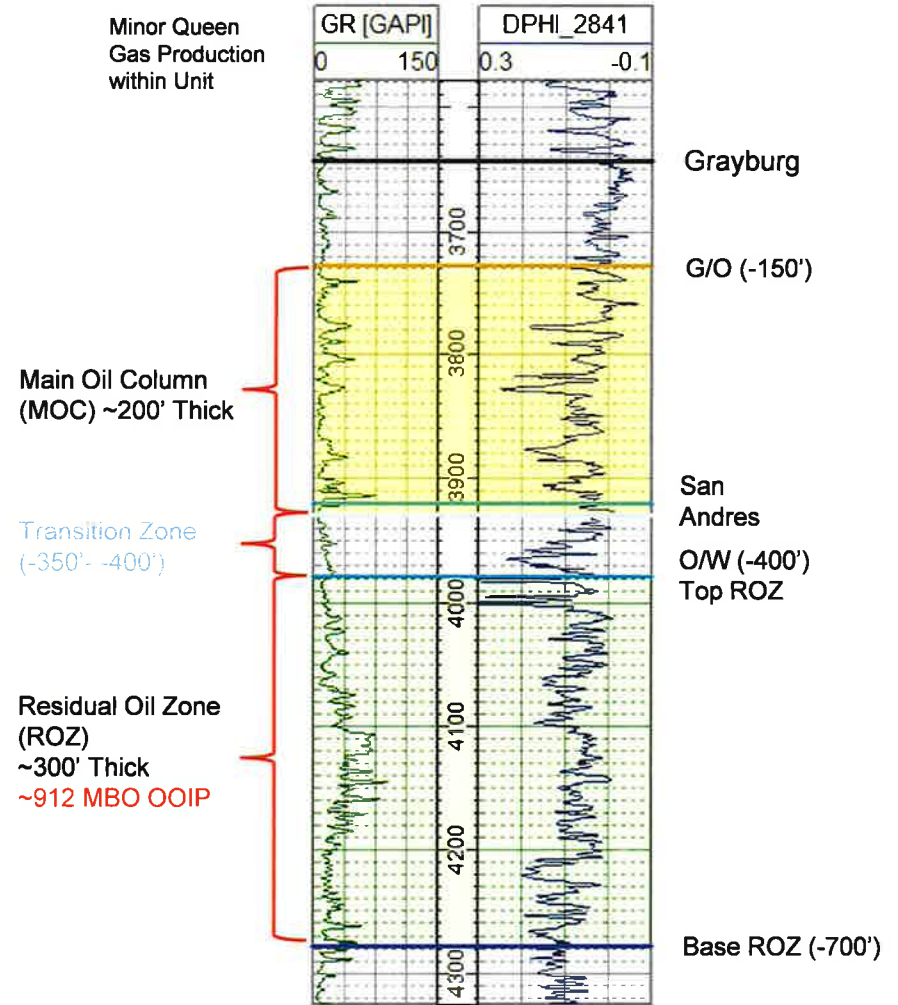


# EMSU, EMSU B and AGU Grayburg Structure, PhiH (MOC) and Type Log

Grayburg Structure (contours) & Hydrocarbon PHI-H (colored)

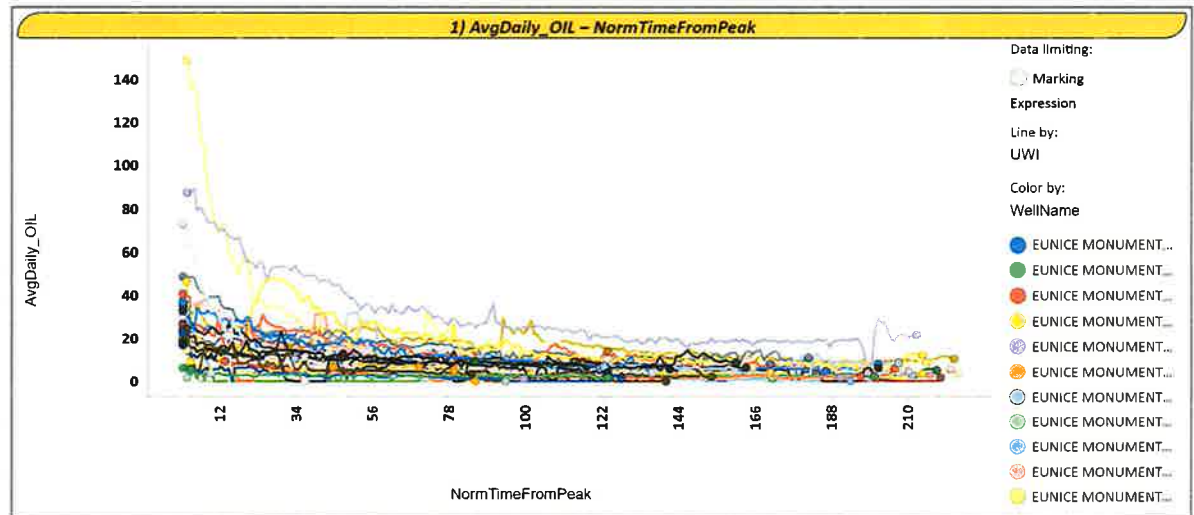
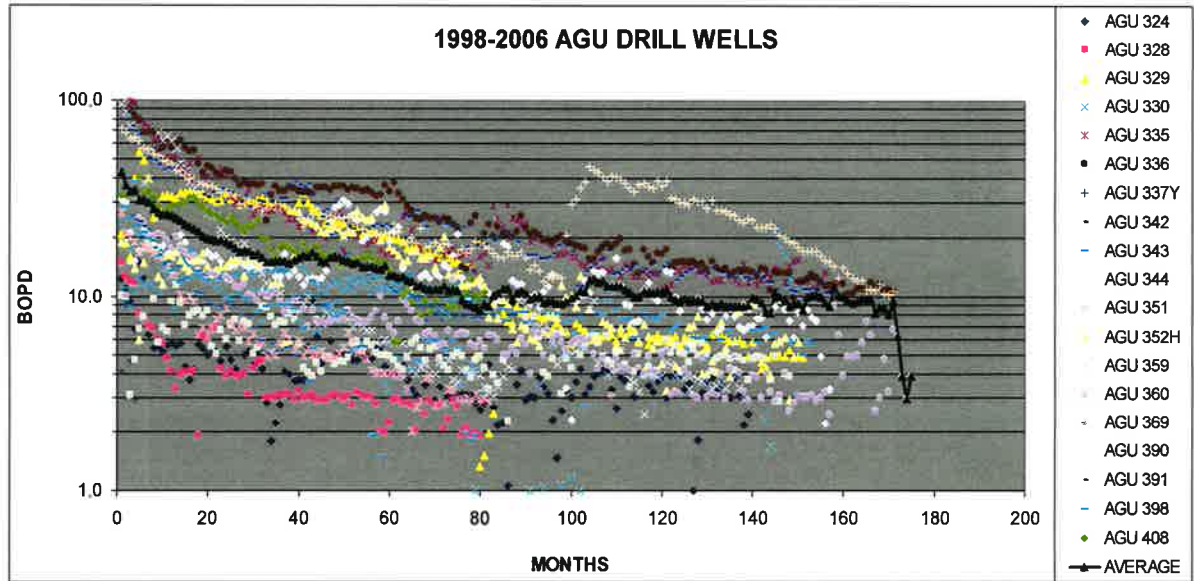


TYPE LOG  
UNIT WELLS



# EMSU, EMSU B and AGU Infill Type Curve

- A series of infill wells were drilled between 1998-2006 at EMSU and AGU
- 61 in total (42 EMSU and 19 AGU)
  - 13 XTO wells drilled between 2005-2006
  - 48 Chevron wells drilled between 1998-2002
- EMSU AVG IP = 49 BOPD
- AGU AVG IP = 43 BOPD





# EMSU, EMSU B, AGU and Surrounding Area Potential

## Infill Potential

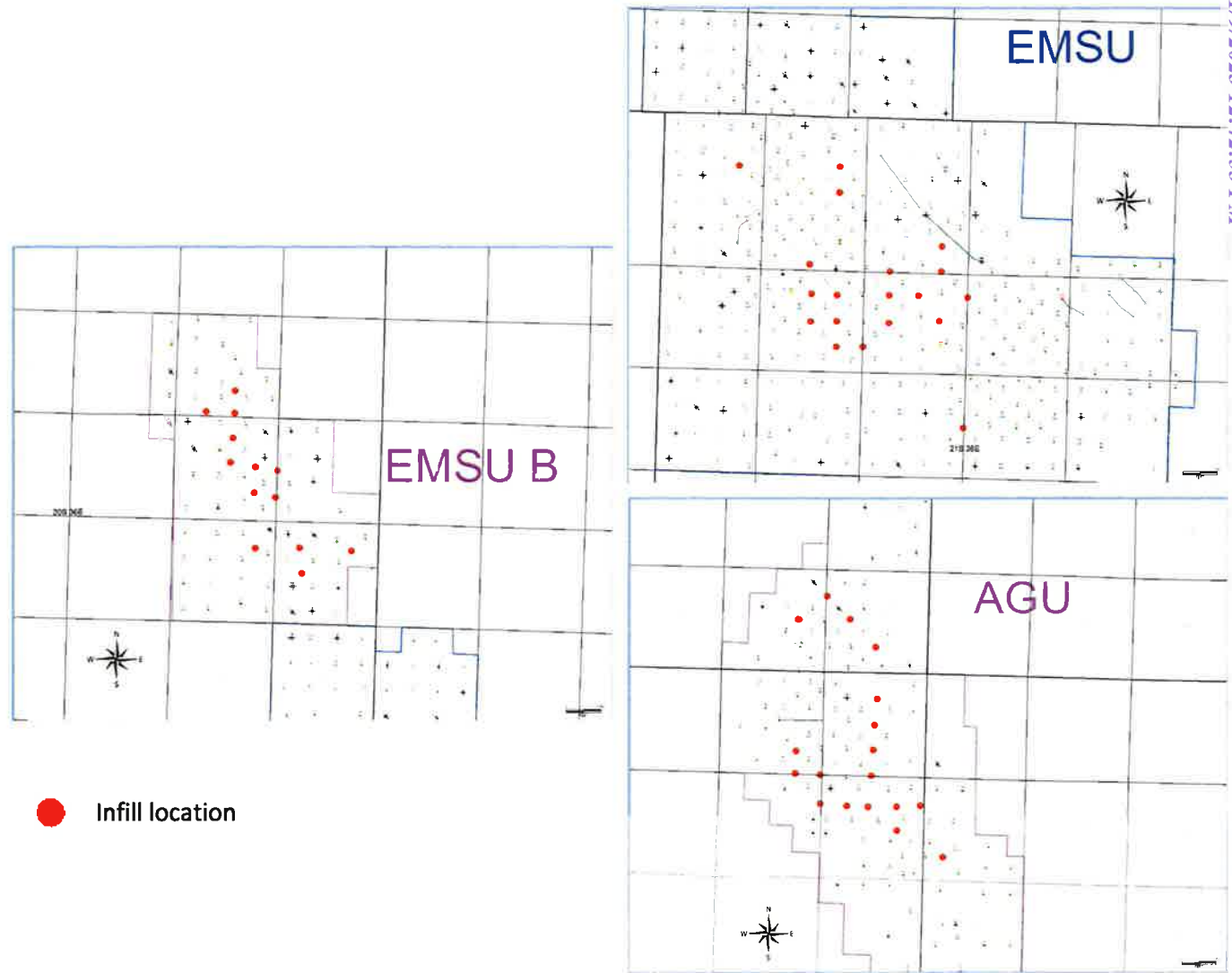
- Approximately 50 infill locations (20 acre spacing) have been identified within the three units

## Returning ~40 shut-in wells to production

- An additional ~250 BOPD if wells could be repaired more cost effectively
- Evaluate shut-in wells for OAP

## Optimization of water floods

- Injector conformance work: Attempt squeezing zones in the upper Grayburg previously identified with injection profile logs as being "thief" zones



# Eunice Area ROZ PhiH Map

## Map Description

- Porosity Cutoff >6%
- Porosity curve calculated from RhoB using 2.84 g/cc matrix based on core matrix density
- Green arrows indicate core location
- Please note location of cross-section A – A' (see next slide)

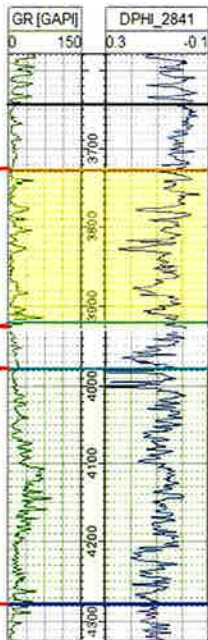
TYPE LOG  
UNIT WELLS

Minor Queen  
Gas Production  
within Unit

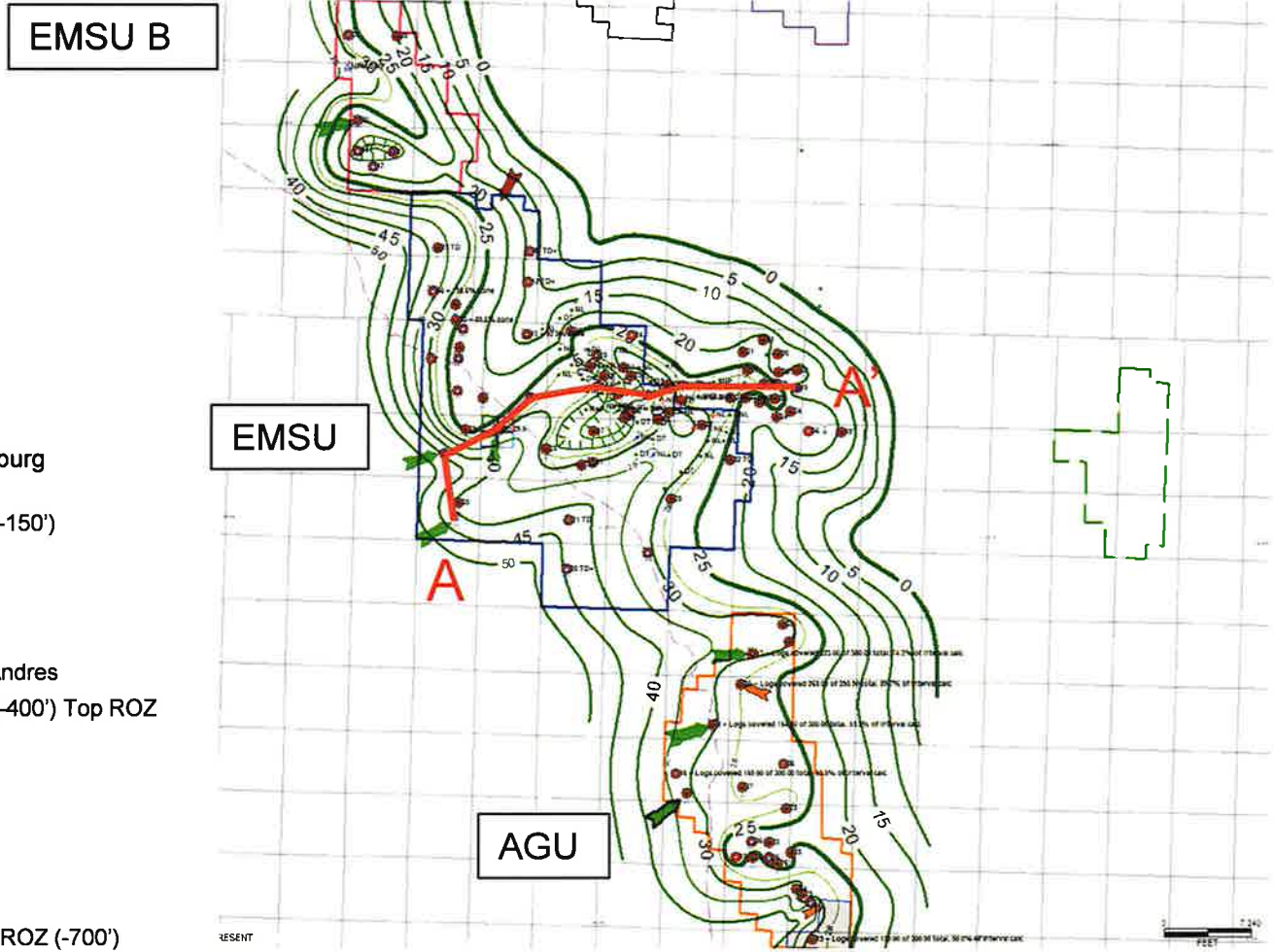
Main Oil Column  
(MOC) ~200'  
Thick

Transition Zone  
(-350' -400')

Residual Oil  
Zone (ROZ)  
~300' Thick  
~912 MBO  
OOIP



Grayburg  
G/O (-150')  
San Andres  
OW (-400') Top ROZ  
Base ROZ (-700')





# Eunice Area ROZ Cross-section

## Cross-section Description

- Porosity Cutoff 6% Green Shading
- Sw < 50% Red Shading
- Core So > 5% Brown Shading
- Top of Grayburg Gray Dash
- Top of San Andres Dark Green

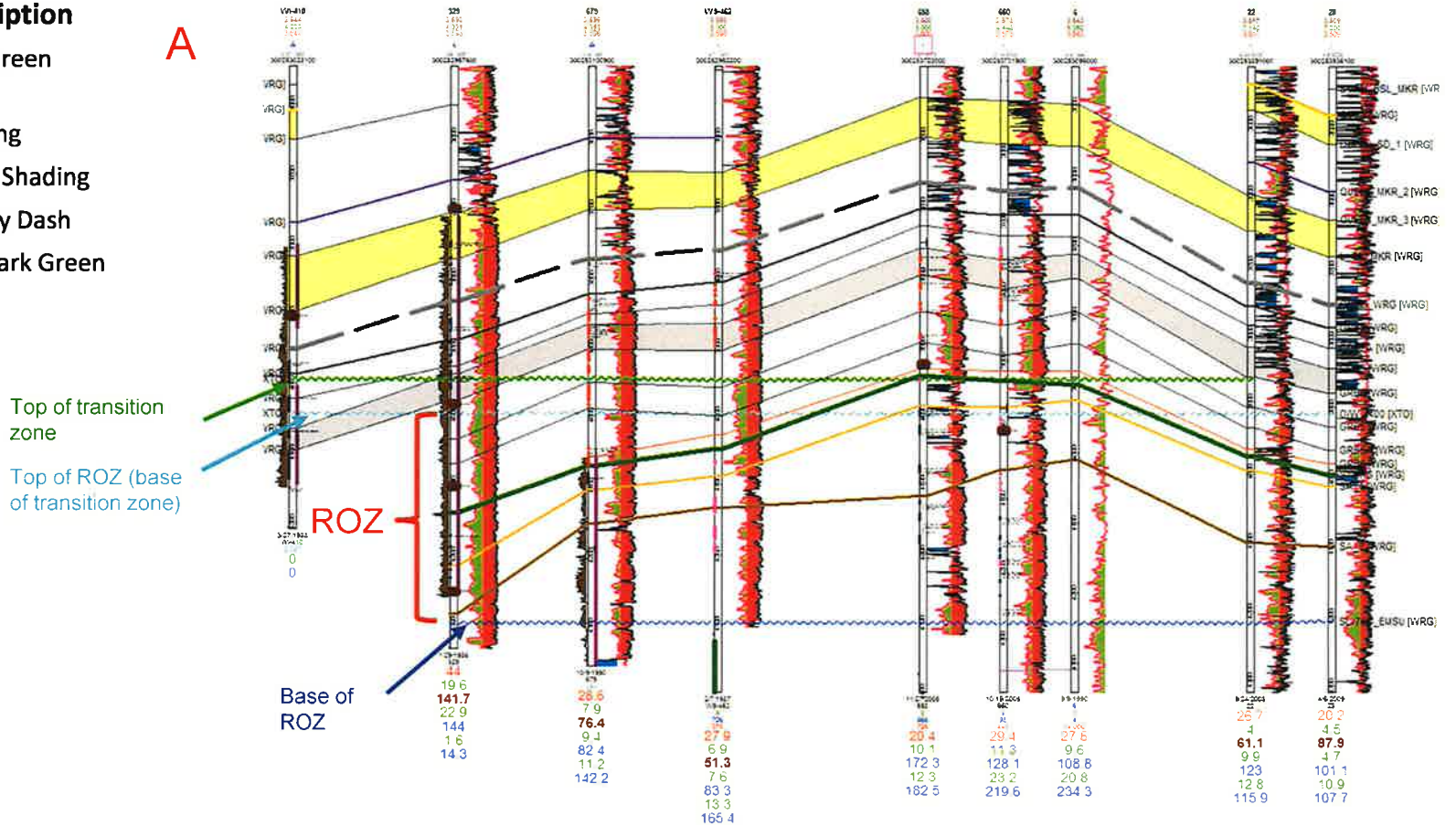


EXHIBIT A-6

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.

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Case No. 8397  
Order No. R-7765

(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



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Case No. 8397  
Order No. R-7765

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.

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Case No. 8397  
Order No. R-7765

(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.

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Case No. 8397  
Order No. R-7765

(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.



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Case No. 8397  
Order No. R-7765

(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.

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Case No. 8397  
Order No. R-7765

(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

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Case No. 8397  
Order No. R-7765

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



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Case No. 8397  
Order No. R-7765

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

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Case No. 8397  
Order No. R-7765

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

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Case No. 8397  
Order No. R-7765

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.



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Case No. 8397  
Order No. R-7765


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 A-7

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 8399  
Order No. R-7767

NOMENCLATURE

APPLICATION OF GULF OIL CORPORATION  
FOR POOL EXTENSION AND CONTRACTION,  
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, is the operator of the Eunice Monument South Unit with horizontal limits including that acreage described on Exhibit "A" attached to this order.

(3) The applicant, seeks the upward extension of the vertical limits of the Eunice-Monument Pool to include either the top of the Grayburg formation or to a subsea datum of minus 100 feet, whichever is higher, and the concomitant amendment of the vertical limits of the Eumont

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Case No. 8399  
Order No. R-7767

Gas Pool by contracting its lower limits to either the base of the Queen formation or to a subsea datum of minus 100 feet, whichever is higher, underlying said unit.

(4) The proposed amendment of pool vertical limits is necessary to permit the applicant to successfully carry out secondary recovery operations within the full oil column underlying said unit.

(5) No party appeared and objected to the proposed amendment of vertical limits.

(6) Granting this application will serve to prevent waste and will not violate correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) Within the area designated as the Eunice Monument South Unit Area, as shown on Exhibit "A" attached hereto, the vertical limits of the Eumont Gas Pool are hereby amended to be from the top of the Yates formation to a lower unit described as the base of the Queen formation or 100 feet below mean sea level, whichever is higher; the geologic markers having been previously found to occur at 2747 feet and 3666 feet, respectively, in Continental Oil Company's No. 23 Meyer B-4 Well (located at 660 feet from the South line and 1980 feet from the East line of Section 4, Township 21 South, Range 36 East, 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.

(2) Within the area designated as the Eunice Monument South Unit Area, as shown on Exhibit "A" attached hereto, the vertical limits of the Eunice Monument Oil Pool are hereby amended to be 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 3666 feet and 5283 feet, respectively, in Continental Oil Company's No. 23 Meyer B-4 well (located at 660 feet from the South line and 1980 feet from the East line of Section 4, Township 21 South, Range 36 East, 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.

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Case No. 8399

Order No. R-7767

(3) The effective date of this order and the changes to vertical limits included herein shall be January 1, 1985.

(4) Jurisdiction of this cause 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.

STATE OF NEW MEXICO  
OIL CONSERVATION COMMISSION

JIM BACA, Member



ED KELLEY, MEMBER



R. L. STAMETS, Chairman  
and Secretary

S E A L

LEA COUNTY, NEW MEXICO

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  
Sections 14 through 18: All  
Section 21: N/2 and N/2 S/2  
Section 22: N/2 and N/2 S/2

CASE NO. 8399  
ORDER NO. R-7767  
EXHIBIT "A"

EXHIBIT A-8

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:

NOMENCLATURE  
CASE NO. 10061  
Order No. R-7767-A

APPLICATION OF CHEVRON U.S.A. INC.  
FOR POOL EXTENSION AND CONTRACTION,  
LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on August 22, 1990, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 19th day of October, 1990, the Division Director, having considered the testimony, the record, and the recommendations of the Examiner, and being fully advised in the premises,

FINDS THAT:

- (1) Due public notice having been given as required by law, the Division has jurisdiction of this cause and the subject matter thereof.
- (2) Division Case Nos. 10059, 10060 and 10061 were consolidated at the time of the hearing for the purpose of testimony.
- (3) The applicant, Chevron U.S.A. Inc., is the operator of the Eunice Monument South Unit Expansion Area B with horizontal limits encompassing that acreage described on Exhibit "A" attached hereto.



NOMENCLATURE  
CASE NO. 10061  
Order No. R-7767-A  
Page -2-

(4) The applicant seeks the vertical extension of the upper limits of the Eunice Monument Grayburg-San Andres Pool to include either the top of the Grayburg formation or to a subsea datum of minus 100 feet, whichever is higher, and the concomitant amendment of the vertical limits of the Eumont Gas Pool by contracting its lower limits to either the base of the Queen formation or to a subsea datum of minus 100 feet, whichever is higher, underlying said area.

(5) The proposed amendment of pool vertical limits is necessary to permit the applicant to successfully carry out secondary recovery operations within the full oil column underlying said unit.

(6) No party appeared and objected to the proposed amendment of said vertical limits.

(7) Granting this application will serve to prevent waste and will not violate correlative rights.

IT IS THEREFORE ORDERED THAT:

(1) Within the area designated as the Eunice Monument South Unit Expansion Area B, as described on Exhibit "A" attached hereto, the vertical limits of the Eumont Gas Pool are hereby amended to be from the top of the Yates formation to a lower limit described as the base of the Queen formation or 100 feet below mean sea level, whichever is higher; the geologic markers having been previously found to occur at 2,747 feet and 3,666 feet, respectively, in Continental Oil Company's Meyer B-4 Well No. 23 located 660 feet from the South line and 1980 feet from the East line of Section 4, Township 21 South, Range 36 East, NMPM, 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.

(2) Within the area designated as the Eunice Monument South Unit Expansion Area B, as described on Exhibit "A" attached hereto, the vertical limits of the Eunice Monument Grayburg-San Andres Pool are hereby amended to be from an upper limit described as 100 feet below mean sea

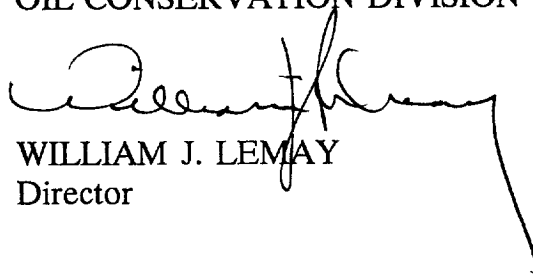
NOMENCLATURE  
CASE NO. 10061  
Order No. R-7767-A  
Page -3-

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 660 feet from the South line and 1980 feet from the East line of Section 4, Township 21 South, Range 36 East, NMPM, 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.

(3) Jurisdiction of this cause 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.

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION



WILLIAM J. LEMAY  
Director

S E A L

CASE NO. 10061  
DIVISION ORDER NO. R-7767-A  
EXHIBIT "A"

TOWNSHIP 20 SOUTH, RANGE 36 EAST, NMPM

Section 10: E/2 E/2  
Section 11: W/2 NE/4, W/2, SE/4  
Section 13: W/2, S/2 SE/4  
Section 14: All  
Section 15: NE/4 NE/4  
Section 23: All  
Section 24: N/2, SW/4, W/2 SE/4

ALL IN LEA COUNTY, NEW MEXICO

EXHIBIT A-9

GB. LEASE NO. B-1641.

#7192

No. 30: RECEIVED: STATE LAND OFFICE: Santa Fe, N.M. at 2:12 P.M. Feb 11, 1933. APPLICATION No. B-1641.

OIL AND GAS LEASE.

THIS AGREEMENT, dated this the 21st day of January, A.D. 1933, made and entered into by and between the STATE OF NEW MEXICO, acting by and through the undersigned, its Commissioner of Public Lands, thereunto duly authorized, party of the first part and hereinafter called the "Lessor", and DEVONIAN OIL COMPANY, Box 1379, Tulsa, Oklahoma, party of the second part, hereinafter called the "Lessee", whether one or more,

WITNESSETH:

WHEREAS, the said lessee has filed in the office of the Commissioner of Public Lands an application for an oil and gas lease covering the lands hereinafter described and has tendered therewith the required first payment being not less than the amount required by law and by the rules and regulations of the New Mexico State Land Office; and

WHEREAS, all of the requirements of law relative to said application and tender have been duly complied with and said application has been approved and allowed by the Commissioner of Public Lands:

THEREFORE, for and in consideration of the premises as well as the relinquishment of Assign. No. 1, Lease A-1461, dated December 17, 1928, no cash payment being required, 106479, and of the further sum of \$5.00 filing fee, and of the covenants and agreements hereinafter contained on the part of the lessee to be paid, kept and performed, the said lessor has granted and demised, leased and let, and by these presents does grant, demise, lease and let unto the said lessee, exclusively, for the sole and only purpose of exploration, development and production of oil and/or gas thereon and therefrom with the right to own all oil and gas so produced and saved therefrom and not reserved as royalty by the lessor under the terms of this lease, together with rights of way, easements and servitudes for pipe lines, telephone and telegraph lines, tanks, power houses, stations, gasoline plants, and fixtures for producing, treating and caring for such products, and housing and boarding employees, and any and all rights and privileges necessary, incident to or convenient for the economical operation of said land, for oil and gas, with right for such purposes to the free use of oil, gas, casing-head gas, or water from said lands, but not from lessor's water wells, and with the right of removing either during or after the term hereof, all and any improvements placed or erected on the premises by the lessee, including the right to pull all casing, subject, however, to the conditions hereinafter set out, the following described land situate in the County of Lea, State of New Mexico, and more particularly described as follows:

LINE:	INSTITUTION	SEC.	TWP	RANGE	S U B D I V I S I O N				ACRES
					COLUMN 1:	COLUMN 2:	COLUMN 3:	COLUMN 4:	
1	Lieu	5	21S	36E	38.91 Lot 1	39.10 Lot 2			78.01
2.	"	"	"	"	39.28 Lot 3	39.47 Lot 4	40.00 Lot 5	40.00 Lot 6	158.75
TOTAL-----									236.76

Said lands having been awarded to lessee and designated as tract No. \_\_\_ at a public sale held by the Commissioner of Public Lands on \_\_\_\_, 19\_\_, (To be filled in only where lands are offered at public sale.)

TO HAVE AND TO HOLD said land, and all the rights and privileges granted hereunder, to and unto the lessee for a primary term until December 17, 1933, from the date hereof, and as long thereafter as oil and gas in paying quantities, or either of them is produced from said land by the lessee, subject to all of the terms and conditions as hereinafter set forth.

In consideration of the premises the parties covenant and agree as follows:

1. Subject to the free use without royalty, as hereinbefore provided, the lessee shall pay the lessor as royalty one-eighth part of the oil produced and saved from the leased premises, or the cash value thereof, at the option of the lessor, such value to be price prevail

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ing the day oil is run into a pipe line, if the oil be run into a pipe line, or into storage tanks, if the oil be stored.

2. The lessee agrees to pay the lessor the one-eighth of the net proceeds derived from the sale of gas from each gas well; If casing-head gas produced from said land is sold by the lessee, the lessee shall pay the lessor as royalty one-eighth of the net proceeds of said sale; if casing-head gas produced from said lands is utilized by the lessee otherwise than for carrying on the lessee's operations for producing oil or gas from said lands, then the lessee shall pay the lessor the market value in the field, the equal of one-eighth part of the casing head gas so utilized at the time of such utilization.

3. Lessee agrees to make full settlement on the 20th day of each month for all royalties due the lessor for the preceding month, under this lease, and to permit the lessor or its agents, at all reasonable hours, to examine lessee's books relating to the production and disposition of oil and gas produced. The lessee also agrees to submit <sup>to</sup> the lessor, for each and every royalty payment, a correct statement showing the amount of oil or gas produced and saved since his last report and the market value thereof. Lessee further agrees to submit to lessor annually upon forms furnished by lessor, verified reports showing lessee's operations for the preceding year.

4. It is expressly agreed that the consideration hereinbefore specified is a good, valid and substantial consideration and sufficient in all respects to support each and every covenant herein, including specifically the option granted the lessee to prevent the termination of this lease from year to year, by the payment or tender of the further rental hereinafter provided for.

An annual rental, at the rate of fifty cents per acre shall also become due and payable to the lessor by the lessee, or by any transferee or assignee of the same, or any part hereof where such transferee or assignee has been recognized, and such transfer or assignment approved by the lessor as hereinafter provided, upon each acre of the land above described and then claimed by such lessee, transferee or assignee hereunder, and the same shall be due and payable in advance to the lessor on the 17th day of December in each year during the time this lease is in force, but the annual rental on any assignment shall in no event be less than six Dollars (\$6.00).

V In event the lessee shall elect to surrender any or all of said acreage, he shall deliver to the Commissioner a duly executed release thereof and in event said lease has been recorded then he shall upon request furnish and deliver to said Commissioner a certified copy of a duly recorded release.

5. The lessee may at any time by paying to the State of New Mexico, acting by its Commissioner of Public Lands, or other authorized officer, all amounts then due as provided herein and the further sum of Ten Dollars (\$10.00), surrender and cancel this lease, insofar as the same covers all or any portion of the lands herein leased and be relieved from further obligations or liability hereunder, in the manner as hereinbefore provided. Provided, this surrender clause and the option herein reserved to the lessee shall cease and become absolutely inoperative immediately and concurrently with the institution of any suit in any court of law or equity by the lessee, lessor, or any assignee, to enforce this lease, or any of its terms express or implied.

6. All payments due hereunder shall be made on or before the day such payment is due, in cash or by certified exchange at the office of the Commissioner of Public Lands in Santa Fe, New Mexico.

7. The lessee with the consent of the lessor, shall have the right to assign this lease in whole or in part, provided, however, that no assignment of any undivided interest in the lease or in any part thereof nor any assignment of less than a legal subdivision shall be



recognized or approved by the lessor. Upon approval in writing by the lessor of an assignment, the assignor shall stand relieved from all obligations to the lessor with respect to the lands embraced in the assignment and the lessor shall likewise be relieved from all obligations to the assignor as to such tract, and the assignee shall succeed to all of the rights and privileges of the assignor with respect to such tracts and shall be held to have assumed all of the duties and obligations of the assignor to the lessor as to such tracts.

8. Lessee agrees, with reasonable diligence, to offset all paying oil or gas wells drilled, within 300 feet of any of the land covered by this lease and retained hereunder.

9. The lessee agrees to notify the lessor of the location of each well before commencing drilling thereon, to keep a complete and accurate log of each well drilled and to furnish a copy thereof, verified by some person having actual knowledge of the facts, to the lessor upon the completion of any well, and to furnish the log of any unfinished well at any time when required to do so by the lessor. If any lands embraced in this lease shall be included in any deed or contract of purchase outstanding and subsisting issued pursuant to any sale made of the surface of such lands prior to the date of this lease, it is agreed and understood that no drilling operation shall be commenced on any such lands so sold unless and until the lessee or his assignee shall have filed a good and sufficient bond with the lessor as required by law to secure the payment for such damage to the livestock, range, water, crops or tangible improvements on such lands as may be suffered by the purchaser holding such deed or contract of purchase, or his successors, by reason of the developments, use and occupation of such lands by such lessee. Provided, however, that no such bond shall be required if such purchaser shall waive the right to require such bond to be given in the manner provided by law.

10. In drilling wells all water-bearing strata shall be noted in the log, and the lessor reserves the right to require that all or any part of the casing shall be left in any non-productive well when lessor deems it to be in the interest of the State of New Mexico to maintain said well or wells for water. For such casing so left in wells the lessor shall pay to the lessee the reasonable value thereof.

11. Lessee shall be liable and agrees to pay for all damages to the range, livestock, growing crops or improvements caused by lessee's operations on said lands. When requested by lessor, the lessee shall bury pipe lines below plow depth.

12. The lessee shall not remove any machinery or fixtures placed on said premises, nor draw the casing from any well unless and until all payments and obligations due the lessor under the terms of this agreement shall have been paid or satisfied. The lessee's right to remove the casing is subject to the provision of paragraph 10 above.

13. Upon failure or default of the lessee or any assignee to comply with any of the provisions or covenants hereof, the lessor is hereby authorized to cancel this lease and such cancellation shall extend to and include all rights hereunder as to the whole of the tract so claimed, or possessed by the lessee or assignee so defaulting, but shall not extend to, nor affect the rights of any other lessee or assignee claiming any portion of the lands upon which no default has been made; provided, however, that before any such cancellation shall be made, the lessor shall mail to the lessee, or assignee so defaulting, by registered mail, addressed to the post-office address of such lessee or assignee as shown by the records of the State Land Office, a notice of intention of cancellation specifying the default for which cancellation is to be made, and if within 30 days from the date of mailing said notice the said lessee or assignee shall remedy the default specified in said notice, cancellation shall not be made.

14. All the terms of this agreement shall extend to and bind the heirs, executors, administrators, successors and assigns of the parties hereto.



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15. If the lessee shall have failed to make discovery of oil and/or gas in paying quantities during the primary term hereof, the lessee may continue this lease in full force and effect for an additional term of five years and as long thereafter as oil and gas in paying quantities, or either of them is produced from the leased premises, by paying each year in advance, as herein provided, double the rental provided herein for the primary term, or the highest rental prevailing at the commencement of the secondary term in any rental district, or districts in which the lands, or any part thereof, may be situated, if it be greater than double the rental provided for the primary term. (This paragraph (15) shall not be inserted in any lease issued pursuant to the provisions of Section 3 (132-403) of this Act.)

IN WITNESS WHEREOF, the party of the first part has hereunto signed and caused its name to be signed by its Commissioner of Public lands thereunto duly authorized, with the seal of his office affixed, and the lessee has signed this agreement the day and year first above written.

(State Land Office Seal)

ATTEST: Geo. D. Foster, Secretary.

STATE OF NEW MEXICO

By: Frank Vesely, COMMISSIONER OF PUBLIC LANDS, Lessor.

DEVONIAN OIL COMPANY,

By: L.C. Ritts, Vice Pres (Seal) Lessee.

Distributed this the 14th day of February, 1933.

(ACKNOWLEDGMENT BY CORPORATION)

STATE OF OKLAHOMA }  
COUNTY OF TULSA } SS

On this the 8th day of February, 1933, personally appeared L.C. Ritts, to me personally known, who being by me duly sworn did say that he is the Vice-President of Devonian Oil Company, and that the seal affixed to the foregoing instrument is the corporate seal of said corporation, and that said instrument was signed and sealed in behalf of said corporation by authority of its board of directors, and said L.C. Ritts acknowledges said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate above written.

(Notarial Seal) My Commission expires: October 15th, 1933. H.E. Geiger, Notary Public.

STATE OF NEW MEXICO }  
COUNTY OF LEA } SS

in Book 24, page 331.

(County Clerk's Seal)

FILED FOR RECORD MAR 9, 1933 at 2:20 o'clock, P.M. and recorded

B.B. Barnes, County Clerk.

By: L.M. Balckmon, Deputy.

COMPARED

GB. LEASE NO. B-1640.

#7193.

OIL AND GAS LEASE.

N-32: RECEIVED: STATE LAND OFFICE: Santa Fe, N.M. FEB 11, 1933 at 2:12 P.M.: APPLICATION NO. B-1640:

THIS AGREEMENT, dated this the 21st day of January, A.D. 1933, made and entered into by and between the STATE OF NEW MEXICO, acting by and through the undersigned, its Commissioner of Public Lands, thereunto duly authorized, party of the first part and hereinafter called the "Lessor", and Devonian Oil Company Box 1379, Tulsa, Oklahoma, party of the second part, herein after called the "Lessee", whether one or more,

WITNESSETH:

WHEREAS, the said lessee has filed in the office of the Commissioner of public lands an application for an oil and gas lease covering the lands hereinafter described and has tendered therewith the required first payment being not less than the amount required by law and by the rules and regulations of the New Mexico State Land Office; and

Tab 2.

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

**APPLICATION OF GOODNIGHT MIDSTREAM  
PERMIAN, LLC FOR APPROVAL OF FOUR  
SALTWATER DISPOSAL WELLS  
LEA COUNTY, NEW MEXICO**

**CASE NOS. 23614  
23615  
23616  
23617**

**SELF-AFFIRMED STATEMENT OF ROBERT F. LINDSAY**

1. My name is Robert Forrest Lindsay. I am over eighteen years of age and have personal knowledge of the facts herein. I am a geologist with 47 years' experience in the petroleum industry, having worked for Gulf (1976-1985), Chevron (1985-2001), ChevronTexaco (2001-2002), Saudi Aramco (2002-2015), and Lindsay Consulting (2016-Present). My expertise is in reservoir characterization.
2. I hold a Bachelor of Science degree in Geology from Weber State College (June, 1974), a Master of Science degree in Geology from Brigham Young University (December, 1976), and Doctor of Philosophy degree in geology from the University of Aberdeen, Scotland (July, 2014).
3. I worked on Eunice Monument complex of unitized oil fields for Chevron from 1988 to 2002. I retired from Chevron in 2002. While working for Saudi Aramco (2002-2015), I used the 14-man year data base that I built on Eunice Monument unitized oil fields, other oil fields, and mountain range outcrops to complete a PhD degree (2014) on the Grayburg Formation.
4. I am a member of the following: 1) American Association of Petroleum Geologists (AAPG); 2) Society for Sedimentary Geology (SEPM); 3) Society of Independent Professional Earth Scientists (SIPES); 4) Past-president and honorary life member of the West Texas Geological Society (WTGS); 5) Past-president and honorary life member of the Permian Basin Section–SEPM (PBS-SEPM); and 6) Texas Board of Professional Geoscientists #1386.
5. I served my country in U.S. Army Special Forces as a medical specialist.

Exhibit B

A. THE PROPOSED SWD WELLS WOULD INJECT INTO SAN ANDRES FORMATION WHICH CONTAINS A RESIDUAL OIL ZONE

6. While describing cores and characterizing Grayburg and San Andres reservoirs at Eunice Monument South Unit (EMSU), Eunice Monument South Unit Expansion Area B (EMSUB), and Arrowhead Grayburg Unit (AGU), located on the northwest corner of the Central Basin Platform (CBP), it was discovered that the San Andres reservoir contains a residual oil zone (ROZ):

- San Andres reservoir at EMSU contains oil saturated porosity down section to depths of -719 ft (subsea) to potentially -750 ft (subsea) and is a residual oil zone (ROZ).
- Grayburg reservoir at EMSU had initial water-free oil production to a depth of -350 ft (subsea), mixed oil and water production from -350 ft to -540 ft (subsea). Beneath -540 ft only water is produced.
- The unitized interval for EMSU is from -100 ft in the Grayburg Formation to the base of the San Andres Formation.

The following figures illustrate and confirm the points made above.

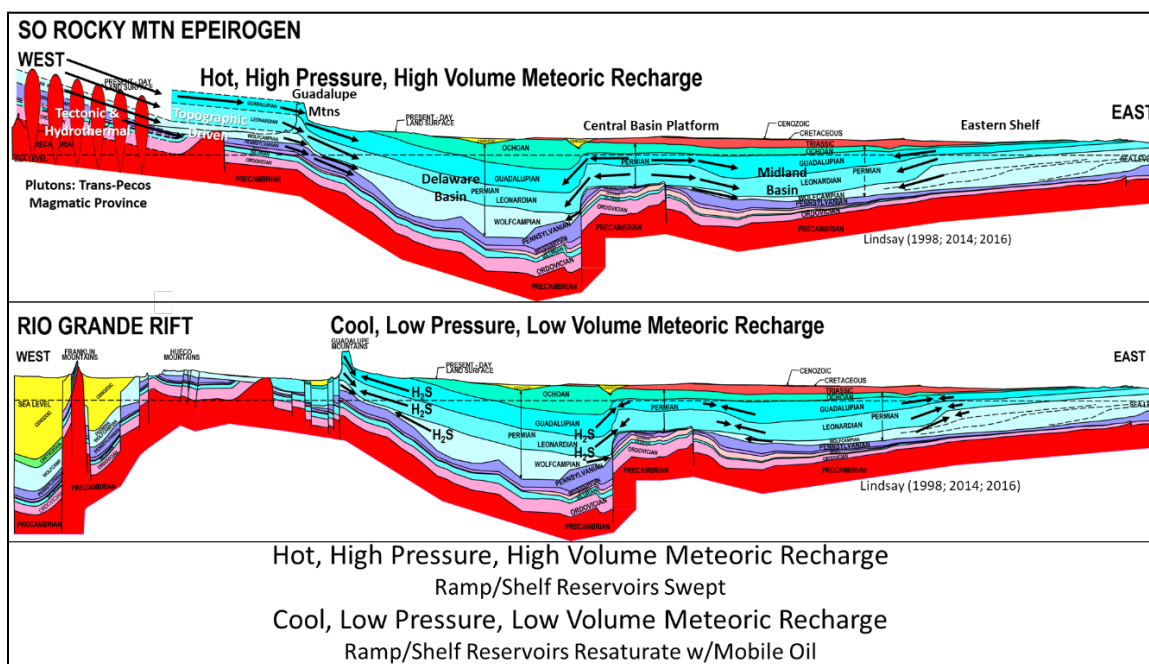


Figure B1. In Late Eocene to Early Miocene the Southern Rocky Mountain Epeirogen uplifted western North America. West of the Permian Basin hot, high pressure, high volume meteoric water recharged into the subsurface, with an enormous head of energy, and swept mobile oil out of structural closures to create residual oil zones (ROZ's). In Middle Miocene to Late Miocene Rio Grande rifting down faulted and destroyed the large recharge area leaving small, isolated mountain ranges to recharge cool, low pressure, low volume meteoric water into the subsurface. This allowed some ROZ's to completely or partially resaturate with mobile oil.

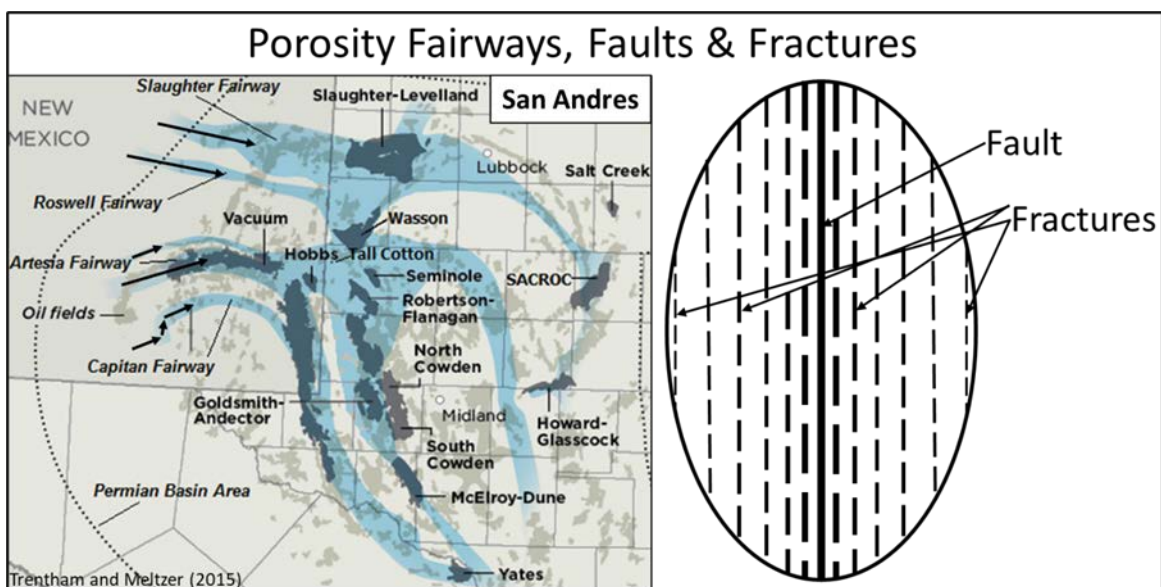


Figure B2. Left is a map of regional San Andres porosity fairways. These are pathways that recharging meteoric water took when entering the Permian Basin from present-day area of the Guadalupe and Sacramento mountains to the northwest and Glass Mountains to the south. To the right is an example of a fracture halo, where a series of fractures surround a fault. Deep-seated differential block faulting that folded overlying strata created a fracture halo without having a fault present.

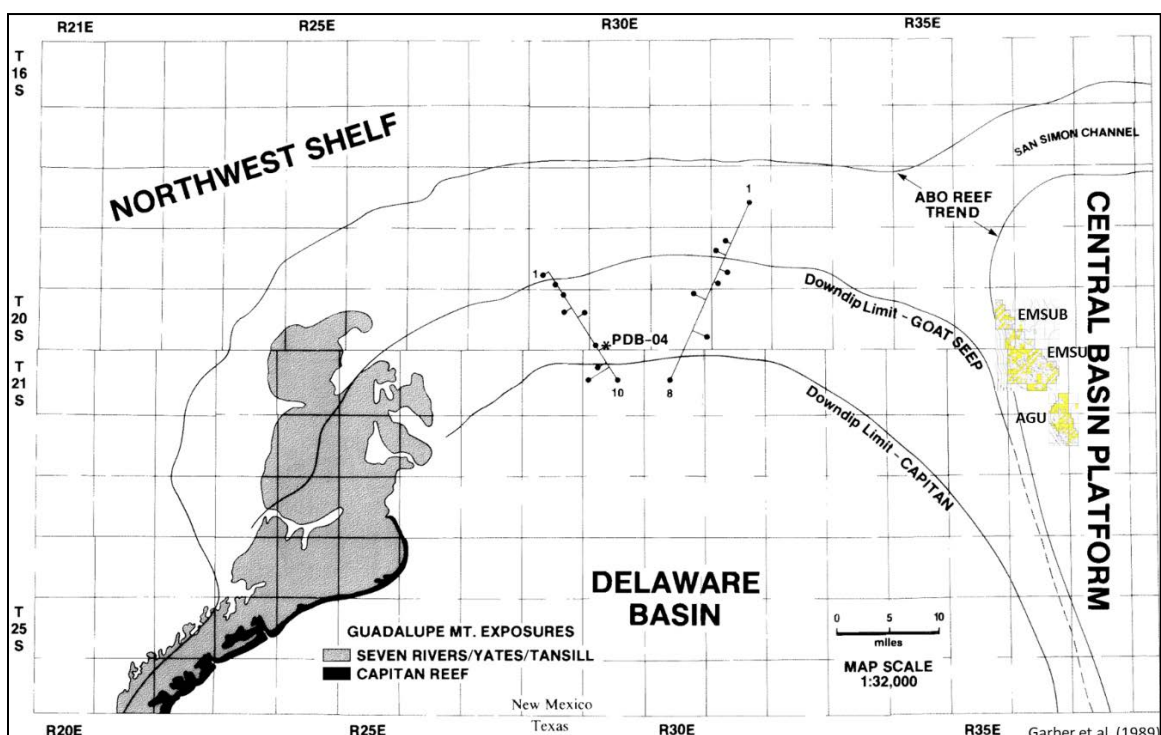


Figure B3. Index map of New Mexico part of the Delaware Basin, Northwest Shelf, and Central Basin Platform (CBP). Positions of EMSUB, EMSU, and AGU are shown along the northwest corner of the CBP. Down-dip limits of Goat Seep and Capitan aquifers are shown. Both aquifers are a source of low-salinity (<10,000 ppm) water. The Goat Seep Aquifer is 1.5 to 2 miles down-dip of the west unit boundary of EMSU and is the source of edge water entry into the Grayburg reservoir.



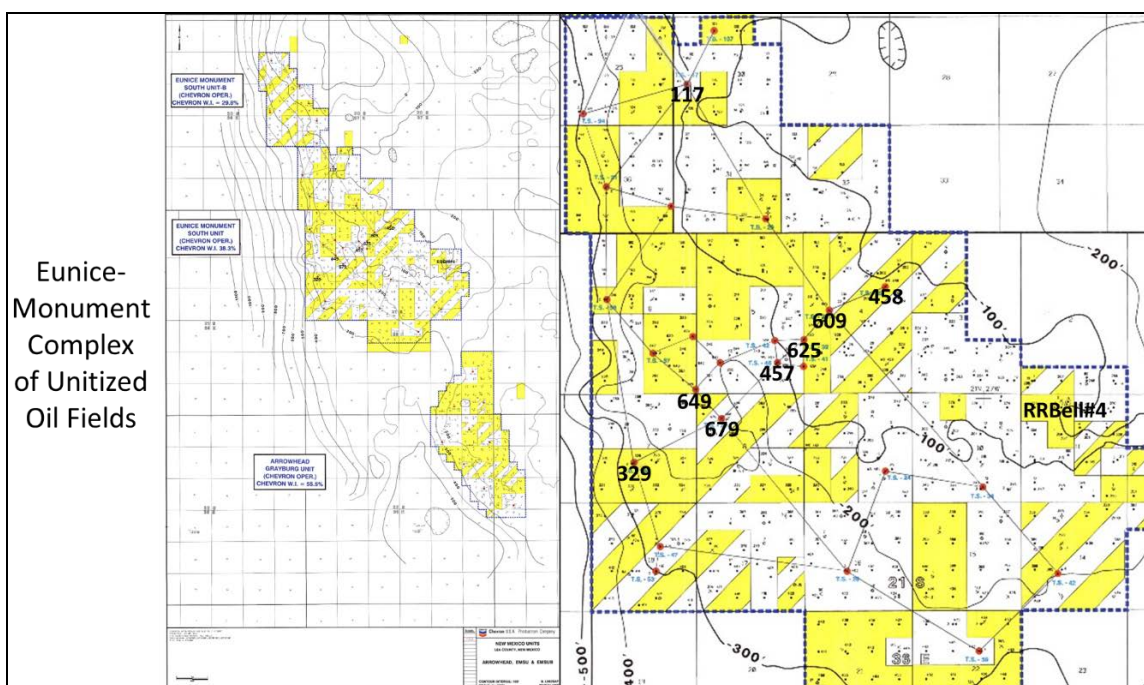


Figure B4. Index map of EMSUB, EMSU, and AGU unitized oil fields. EMSU-329 to EMSU-458 serve as the principle cross section through the Grayburg reservoir. All cross sections will be along this line, including seismic data. Some cross sections will extend farther up-dip and down-dip.

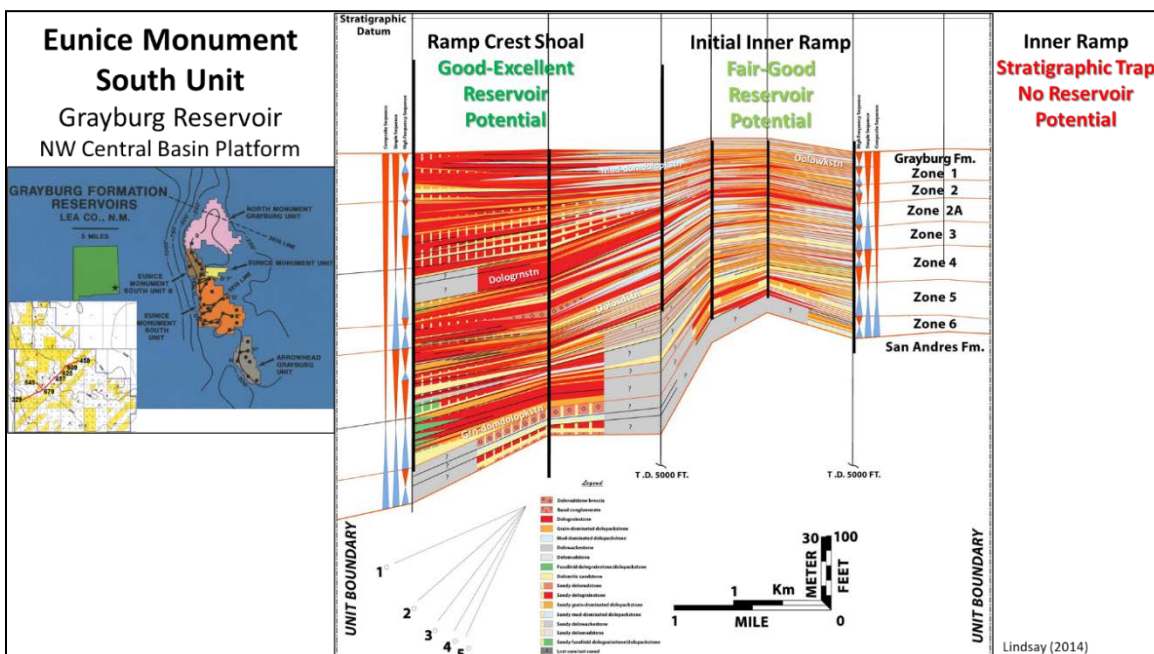


Figure B5. Reservoir-scale sequence stratigraphic model of Grayburg reservoir architecture, composed of individual cycles of dolostone and interbedded siliciclastic strata. West side of EMSU contains good to excellent reservoir potential. Whereas the east side contains fair to good reservoir potential. Up-dip the stratigraphic trap (right) is non-reservoir. Red = Dolograinsstone. Orange = Grain-dominated dolopackstone. Light blue = Mud-dominated dolopackstone. Light gray = Dolowackestone. Green = Fusulinid dolostone. Yellow = Dolomitic sandstone. Up-dip individual cycles act as flow units. Down-dip cycles tend to stack to form thick flow units. Note the presence of a subtle anticline during Grayburg time.



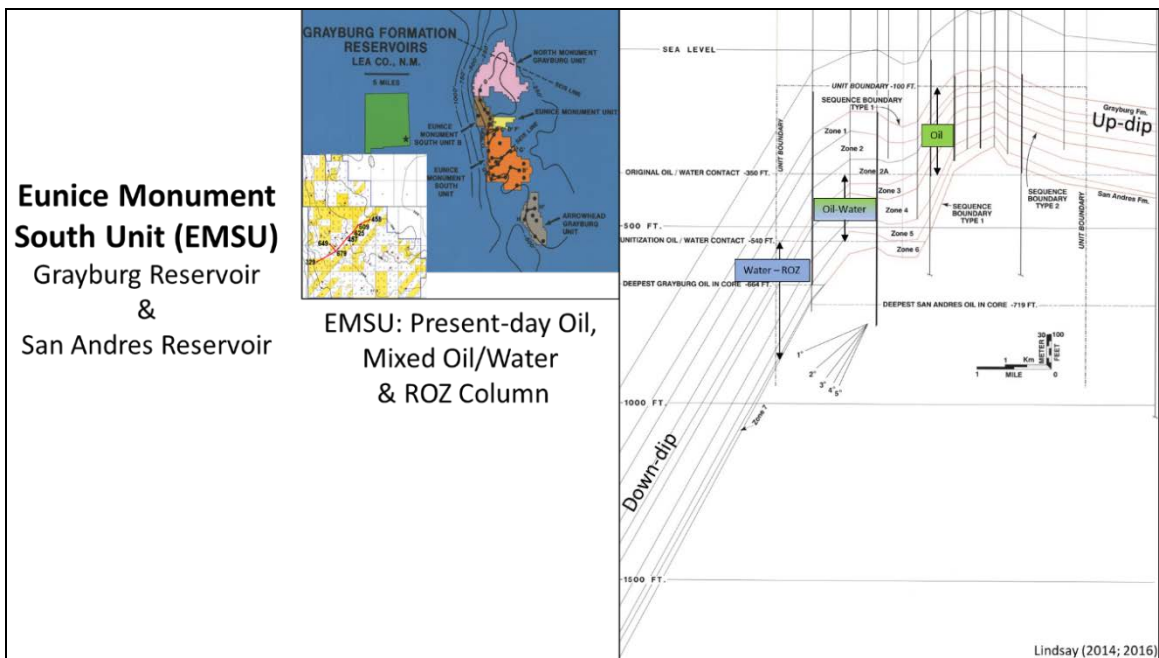


Figure B6. Structural cross section through EMSU. Note double humped shape of the asymmetric anticline. The structure flattens up-dip (right) into non-porous lateral stratigraphic trap and steepens to 5° down-dip (left) into the Delaware basin. Historically, water-free oil production was from top of Grayburg reservoir unit boundary -100 ft down section to -350 ft (subsea). Farther down section mixed oil and water production were from -350 ft to -540 ft (subsea). Beneath -540 ft (subsea) only water is produced. San Andres reservoir contains a residual oil zone (ROZ) that extends down section to -719 ft to potentially -750 ft (subsea).

**B. GEOLOGIC AND ENGINEERING INTERPRETATIONS WILL IDENTIFY VERTICAL FRACTURES AND PLUMES WHICH WOULD NOT PREVENT VERTICAL MIGRATION OF FLUIDS**

7. While working on Eunice Monument South Unit (EMSU) and Eunice Monument South Unit Expansion Area B (EMSUB), some Grayburg cores were found to be vertically fractured, with the area surrounding the well in communication with San Andres water that raised up section through fractures and form vertical plumes within the Grayburg reservoir:
- Plumes of water tend to be in individual wells and contain high-water cuts when mapped throughout EMSU.
  - Water chemistry studies verified that plumes of water were sourced from the underlying San Andres. San Andres reservoir contains low salinity water (<10,000 ppm) that is sulfate-rich.
  - A fracture study was conducted on EMSU-679 to identify individual fractures. In general, two sets of fractures were identified, one set trending northwest to southeast and another set trending northeast to southwest.
8. Additional work confirmed three water chemistries to be present within EMSU. From top to bottom they are:
- Connate water in the Grayburg reservoir that contains a salinity of 120,000 ppm. Barium (Ba) is present in connate water and was derived from dissolution of K-feldspar grains in interbedded dolomitic sandstones. Barium and potassium ions are approximately the same size, with barium replacing potassium ions in the K-feldspar crystal lattice.
  - Edge water entered the west side of the Grayburg reservoir in EMSU. Edge water is composed of low salinity (<10,000 ppm) sulfate-free water. Edge water entry is due to a drop in reservoir pressure. Edge water is sourced from the Goat Seep Aquifer 1.5 to 2 miles west and down-dip of EMSU. Edge water is in communication with the Grayburg reservoir. Edge water was sourced into the Goat Seep Aquifer from the present-day Guadalupe and Glass mountains.
  - Bottom water is in the San Andres residual oil zone (ROZ). Bottom water contains low salinity (<10,000 ppm) water that is sulfate rich. Bottom water was sourced from the present-day Sacramento Mountains area by meteoric recharge of fresh water down-dip into the Permian Basin. Recharging meteoric water dissolved San Andres evaporite strata (CaSO<sub>4</sub>), which accounts for the source of sulfate (SO<sub>4</sub>) in San Andres bottom water at EMSU and AGU.

The following figures illustrate and confirm the points made above.

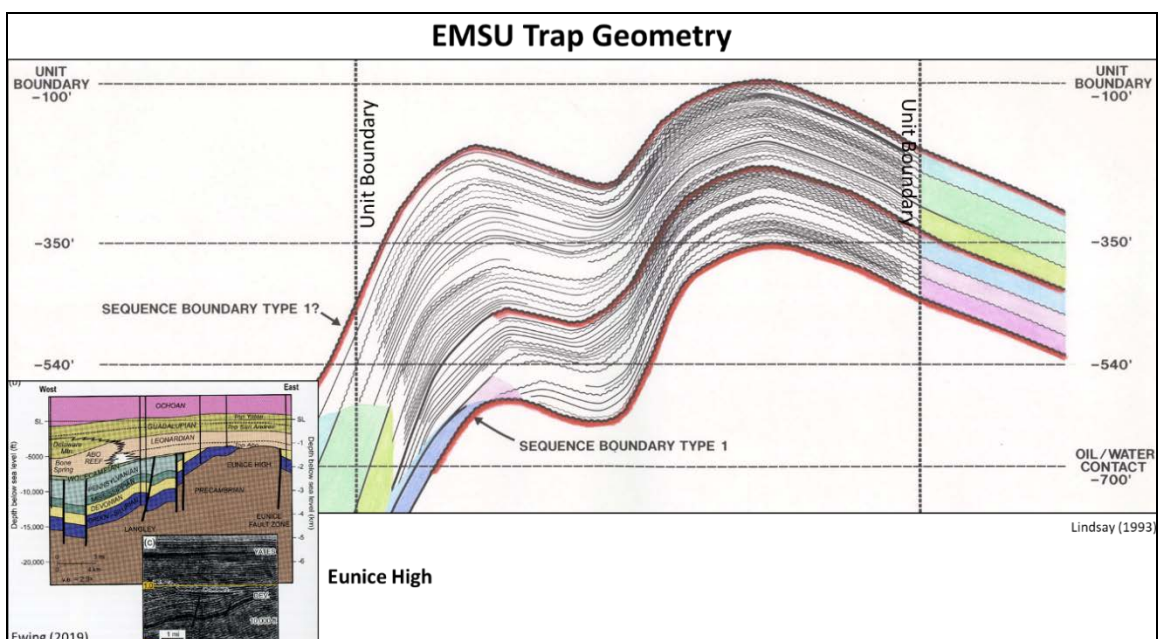


Figure B7. Structural cross section of Grayburg reservoir in EMSU. The asymmetric anticline gently dips to the east (right) into the lateral stratigraphic trap and dips at 5° to the west (left) into the Delaware basin to connect with the Goat Seep Aquifer. Note the double-humped shape of the asymmetric anticline. Additional folding of brittle dolostone reservoir strata created fractures. Eunice-Monument complex of unitized oil fields is positioned atop the Eunice High structural block.

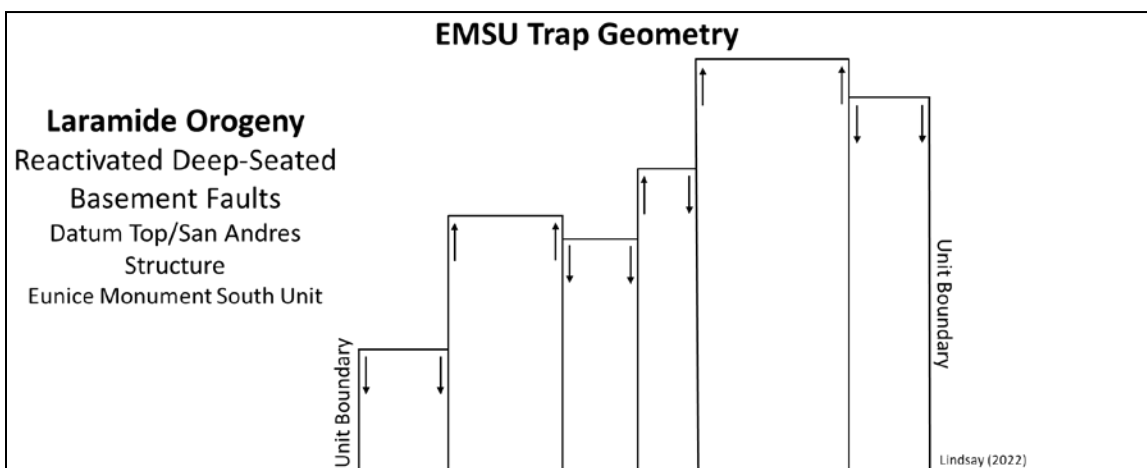


Figure B8. Eunice High is broken into a series of smaller basement-cored blocks. This interpretation overlays Figure B7 as a comparison. These smaller structural blocks re-adjusted during the Laramide orogeny to uplift and fold Grayburg reservoir strata at EMSU into a double-humped asymmetric anticline and created a series of fractures. Top of San Andres was used as the datum to illustrate vertical offset of individual basement structural blocks in the Eunice High.

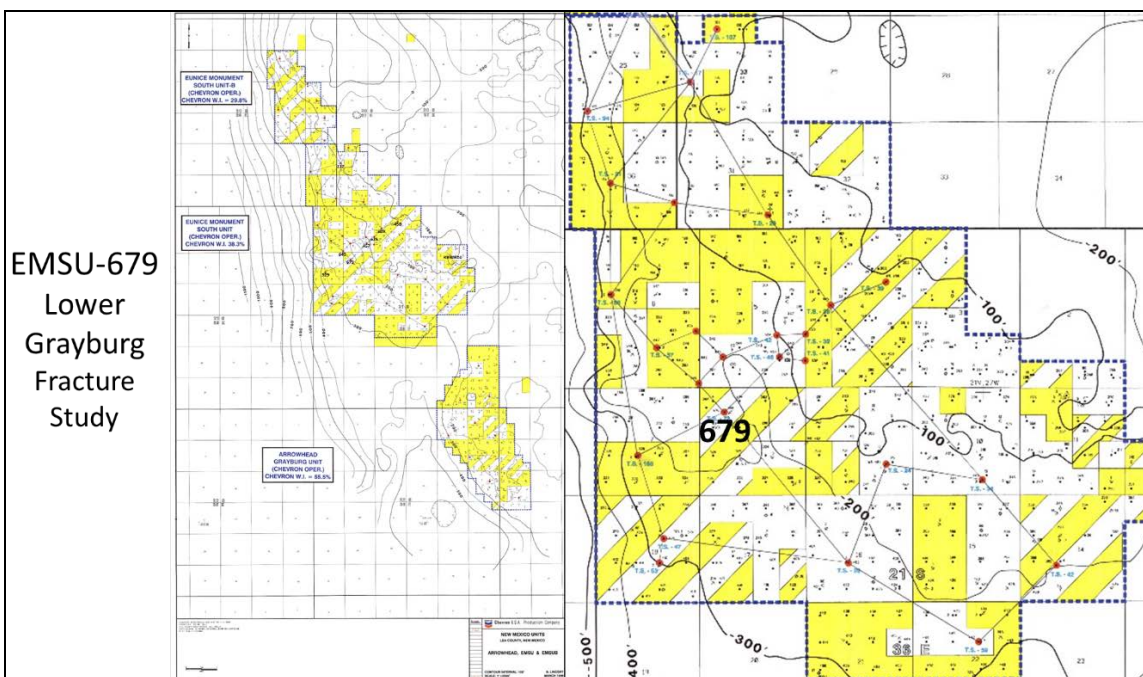


Figure B9. An in-house fracture study was performed on the lower Grayburg reservoir, utilizing EMSU-679 oriented core.

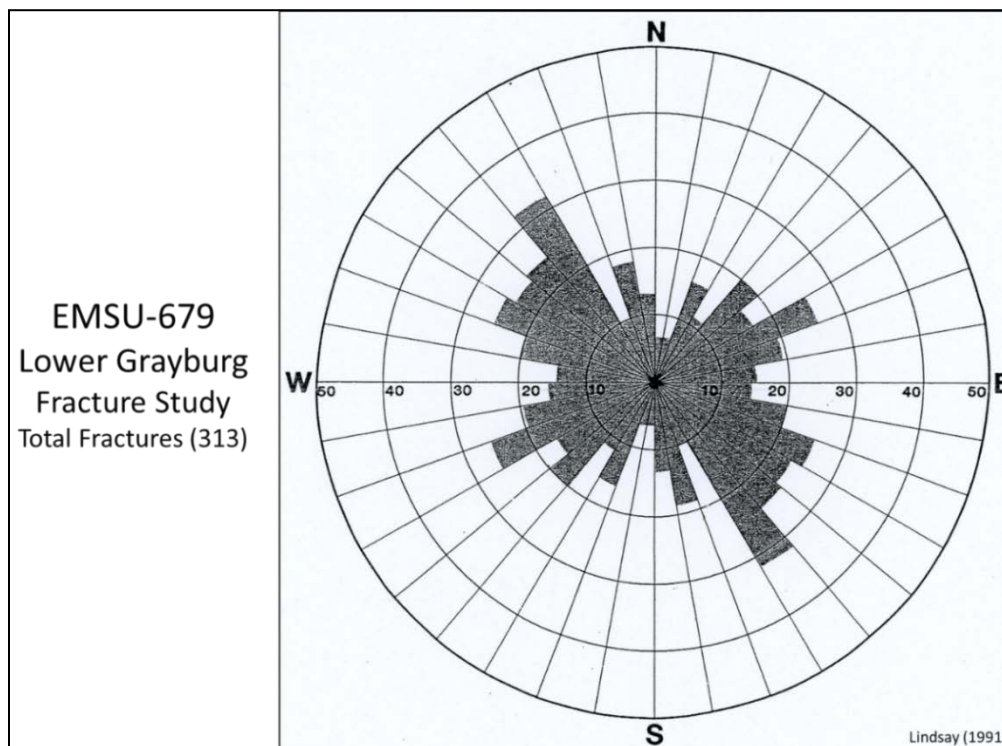


Figure B10. Plot of total fractures and their orientation in the lower Grayburg reservoir. Two fracture trends stand out. One is northwest to southeast and another is northeast to southwest. A total of 313 vertical fractures were measured.



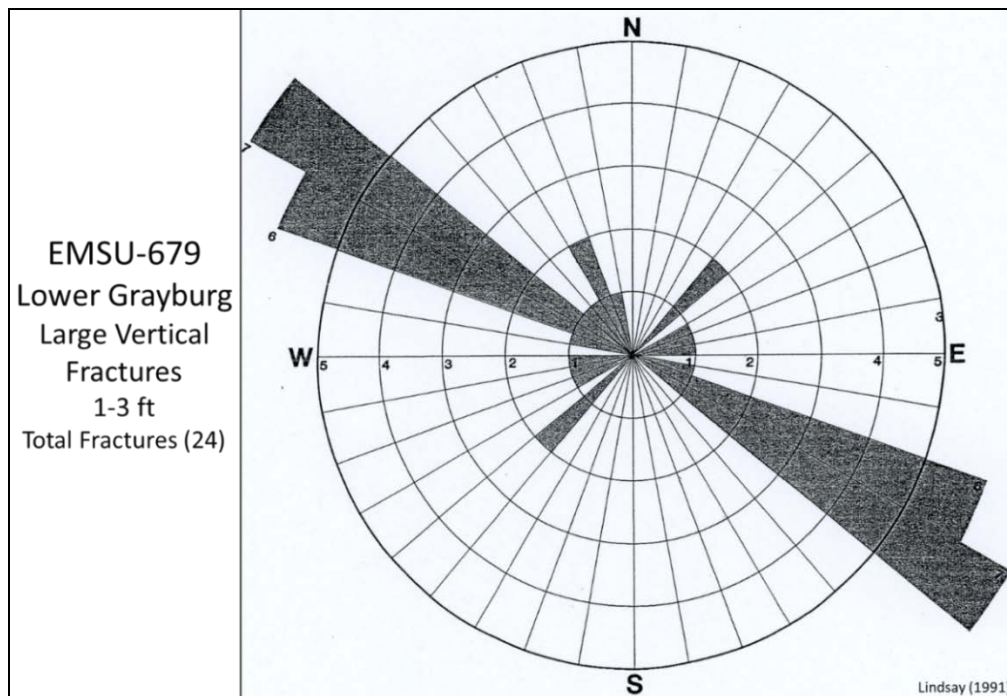


Figure B11. 24 large vertical fractures, 1-3 ft in height, were measured. A major trend is northwest to southeast, with a minor trend northeast to southwest.

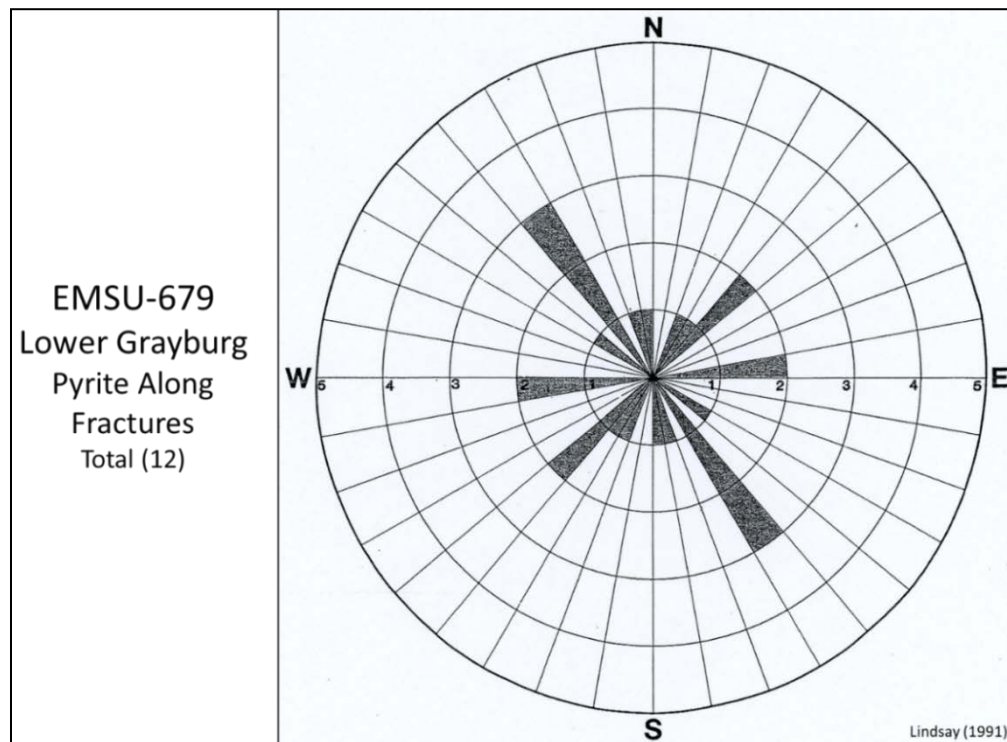


Figure B12. Pyritized vertical fractures in EMSU. A major trend is northwest to southeast, with minor trends to the northeast to southwest and east to west. 12 pyritized fractures were identified.

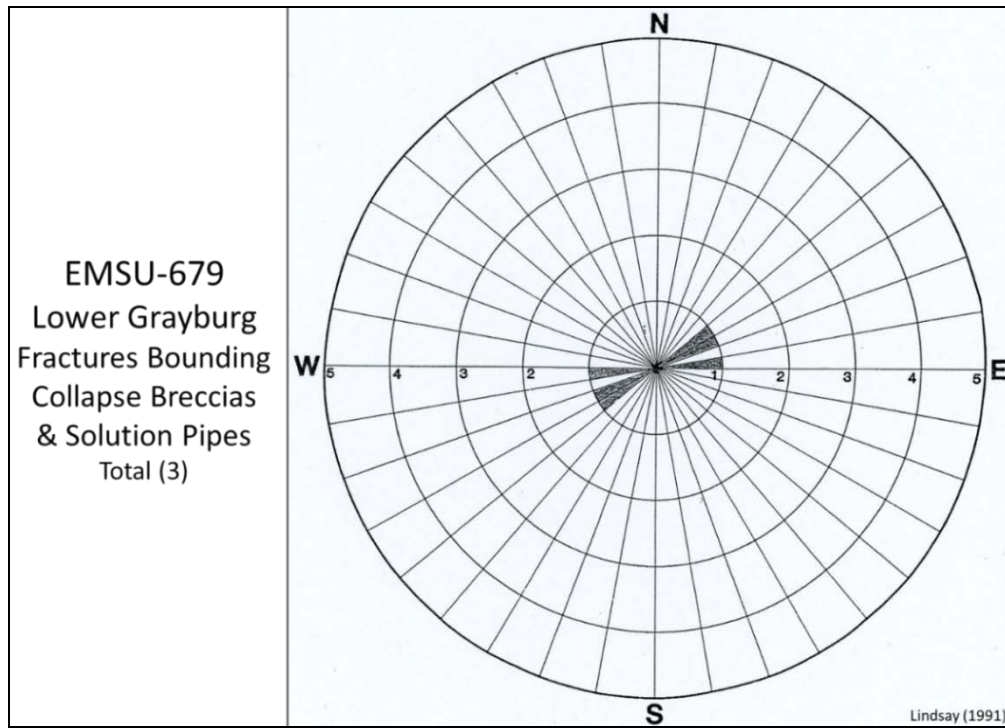


Figure B13. Fractures, associated with collapse breccias and solution pipes trend northwest to southeast and east to west.



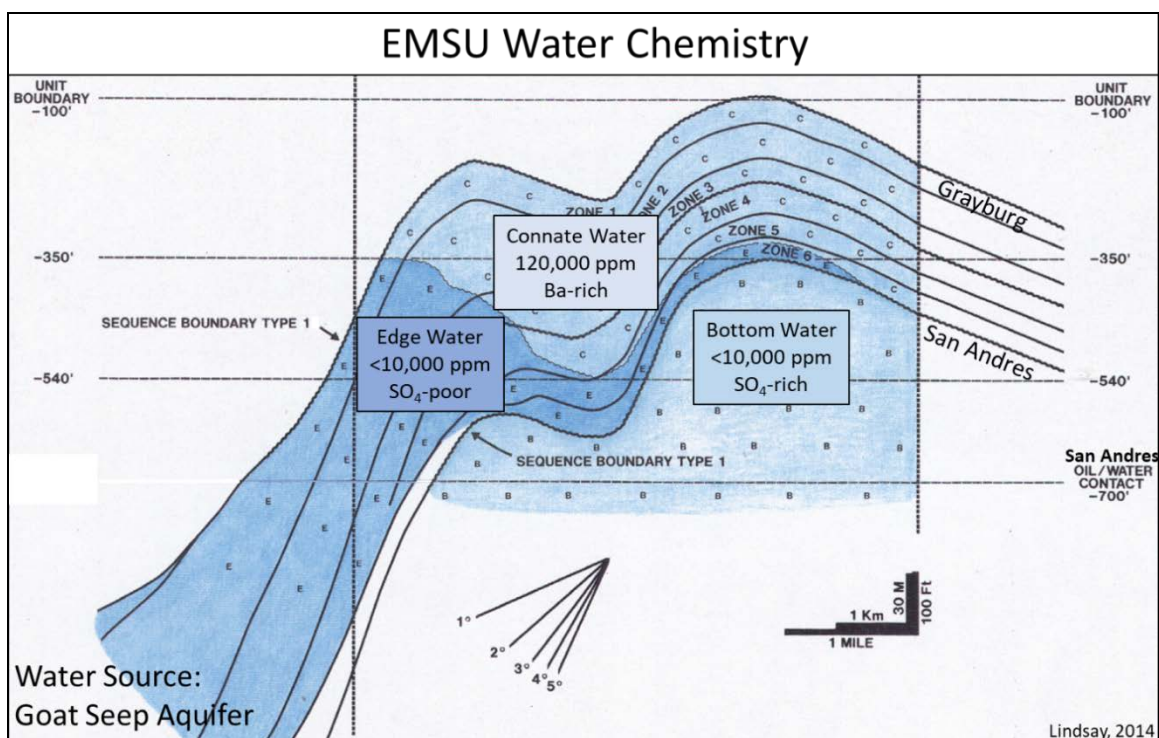


Figure B14. A water chemistry study in EMSU revealed three water chemistries. First, connate water (120,000 ppm) is present in the Grayburg reservoir and contains barium (Ba). Second, low salinity (<10,000 ppm) edge water entered the west side of the Grayburg reservoir. Edge water contains no sulfate. Edge water is sourced from the Goat Seep Aquifer, which is 1.5 to 2 miles down-dip of the west unit boundary of EMSU. Edge water entry into the Grayburg reservoir was by a drop in reservoir pressure. Edge water is sourced from the present-day Guadalupe and Glass mountains. Third, low salinity (<10,000 ppm) bottom water in the San Andres residual oil zone (ROZ), which is sulfate rich. San Andres water was sourced from present-day Sacramento Mountains by meteoric recharge, which dissolved evaporite beds ( $\text{CaSO}_4$ ) as it recharged into the subsurface and added sulfate ( $\text{SO}_4$ ) to the low salinity water.

A. OIL IS PRESENT IN THE SAN ANDRES AS SHOWN BY CORE DATA, LOG DATA AND PETROPHYSICS

1. Cores within the San Andres were found upon examination and description to be porous and oil stained. Core analysis data also revealed that the San Andres was porous and contained oil saturation:
  - The oil/water contact in the San Andres residual oil zone (ROZ) was found to be -719 ft to potentially -750 ft (subsea).

The following figures illustrate and confirm the points made above.

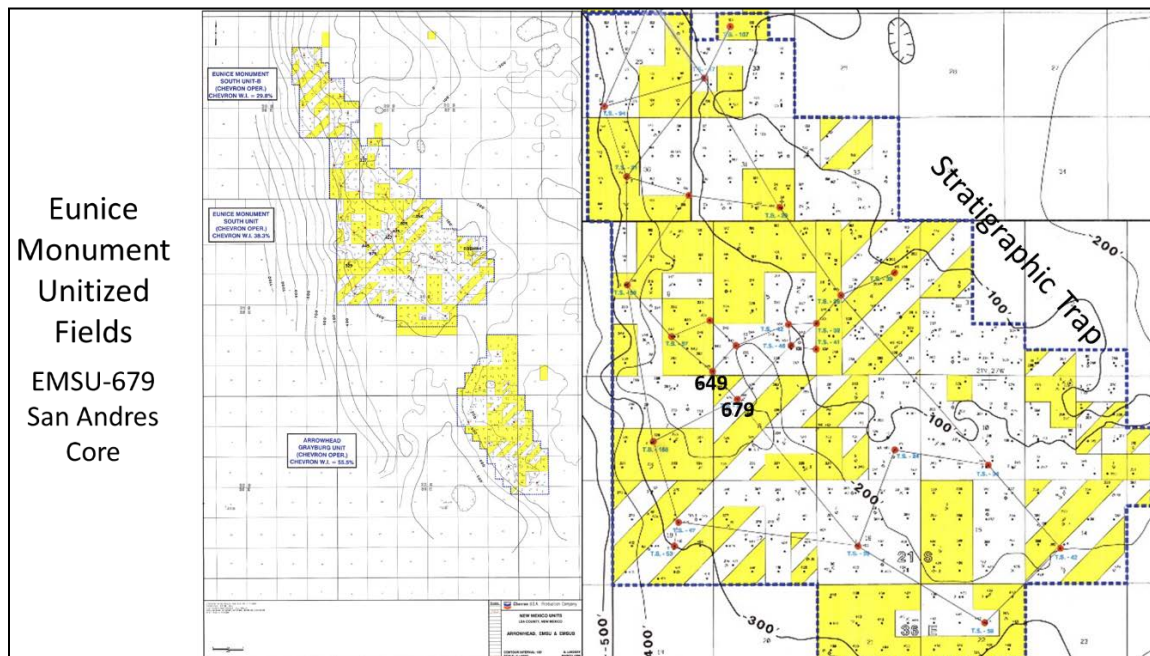


Figure B15. Combined cores from EMSU-649 (upper and middle Grayburg core) and EMSU-679 (lower Grayburg and upper San Andres core) show the complete Grayburg reservoir and part of the upper San Andres reservoir residual oil zone (ROZ) on the west side of EMSU.

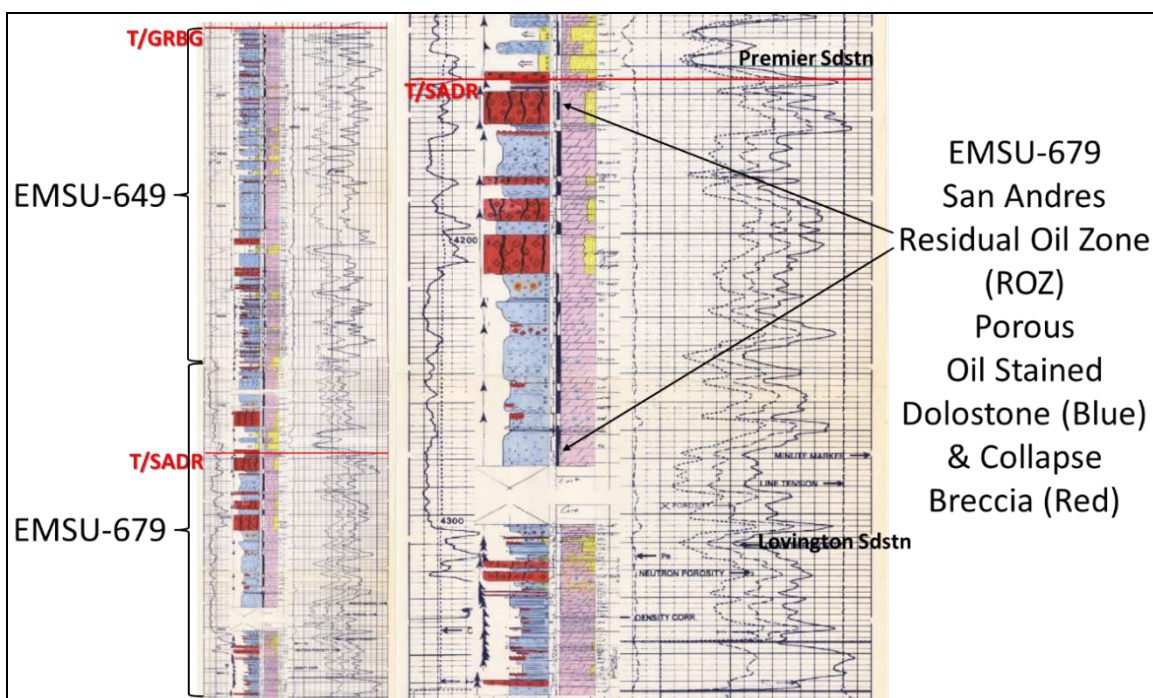


Figure B16. Left is combined EMSU-649 and EMSU-679 cores that contain the complete Grayburg reservoir and upper part of the San Andres reservoir residual oil zone (ROZ) to beneath the Lovington Sandstone. Right is close-up of EMSU-679 core from Premier Sandstone at the base of Grayburg reservoir down section, crossing basal lag conglomerate (top red) and unconformity (red line) that separates Grayburg reservoir from San Andres reservoir and extends down section into upper part of the San Andres residual oil zone (ROZ). Black arrows point to top and bottom of porous, oil-stained residual oil zone (ROZ) in the San Andres reservoir. Porosity and oil stain is above Lovington Sandstone in the upper San Andres. Red = Collapse breccia. Blue = Dolostone. Black bars = Porous–oil-stained dolostone strata.

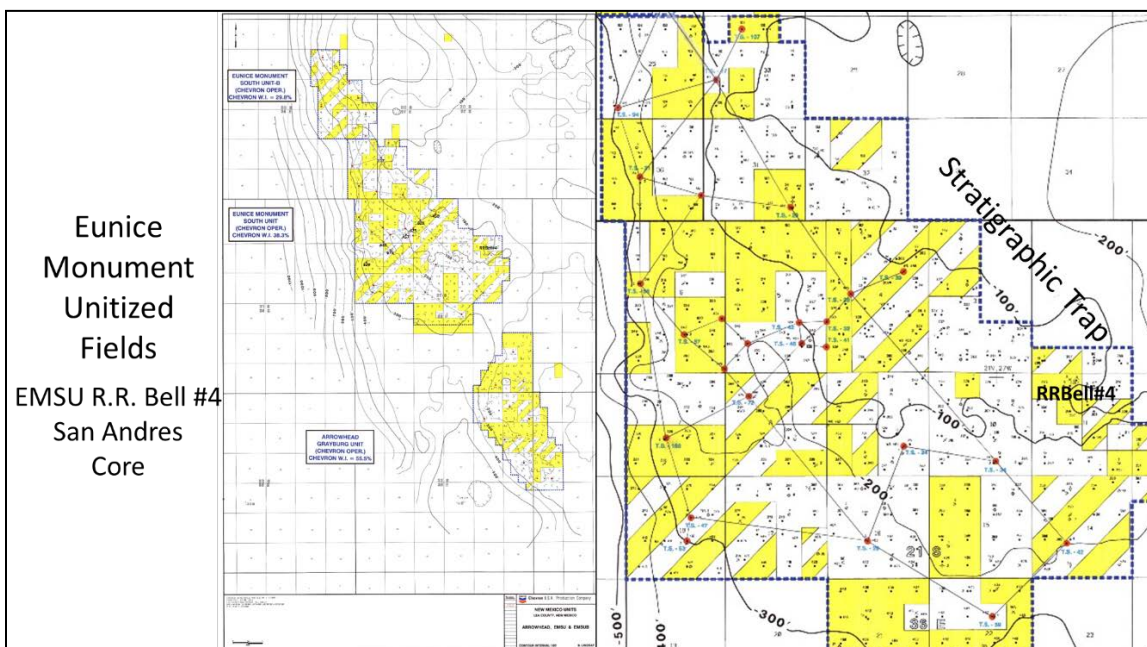


Figure B17. R.R. Bell #4 cored the complete Grayburg reservoir and upper part of San Andres reservoir residual oil zone (ROZ) in the easternmost part of EMSU next to the east unit boundary and up-dip lateral stratigraphic trap where reservoir porosity pinches out.



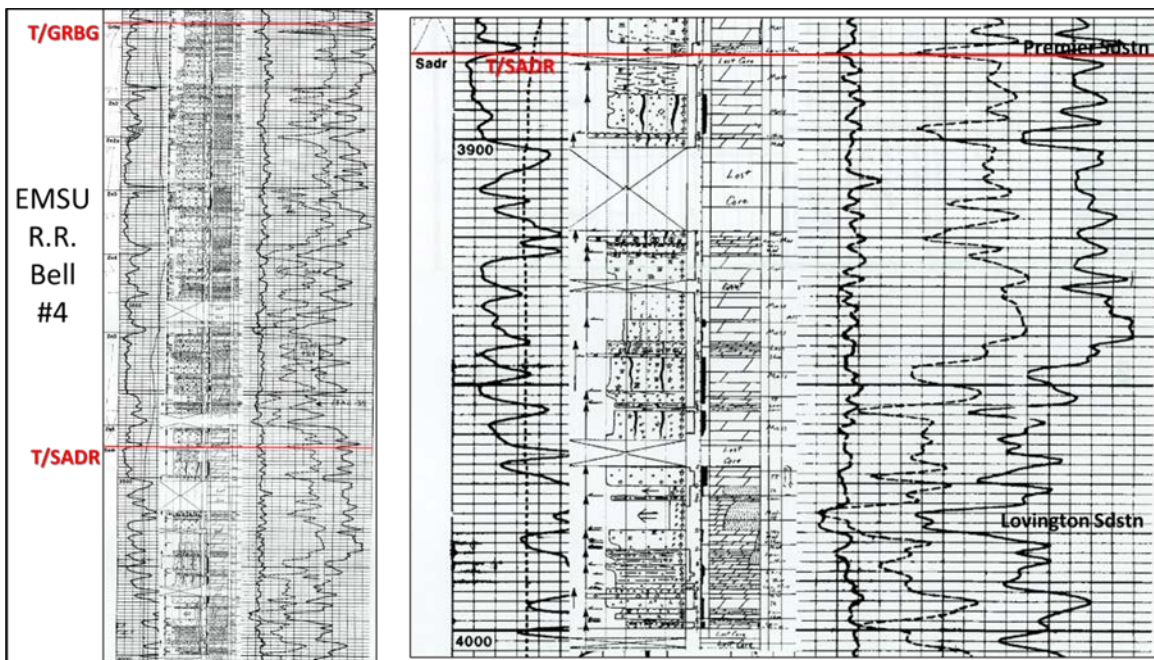


Figure B18. Left is R.R. Bell #4 well log and core description of the complete Grayburg reservoir and San Andres reservoir residual oil zone (ROZ). Right is a close-up view from Premier Sandstone and unconformity (red line) that separates overlying Grayburg reservoir from underlying San Andres reservoir residual oil zone (ROZ). San Andres core penetrated to beneath the Lovington Sandstone.

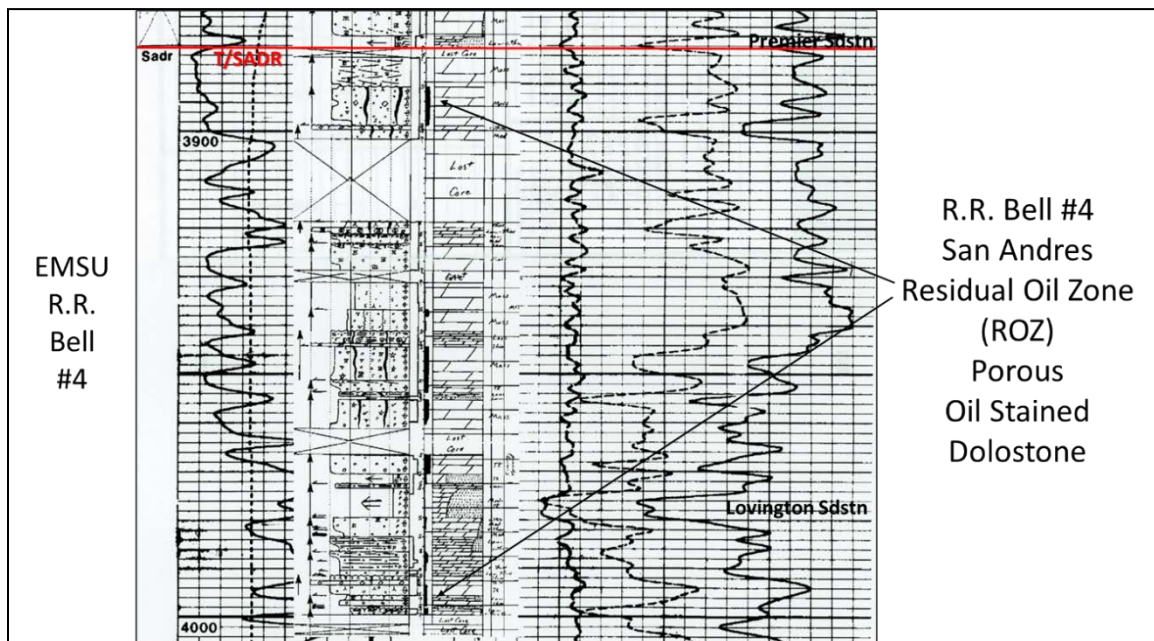


Figure B19. R. R. Bell #4 well log and core description of San Andres reservoir residual oil zone (ROZ). Arrows point to porous, oil-stained strata on the well log and in the core. Porous, oil-stained strata are present from top of the San Andres to beneath the Lovington Sandstone. Black bars = Porous-oil-stained dolostone strata.

Gulf Oil Expl. & Prod. Co. ROTARY ENGINEERS LABORATORIES									
R. R. Bell #4									
Lea County, New Mexico WHOLE CORE ANALYSIS TABULAR DATA Page (6)									
SAMPLE NUMBER	DEPTH	RAT. INC.	GRAIN DENS. (G/CC)	PORO. SITY	WHOLE CORE PERMEABILITY (D)	FLUIDS SW	FLUIDS (G)	F.L.O.	REMARKS
217	3785-3786	F	2.88	6.9	<1	Plug	40.7	13.5	Sp. Dolo, S/P, Sc. Small Vugs, Fr.
218	-86.6	F	2.82	5.1	0.5	Plug	46.5	11.2	Sp. Dolo, S/P, PFP-Sm. Vugs, Fr.
219	3786.6-3787.3	F	2.86	7.0	<1	Plug	69.9	15.3	Sp. Dolo, S/P, Sc. Vugs, Fr.
220	-89	F	2.84	5.8	4.3	Plug	56.8	11.9	Sp. Dolo, S/P, PFP-Small Vugs, Fr.
221	3789-3790	VP	2.84	4.1	<1	Plug	58.8	16.0	Sp. Dolo, S/P, PFP-Small Vugs Fr. Fr. Spotty Fluorescence)
222	-92	VP	2.83	3.3	<1	Plug	38.0	10.3	Sp. Dolo, S/P, Sc. Vugs, Fr.
223	-93	F	2.83	4.0	<1	Plug	37.0	17.3	Sp. Dolo, S/P, Sc. Vugs, Fr.
224	-94	F	2.83	2.4	<1	Plug	53.6	14.9	Sp. Dolo, S/P, Sc. Vugs, Fr.
225*	3794-3795	F	2.81	4.1	<1	Plug	50.9	13.5	Sp. Dolo, S/P, Sc. Vugs, Fr.

R.R. Bell #4  
Residual Oil Zone (ROZ)  
So = Oil Saturation (Green)

Figure B20. R.R. Bell #4 core analysis data from top of San Andres reservoir residual oil zone (ROZ) to base of cored interval in Figure B21. Green = Oil saturation (So) percentage. Core analysis depths were off by 100 ft and were hand adjusted to their proper depth.

Gulf Oil Expl. & Prod. Co. ROTARY ENGINEERS LABORATORIES									
R. R. Bell #4									
Lea County, New Mexico WHOLE CORE ANALYSIS TABULAR DATA Page (7)									
SAMPLE NUMBER	DEPTH	RAT. INC.	GRAIN DENS. (G/CC)	PORO. SITY	WHOLE CORE PERMEABILITY (D)	FLUIDS SW	FLUIDS (G)	F.L.O.	REMARKS
267	3869-3870	F	2.80	7.8	<1	Plug	28.2	16.9	100 Dolo, S/P, Fr.
268	-71	G	2.79	13.5	2.5	Plug	36.0	15.7	100 Dolo, S/P, Small Vugs, Fr.
269	-72	F	2.82	5.5	7.8	7.7	41.5	11.9	100 Dolo, S/P, Fr.
270	3872-3873	F	No Analysis	(SCAL - Dolo, Sc. S/P, Sc. Vugs, Fr. Fr. Spotty Fluorescence)					
271	-74	P	2.74	5.2	0.1	<1	60.0	14.6	Sp. Dolo, S/P, Fr.
272	3874-3875	P	2.73	4.8	0.5	0.5	57.6	8.0	Sp. Dolo, S/P, Fr.
273	-76	P	2.77	6.7	0.4	<1	55.8	26.2	Sp. Dolo, S/P, Fr.
274	-77	F	2.67	10.6	1.3	0.1	45.3	11.2	Sp. Dolo, S/P, Fr.
275	-78	G	2.47	11.8	3.2	1.5	41.0	14.2	Sp. Dolo, S/P, Fr.
276	-79	G	2.73	13.7	5.9	0.9	32.6	11.7	100 Dolo, S/P, Fr.
277	3879-3880	F	2.66	10.9	0.2	0.1	43.9	14.8	Sp. Dolo, S/P, Fr.
278	-81	F	2.72	7.3	0.2	0.1	52.3	16.1	Sp. Dolo, S/P, Fr.
279	-82	F	2.73	7.3	1.2	0.8	49.1	22.0	100 Dolo, S/P, Fr.
280	-83	P	2.78	6.6	15.3	0.3	56.0	23.3	100 Dolo, S/P, Fr.
281	-84	VP	2.78	4.6	0.4	0.1	74.0	18.3	100 Dolo, S/P, Fr.
282	3884-3885	F	2.72	7.3	0.8	0.2	41.3	21.0	100 Dolo, S/P, Fr.
283	-86	VP	2.74	4.5	0.1	Plug	61.3	79.2	50 Dolo, S/P, Fr.
284	-87	VP	2.81	7.7	0.1	0.1	84.4	7.6	60 Dolo, S/P, Fr.
285	-88	P	2.76	8.0	0.4	<1	76.7	10.9	100 Dolo, S/P, Fr.
286	3890-3890	F	2.74	9.0	78.1	Plug	42.4	19.0	100 Dolo, S/P, Fr.
287	-91	F	2.81	10.6	38.5	8.6	26.2	25.4	100 Dolo, S/P, Fr.
288	-92	F	2.81	12.7	2.9	0.3	34.6	25.0	100 Dolo, S/P, Fr.
289	-93	P	2.79	5.9	<1	<1	64.2	15.9	100 Dolo, S/P, Fr.
290	-94	VP	2.86	6.3	7.8	1.1	81.6	4.7	100 Dolo, S/P, Fr.
291	3894-3895	P	2.88	5.4	<1	Plug	61.3	5.3	100 Dolo, S/P, Sc. Vugs, Fr.
292	3895-3896	F	No Analysis	(SCAL - Dolo, Sc. S/P, Sc. Vugs, Fr. 100% Fluorescence)					
293	-97	F	2.80	3.3	2.6	2.3	41.3	6.5	100 Dolo, S/P, Sc. Vugs, Fr.
294	-98	F	2.78	6.5	0.3	0.3	31.2	13.1	100 Dolo, S/P, Sc. Vugs, Fr.
295	3899-3900	VP	2.82	7.3	3.1	0.1	73.0	6.1	Sp. Dolo, S/P, Fr.
296	-99	VP	2.80	7.5	3.2	0.6	73.1	11.5	100 Dolo, S/P, Fr.
297	-01	F	2.83	7.9	2.7	1.4	48.8	14.1	100 Dolo, S/P, Small Vugs, Fr.
298	-02	F	2.80	12.5	0.3	<1	30.6	25.0	100 Dolo, S/P, Small Vugs, Fr.
299	-03	F	2.79	10.4	0.1	0.1	38.3	15.3	100 Dolo, S/P, Fr.
300	3903-3904	F	No Analysis	(SCAL - Dolo, Sc. S/P, Sc. Vugs, Fr. 100% Fluorescence)					
301	3904-3906	F	Not Recovered						

R.R. Bell #4  
Residual Oil Zone (ROZ)  
So = Oil Saturation (Green)

Lovington Sdstn

Figure B21. Continuation of R.R. Bell #4 core analysis data from top of the San Andres reservoir residual oil zone (ROZ) in Figure B20 to the base of the cored interval. Green = Oil saturation (So) percentage. Core analysis depths are off by 100 ft and were hand adjusted to their proper depth. Lovington Sandstone from 3973-3986 ft helped locate proper core depths.



A. THE PROPOSED SALTWATER DISPOSAL OPERATIONS WILL IMPAIR CURRENT WATERFLOOD OPERATIONS AND RESULT IN THE WASTE OF VALUABLE OIL AND GAS RESERVES

1. From my perspective, injection of high salinity produced saltwater into the San Andres will do two things:
  - First, injection of high salinity produced water will communicate up section into the Grayburg reservoir through fractures and impair existing waterflood operations.
  - Second, being a high salinity heavier fluid, injection of produced water will work its way down-dip into the Goat Seep Aquifer and contaminate a source of low salinity water (<10,000 ppm) in the Chihuahuan Desert.

The following figure and preceding figures illustrate and confirm the points made above.

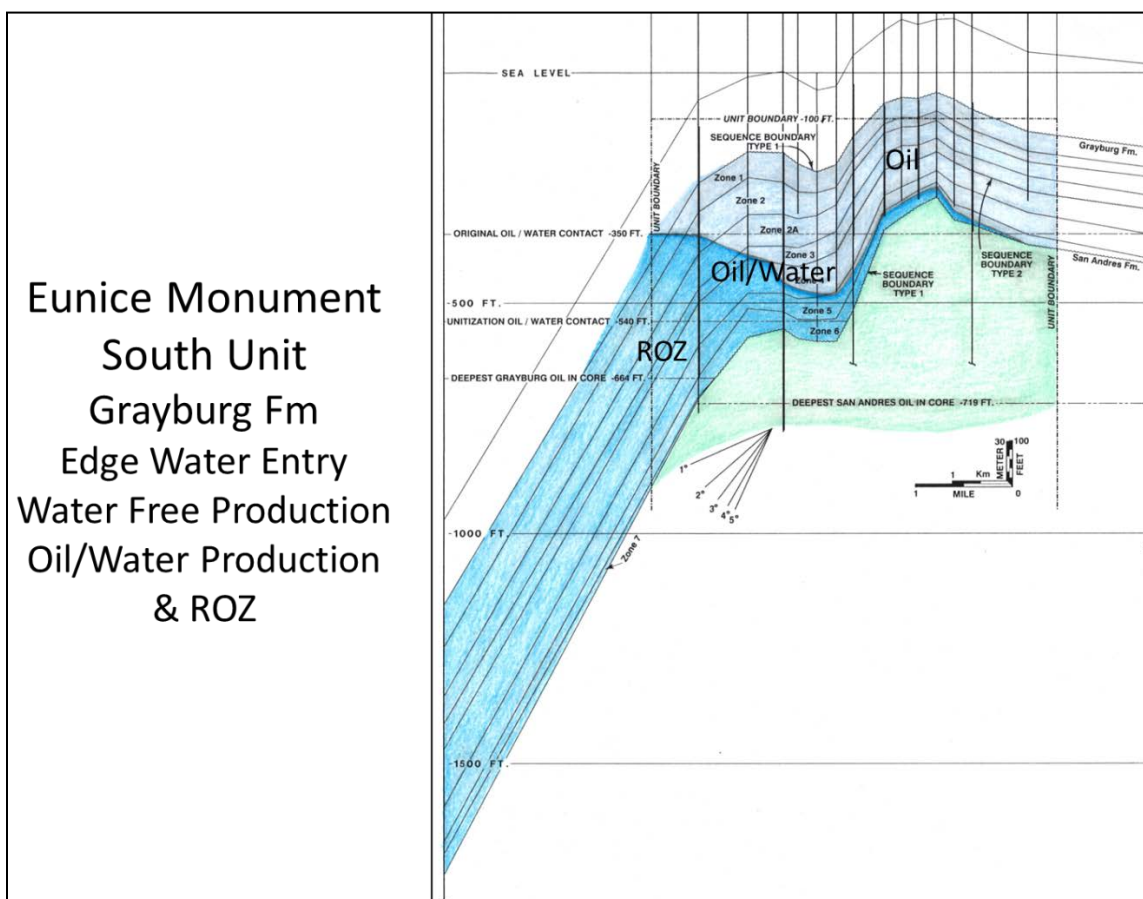


Figure B22. Structural cross section through EMSU showing low salinity (<10,000 ppm) edge water entry into west side of EMSU. Source of edge water is Goat Seep Aquifer down-dip 1.5 to 2 miles of the west unit boundary of EMSU. Edge water entry is due to a drop in reservoir pressure from production through time. Injection of produced high salinity saltwater, being heavier than low salinity (<10,000 ppm) edge water, will eventually work its way down-dip to contaminate the Goat Seep Aquifer. Goat Seep Aquifer is one of only two sources of deep subsurface low salinity (<10,000 ppm) water in the Chihuahuan Desert.



- B. IT IS MORE LIKELY THAN NOT THAT GOODNIGHT'S INJECTION OF HIGH SALINITY WATER INTO THE SAN ANDRES WOULD CONTAMINATE THE GOAT SEEP LOW SALINITY AQUIFER ATTACHED TO THE EUNICE MONUMENT AND ARROWHEAD FIELDS DUE TO ITS GREATER DENSITY AND INCREASED PRESSURE AS MORE WATER IS INJECTED.
2. High resolution 3-d seismic data show that reservoirs along the Eunice Monument trend of unitized oil fields are immediately up-dip approximately 1.5 to 2 miles from the Goat Seep Aquifer a source of low salinity (<10,000 ppm) water:
    - Down-dip immediately west of the unitized oil fields the Grayburg underwent erosion at the end of Grayburg deposition, with the down-dip basinward part of the Grayburg eroded.
    - The Goat Seep Aquifer is attached to the eroded edge of the Grayburg and is in pressure communication with Eunice Monument South Unit (EMSU) and Arrowhead Grayburg Unit (AGU).
    - Through time as EMSU and AGU produced oil and reservoir pressure decreased, edge water from the Goat Seep Aquifer entered the west side of the two reservoirs.
    - Edge water entry into EMSU has been mapped and extends in the lower part of the Grayburg reservoir (-350 ft and down section).
    - Edge water from the Goat Seep Aquifer is low salinity (<10,000 ppm) and free of sulfur.
    - Goat Seep aquifer is recharged from the present-day Guadalupe Mountains to the northwest and Glass Mountains to the south. These two mountain ranges capture rain and occasional snow and recharge low salinity water (<10,000 ppm) into the subsurface. This low salinity water (<10,000 ppm) recharges the Goat Seep Aquifer.

The following figures and preceding figures illustrate and confirm the points made above.

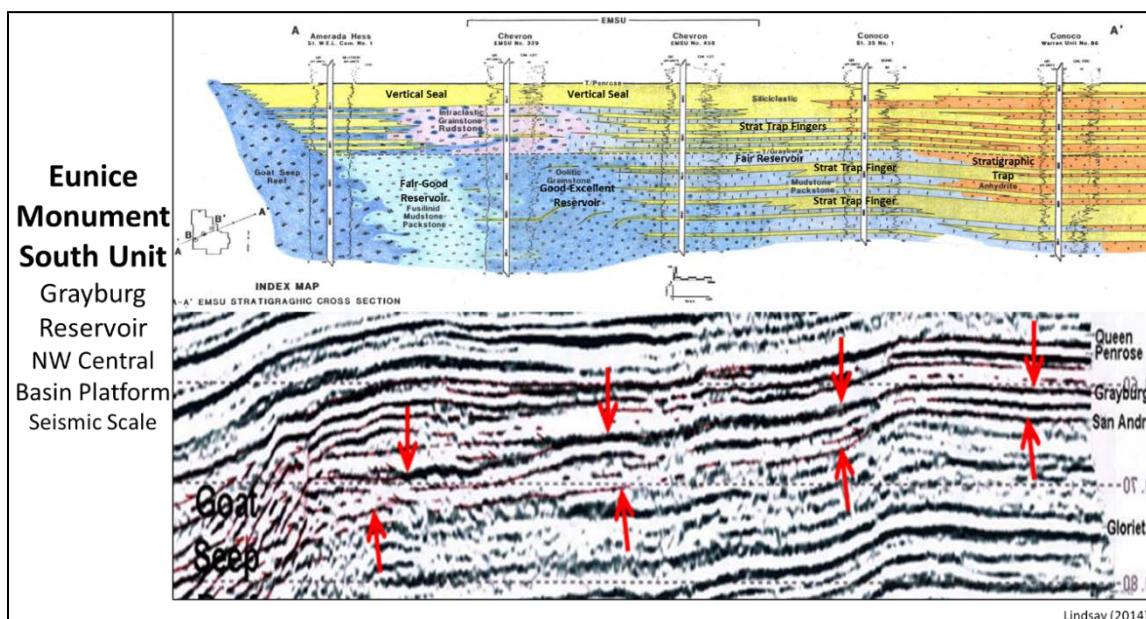


Figure B23. Upper cross section is from EMSU unitization hearings in 1980's, showing down-dip Goat Seep Aquifer (left) connected with Grayburg reservoir in EMSU (middle) and up-dip lateral stratigraphic trap (right) and overlying vertical seal in base of Queen Formation. Lower cross section is 3-d seismic through the same area, showing down-dip Goat Seep Aquifer (left) attached to eroded edge of Grayburg. Datum is Yates Sandstone.

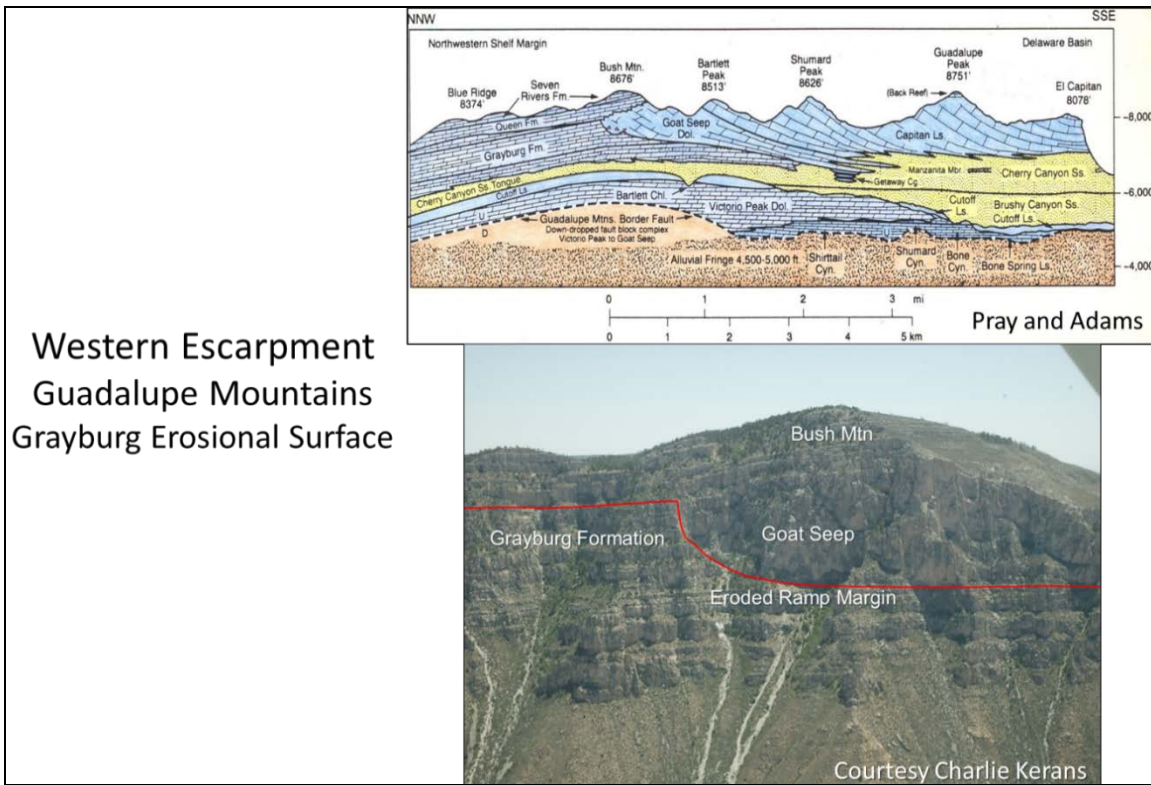


Figure B24. Upper and lower illustrations show down-dip eroded edge of Grayburg Formation, with Goat Seep Dolostone attached to Grayburg along the Western Escarpment, Guadalupe Mountains.

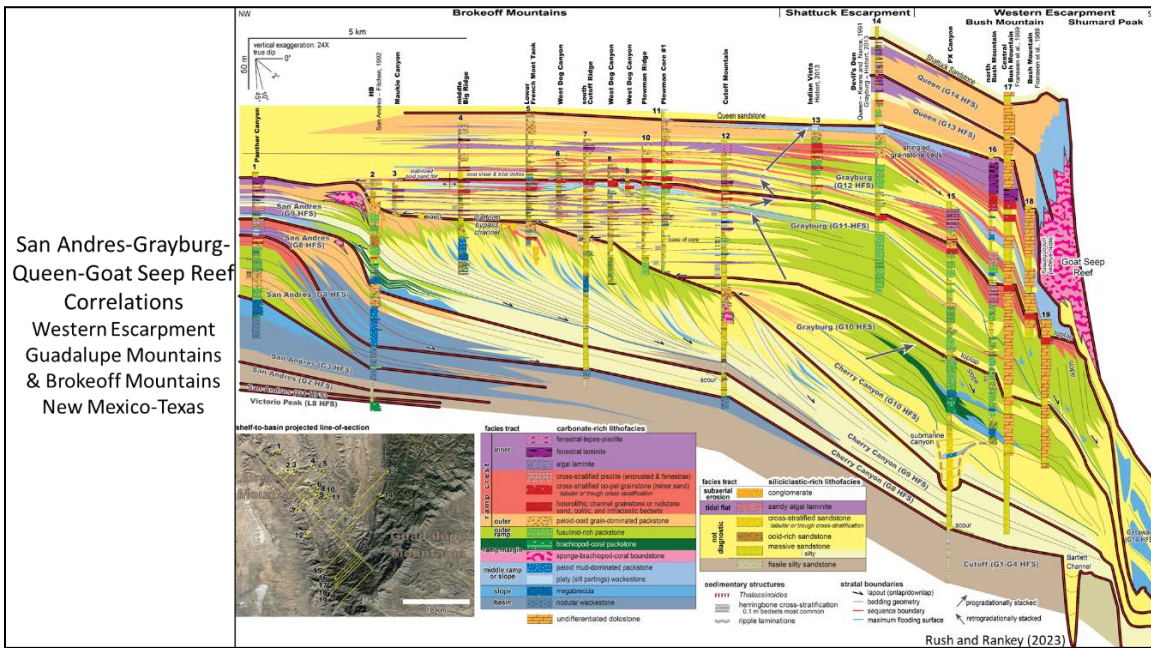


Figure B25. Detailed outcrop study of San Andres, Cherry Canyon, Grayburg, and Queen formations from Western Escarpment, Guadalupe Mountains up-dip into Brokeoff Mountains west of the Guadalupe Mountains. Down-dip of eroded Grayburg edge is Goat Seep Dolostone (pink-red) attached directly to Grayburg Formation. Guadalupe Mountains receive rain and occasional snow and recharge meteoric water into the subsurface through the Goat Seep to become a low salinity (<10,000 ppm) aquifer free of sulfate in the subsurface.

C. DOCUMENTATION SHOWS THERE IS NOT AN EFFECTIVE SEAL BETWEEN THE OVERLYING GRAYBURG PRODUCING ZONE AND THE UNDERLYING SAN ANDRES (CAN BE FOUND IN SPE PAPERS)

3. At first when studying Eunice Monument South Unit (EMSU) it was thought that the unconformity and non-porous strata that separated overlying Grayburg reservoir from underlying San Andres reservoir were isolated from each other and the two formations were not in communication:

- Upon the crest of the Eunice High structural block, which created the greater Eunice Monument structural closure for EMSUB, EMSU, and AGU reservoirs, there are fractures.
- The asymmetric anticline at EMSU is not a simple asymmetric anticline, but an anticline that contains a series of basement-cored smaller fault blocks that created a double humped asymmetric anticline. These structural complexities along the crest of the structure created a series of fractures.
- It has been documented that San Andres low salinity (<10,000 ppm) water enriched in sulfate, is in communication with Grayburg reservoir strata through fractures in the crest of the structure.
- Fractures breached non-porous strata associated with the unconformity that separates San Andres reservoir strata from Grayburg reservoir strata.
- Fractures allowed San Andres water to communicate vertically up section to form what is termed a plume of water.
- Plumes of water were easily identified by water chemistry, which identified low salinity water (<10,000 ppm) that contained sulfate.
- San Andres water in the residual oil zone (ROZ) at the Eunice Monument complex of unitized oil fields was sourced from the present-day Sacramento Mountains.
- Field work along U.S. Highway 82 west of Artesia, New Mexico identified San Andres collapse breccia horizons where evaporite strata ( $\text{CaSO}_4$ ) were dissolved by recharging meteoric water and overlying carbonate strata collapsed down to form a breccia horizon.
- Dissolution of evaporite strata ( $\text{CaSO}_4$ ) added sulfate ( $\text{SO}_4$ ) to low salinity San Andres water as it recharged into the subsurface.
- Through time recharging meteoric water delivered low salinity water (<10,000 ppm) containing sulfate ( $\text{SO}_4$ ) into the San Andres forming the residual oil zone (ROZ) at EMSUB, EMSU, and AGU.

All preceding figures and the one additional figure confirm the points made above.





Figure B26. San Andres collapse breccia along U.S. Highway 82 near the foothills of the Sacramento Mountains, New Mexico. Meteoric recharge dissolved San Andres evaporite strata ( $\text{CaSO}_4$ ), which caused carbonate strata forming the roof to collapse. Dissolved evaporite strata ( $\text{CaSO}_4$ ) added sulfate ( $\text{SO}_4$ ) to low salinity ( $<10,000$  ppm) meteoric water as it recharged into the subsurface.

D. PROOF OF CHANNELING AND CROSSFLOW BETWEEN ZONES THROUGHOUT THE FIELD THEREFORE HAS BEEN DOCUMENTED BY PRODUCTION DATA AND INCREASE IN SULPHUR CONTENT. IT IS MORE LIKELY THAN NOT THAT THIS WILL OCCUR AS A RESULT OF GOODNIGHT'S SALTWATER DISPOSAL.

4. The above testimony confirms the following:

- First, injection of high salinity produced water into the San Andres residual oil zone (ROZ) in EMSU will communicate up section through fractures into the Grayburg reservoir and will thereby result in the waste of hydrocarbons.
- Additional water entry into the Grayburg reservoir at EMSU will more likely than not have negative effects on production within the reservoir.
- Injection of high salinity produced water will through time communicate down section to contaminate with the low salinity (<10,000 ppm) Goat Seep Aquifer.
- Goat Seep aquifer is a source of low salinity (<10,000 ppm) water in the subsurface in this part of New Mexico where sources of fresh water are rare and should not be contaminated and will therefore harm public health and the environment.

I understand this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date next to my electronic signature below.



Robert F. Lindsay, October 5, 2023

## Attachment

**Robert F. Lindsay**  
**5308 Green Tree Blvd**  
**Midland, Texas 79707**

**Summary**

Developed a strong background in the following: 1) reservoir characterization; 2) evaluation of reservoir potential in exploration wells; 3) assessing new play concepts; 4) unconventional carbonate source rock reservoir potential; and 5) teaching and mentoring. This includes integration of seismic, synthetic seismograms, well logs, cores, petrophysics, engineering and production data to fully evaluate and characterize reservoirs. Performed wellsite geology on exploration and development wells. Good computer skills. Excellent verbal and written communication skills. Conducted field work, measured numerous outcrop sections, and led numerous field trips. Taught graduate level geology courses (MS & PhD).

**Professional Experience**

**Geologic Consultant, Lindsay Consulting LLC, 2016-Present, Midland, Texas**

- Core description and reservoir evaluation: Conventional, tight, and unconventional reservoirs
- Field trip leader, Guadalupe Mountains and Apache Mountains, West Texas, building regional-scale sequence stratigraphic models
- Teaching graduate level courses, Affiliate Professor, Brigham Young University, describing cores, assessing reservoir potential, identifying up-dip stratigraphic traps, building reservoir-scale sequence stratigraphic models
- Adjunct Professor, University of Texas at the Permian Basin

**Sr. Geological Consultant, Geological Consultant, & Geological Specialist, Carbonate Sedimentology & Sequence Stratigraphy, 2002-2015, Saudi Aramco, Dhahran, Saudi Arabia**  
 Geological Technical Services Division (GLTSD)

- Described cores and evaluated reservoir potential in development and exploration wells from the following formations, which in stratigraphic order are:
  - Miocene;
    - Wadi WAQB
  - Palaeocene-Eocene;
    - Umm Er Radhuma
  - Cretaceous;
    - Maastrichtian
    - Aruma
    - Mishrif
    - Maaddud
    - Shu'aiba
    - Upper Ratawi
  - Jurassic;
    - Manifa
    - Hith Stringers
    - Rimthan
    - Arab-A
    - Arab-B
    - Arab-C
    - Arab-D
    - Jubaila
    - Hanifa
    - Hadriya source rock



- Upper Fadhili
- Lower Fadhili
- Sharar
- Faridah
- Marrat
- Triassic;
  - Jilh
  - Khuff-A
  - Upper Khuff-B
- Permian;
  - Lower Khuff-B
  - Khuff-C
  - Khuff-D
- Described outcrops and led field trips through the following formations, which in stratigraphic order are:
  - Miocene;
    - Dam
    - Rus
    - Dammam
  - Cretaceous;
    - Aruma
    - Hausiyan
    - Shu'aiba equivalent
    - Biyadh
    - Sulaiy
  - Jurassic;
    - Manifa equivalent
    - Hith
    - Arab-A-C Collapse Breccia
    - Arab-D
    - Jubaila J2
    - Jubaila J1
    - Hanifa Ullaya Member
    - Hanifa Hawatah Member
    - Tuwaiq Mtn T1
    - Tuwaiq Mtn T2
    - Tuwaiq Mtn T1
    - Dhurma D7 Hisyan Shale
    - Dhurma D7 Atash
    - Dhurma D6
    - Dhurma D5
    - Dhurma D4
    - Dhurma D2 Dhibi
    - Marrat
  - Triassic;
    - Minjur
    - Jilh
    - Upper Khuff-B
  - Permian;
    - Lower Khuff-B
    - Khuff-C
- Ghawar field Arab-D reservoir sequence stratigraphy and depositional model (6-8 year study)
- Regional Arab-D stratigraphic trap study

- Unconventional Jurassic carbonate source rock studies
- Khuff A regional sequence stratigraphy and depositional model
- Khuff B regional sequence stratigraphy and depositional model
- Evaluated Shaybah field-Early Cretaceous Shu'aiba porosity development and diagenesis (meso & microporosity)
- Evaluated Exploration Core Laboratory to improve its efficiency
- Evaluated carbonate reservoirs within the Partitioned Neutral Zone for contract renewal with Chevron
- Frac sand regional study throughout Saudi Arabia
- Geology subject matter expert (SME) for the upstream professional development center (UPDC)
- Purchasing laboratory equipment: Minipermeameter
- Interview potential carbonate sedimentologists and geologists, via face to face and video conferencing from Dhahran, at AAPG conventions, and in Calgary, Colombia and Argentina
- Ph.D. titled "Grayburg Formation Reservoir-Scale Architecture and Sequence Stratigraphy, Permian Basin, USA" (Started 2004, Graduated July 7, 2014, University of Aberdeen, Scotland)
- Taught Ph.D. graduate course on carbonate sedimentology at King Faud University of Petroleum and Minerals (KFUPM) (2011 and 2013)
- Presented numerous talks and poster sessions at AAPG and Geo conferences and Dhahran Geoscience Society (DGS)
- Mentored several young geologists and helped locate graduate schools to attend
- Assisted in planning and presented in Predicting Stratigraphic Traps Workshop, 2014, Key note address speaker and presented poster session
- Assisted in planning and presented in Jurassic Workshop 2006
- Assisted in planning and presented in Second Jurassic Workshop 2011
- Assisted in planning and presented in Khuff Workshop
- Taught carbonate reservoir part of Advanced Petroleum Geology Workshop 2009
- Taught Jurassic Petroleum Systems field trip and core workshop 2014
- Taught How To Describe A Core to summer intern students
- Unconventional Jurassic carbonate source rocks, 2013-Present
- Regional Khuff Workshop in Bahrain (2007)
  - Presented talk on Khuff Formation of Saudi Arabia
- Gave Dhahran Geoscience Society (DGS) talks on:
  - Permian Basin: Frontier to Oil Province (2005)
  - Syria Field Trip (2006)
  - Distinguished Lecturer 2013-2014

### **Staff Geologist, Stratigrapher, 1990-2002, Chevron USA, Midland, Texas**

Evaluation and characterization of numerous Permian Basin reservoirs for infill, horizontal, and development wells:

- Created sequence stratigraphic models with facies, rock types, engineering data, and production information superimposed on model to understand reservoir architecture in several large oil fields
- Pioneered use of high pressure Hg porosimetry to calculate effective vs. ineffective porosity and apply to reservoirs to determine volumetrics and economics
- Worked on the following productive intervals in the Permian Basin, which in stratigraphic order are:
  - Middle Permian (Guadalupian);
    - Queen
    - Grayburg
    - San Andres
  - Lower Permian (Leonardian);
    - San Angelo

- Clear Fork
- Tubb
- Drinkard
- Abo
- Lower Permian (Wolfcampian);
  - Wolfcamp
  - Bursum
- Pennsylvanian;
  - Cisco
  - Strawn
- Mississippian;
  - Barnett
- Devonian;
  - Woodford
  - 31 Formation
- Silurian;
  - Fusselman
- Ordovician;
  - Montoya
  - Simpson
  - Ellenberger
- Characterize pore systems, wettability and ability to drain reservoir by primary, secondary and tertiary recovery
- Side projects evaluating reservoirs in Gulf of Mexico, Kazakhstan, Syria, and offshore India
- Conducted outcrop studies of Permian (Guadalupian-Leonardian) Grayburg, Munn and San Andres formations (129 measured sections) as analogs to build subsurface reservoir models
- Led numerous field trips (30+) to study outcrop equivalents of subsurface reservoirs for geologists, geophysicists, engineers, land representative, office services, summer interns and management
- Characterized Late Ordovician Montoya horizontal drilling play
- Taught MS level classes (UTPB) and taught short courses on carbonate sedimentology and reservoir characterization

**Senior Geologist, Sr. Carbonate Petrographer, 1988-1990, Chevron USA, Hobbs, New Mexico**

Reservoir evaluation and characterization of Permian Basin reservoirs, such as, new waterfloods, new discoveries, and mature waterfloods

- Characterized new discovery, correlating porosity, facies distribution, karst overprints, and built a stand up, see through, three dimensional model to utilize in solving day to day production problems
- Conformance work redirecting injection more effectively within a reservoir experiencing water cycling
- Well completion work utilizing core when open-hole logs could not be run in rough hole, completed well for 304 BO and no water
- Initiated outcrop studies to gain better insight into reservoir architecture of the Permian (Guadalupian) Grayburg Formation

**Laboratory Supervisor, 1987-1988, Chevron USA, Denver, Colorado**

Supervised in-house laboratory to support Rocky Mountain and Midcontinent Exploration and Development Divisions

- Core layout tables to describe cores, slabbing saws, and polishing wheels
- Rock petrophysics via thin sections, SEM, Xray and Hg porosimetry

- Geochemistry of produced oil and water, via gas chromatography and ICAP

**Geologist, Carbonate Petrographer, 1985-1987, Chevron USA, Denver, Colorado**

Evaluated and estimated reservoir potential and prediction of porosity occurrence in Midcontinent Exploration Division

- Conducted regional study of Middle Ordovician Simpson Group siliciclastic porosity distribution in Southern Oklahoma
- Conducted similar regional study of Early Ordovician-Late Cambrian Arbuckle Group carbonates
- Characterized carbonate and siliciclastic reservoirs in Central Oklahoma, Western Kansas, Northeast Oklahoma, and Michigan to assess reservoir potential
- Conducted field work and co-led field trips to Arbuckle and Wichita mountains to assess the Cambrian – Ordovician stratigraphy, structural geology, and reservoir potential of southern Oklahoma

**Sr. Project Geologist, Lithostratigraphy, 1983-1985, Gulf Exploration Technology Center, Houston, Texas**

Responsible for worldwide core descriptions, reservoir assessment and characterization

- Described offshore Zaire Early Cretaceous Pinda and Toca cores, identifying porosity types and permeability controls
- Identified Permian Basin injectivity problem, caused by precipitation of iron sulphide and carry over oil combing to create “black gunk” that occluded injection wells
- Work included Gulf of Mexico oil seeps, East coast Jurassic shelf margin core description, and Utah outcrops

**Geologist, Senior Geologist & Supervisor Enhanced Oil Recovery Geology, 1977-1983, Gulf Oil, Oklahoma City, Oklahoma**

Implemented enhanced oil recovery techniques, such as, CO<sub>2</sub>, nitrogen, polymer, micellar polymer, alkaline, fire floods, etc. in various Rocky Mountain and Midcontinent reservoirs

- Responsible for site selection and all geologic work for a successful CO<sub>2</sub> pilot and unitization efforts, in Little Knife field, North Dakota
- Little Knife field unitization study
- Created geologic data base on all North Dakota unitized fields
- Characterized Permian Minnelusa reservoir in Powder River basin, built 3-d structural/stratigraphic fence diagram of complete field
- Characterized other oil fields in Oklahoma, Wyoming, Texas Panhandle, Utah, etc.

**Geologist, 1976-1977, Gulf Energy & Minerals, Oklahoma City, Oklahoma**

Responsible for development of western Kansas oil and gas fields and wellsite geology throughout the Midcontinent on Development and Exploration wells

- Drilled, cored and performed wellsite production geology on 27 wells, without mud loggers, in Oklahoma, North Texas, Texas Panhandle, Kansas, and Michigan
- Associated with two development discoveries

## Education

B.S. Geology, 1974, Weber State College

M.S. Geology, 1976, Brigham Young University

Ph.D. Geology, 2014, University of Aberdeen (Scotland)

## Military

U.S. Army Special Forces, 19<sup>th</sup> Special Forces Group (Airborne), Medical Specialist – Honorable Discharge

### **Professional Associations**

American Association Petroleum Geologists  
SEPM  
West Texas Geological Society  
Permian Basin Section SEPM  
Dhahran Geoscience Society  
National Spleological Society  
SPE  
SIPES

### **Honors**

President West Texas Geological Society, 2000-2001  
President Permian Basin Section–SEPM, 1995-1996  
AAPG Distinguished Lecturer, 1994-1995  
Honorary Life Membership Permian Basin Section–SEPM, 1999  
Honorary Life Membership West Texas Geological Society, 2005  
AAPG Delegate, West Texas Geological Society and Dhahran Geoscience Society  
Member of Board of Professional Geoscientists in the State of Texas, #1386  
Distinguished Lecturer Dhahran Geoscience Society (DGS) 2013-2014  
Secretary, Society of Independent Earth Scientists, Midland Chapter SIPES



**Tab 3.**

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

**APPLICATION OF GOODNIGHT MIDSTREAM  
PERMIAN, LLC FOR APPROVAL OF FOUR  
SALTWATER DISPOSAL WELLS  
LEA COUNTY, NEW MEXICO**

**CASE NOS. 23614  
23615  
23616  
23617**

**SELF-AFFIRMED STATEMENT OF LAURENCE STEPHEN MELZER**

1. My name is Laurence Stephen Melzer. I am working as a consulting engineer (Texas Professional Engineer #46859) with Melzer CO<sub>2</sub> Consulting. I have been recognized as an expert geological engineer. I was awarded a Bachelor of Science degree in Petroleum Engineering from Texas A&M University in May of 1968, a Master of Engineering Degree from Purdue University in 1969 and served as a research engineer in the US Air Force for 4 years. I have conducted research in nuclear weapons effects both in the Air Force and as a civilian GS-12 for nine total years at Kirtland AFB in Albuquerque. Since June 1978 I have operated wells and conducted research into tertiary oil recovery and currently have a private consulting practice in Midland, Texas.
2. During the last 22 years I have directed much of my research into zones below the oil/water contacts (OWCs), now widely understood to be residual oil zones or ROZs. Many San Andres formation fields display a characteristic oil and water saturation profile much like the widely studied Seminole field shown in EXHIBIT C-1. My work originated in 2001 just after a four- year assignment chartered by the University of Texas System as a cooperative program between the University of Texas of the Permian Basin and the State of Texas' University Lands. The work has led to several key landmark ROZ reports published in 2006, 2012 and 2015.
3. In recent years the definition of an ROZ has become known as that interval beneath a conventionally productive oil zone, also known as a Main Pay Zone (MPZ), where the water production exceeds 85% or more (see EXHIBIT C-2). Although "shows" of oil remained present when drilling deeper, most oil companies avoided drilling too deep into the zone below the producing oil/water contact (POWC) in order to minimize the issues with produced water disposal. Later, when companies drilled deeper to find other producing intervals, they found that the deep San Andres intervals with excellent oil shows were often

Exhibit C

several hundreds of feet thick. The characteristics of the ROZ intervals display many of the features of the MPZs (EXHIBIT C-3).

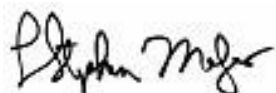
4. When enhanced oil recovery (EOR) techniques were developed to exploit mature water floods, several companies began to realize that the ROZ intervals had the same oil saturation levels as did the water flooded zones of the MPZs. And, starting at the turn of the century, several of the CO<sub>2</sub> flooded fields began to deepen wells into the ROZ to extend the depth intervals of EOR flooding. The success of the deepened wells has led the large integrated oil companies to extend their MPZ CO<sub>2</sub> floods into the ROZ. Over 20 CO<sub>2</sub> floods have been deepened (see EXHIBIT C- 4) into what industry was previously calling transition zones. Most have now acknowledged the intervals were naturally water swept paleo oil entrapments and are residual oil zones, some of which extend over 300 feet below the POWCs.
5. The effort to map the ROZ was next and conducted under the guidance of major oil companies, the Research Partnership to Secure Energy for America, and in conjunction with the US Department of Energy. The effort led to the awareness that the ROZ intervals lie below the main pay intervals in oil fields but also exist away from the fields in what are now termed ROZ 'greenfields', A proof test of the greenfields called the Tall Cotton project (see map on EXHIBIT 5) was initiated in 2014 on slightly less than one square mile and peaked at 3000 BOPD using 40 production wells, and has produced 4.9 million barrels to date (EXHIBIT 6). This work, together with the depth extensions below the producing oil/water contacts in the 20+ projects, has confirmed that the ROZ concept is different and broader than the transition zone notion and are commercial targets with huge oil-in-place (OIP) resources to be developed.
6. Work subcontracted to Advanced Resources International (ARI) by the above-mentioned ROZ research group at the University System attempted to estimate the ROZ OIP targets. They assessed the total oil resource in 3 billion acres of ROZ resource. The OIP resource and the technically recoverable resource in the greenfield ROZs in five selected Texas counties are estimated to be in excess of 150 and 16 billion barrels of oil, respectively (EXHIBIT 7). The ROZ OIP resource in Lea County in New Mexico has since been estimated to be well in excess of the largest Texas County in Texas (Gaines) at 45 billion barrels.
7. Subsequent studies of ROZ occurrences have been recently conducted in other parts of the World. There are very large resources elsewhere that are being considered for development (EXHIBIT 8).
8. As mentioned, the ROZ intervals possess huge volumes of residual oil but produce only water in primary or secondary phases of production. For this reason, the oil and gas industry avoided their exploitation until the last two decades. The intervals require injection of a substance that can alter the properties of the immobile (residual) oil to facilitate production. CO<sub>2</sub>, now readily available in the Permian Basin region, has led the world in 1) developing CO<sub>2</sub> EOR recovery technologies, 2) the actual numbers of CO<sub>2</sub> floods, and 3) exploiting the ROZs. A new second consideration of CO<sub>2</sub> storage has become another consideration and

CO<sub>2</sub> EOR with its large areal footprint and associated and incidental CO<sub>2</sub> storage. This consideration of CO<sub>2</sub> storage is elevating the importance of both the brownfield and greenfield ROZ resources around the world.

9. One of the evolving modern tragedies in our oilfields today is the condemnation of the ROZ oil recovery potential via produced water disposal. This is especially true today with the recent passage of the Inflation Reduction Act's 45Q tax credit enhancements. The lost oil is bad enough but the enormous potential for large volume CO<sub>2</sub> storage that would otherwise occur while producing the oil makes it even more tragic. CO<sub>2</sub> EOR is now well established as a proven large and permanent storage process for emission captured CO<sub>2</sub>. Large reservoirs are needed for the storage and the thick and laterally continuous ROZs are ideally suited for the storage. Disposal water injected into the ROZ reservoirs is effectively condemning them for oil exploitation and CO<sub>2</sub> storage.

### **Testimonial Conclusion**

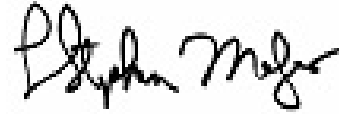
10. The public data and referenced EXHIBITS illustrate that the concept of producing ROZs beneath existing oil fields is a demonstrated, proven process and proven in over 20 different San Andres oilfields in the Permian Basin. Complimentary testimony from Dr. Robert Lindsay shows the existence of a thick oil-bearing zone identified as the EMSU San Andres ROZ. I believe the continued large volume water disposal within the unitized San Andres formation at the EMSU has damaged and will compromise the ROZ oil recovery there and the CO<sub>2</sub> storage potential for a huge portion of the Unit. Any further injection will extend the affected area to the entire Unit and even beyond into the adjoining ROZ greenfields. The broader issue of allowing water disposal into San Andres greenfield ROZ regions should be considered as well.
11. I have not testified before as an expert witness for the Energy, Minerals and Natural Resources Department, Oil Conservation Division.
12. I understand that this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date identified next to my signature below.



---

Laurence Stephen Melzer, October 25, 2023

I understand this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date next to my signature below.



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Signature

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October 25, 2023

Date

{01650445-1}



Attachment

Melzer Consulting

**RESUME FOR L. STEPHEN MELZER**

(432) 682-7664 (wk)

e-mail: melzerls@aol.com

Texas A&M University: BS, Geological Engineering (1968)

Purdue University: MSE, Civil Engineering/Rock Mechanics (1969)

Registered Professional Engineer -Texas (#46859)

Member, Society of Petroleum Engineers and American Association of Petroleum Geologists

**WORK EXPERIENCE SUMMARY**

Mr. Melzer combines his forty years of technical oil and gas industry experience with extensive familiarity with the design, project evaluation, regulatory environment, and business of waterfloods and enhanced oil recovery projects. This background involves advising U.S. and International organizations on enhanced oil recovery, carbon capture and storage, and private clients on business strategies. He assists clients and regulators with evolving policy involving CO<sub>2</sub> Enhanced Oil Recovery and utilization of CO<sub>2</sub> for geologic storage. He also conducts reservoir characterization, engineering, and project planning studies on oil and gas projects and has served on the Texas Governor's Panel for the FutureGen project. His very recent work has been focused on advancing the understanding of residual oil zones, their origins, properties and amenability to EOR recovery with its associated CO<sub>2</sub> storage. For the past five years he has taught courses with several large independent oil companies and coauthored key reports for the National Petroleum Council and National Coal Council. He has consulted on a variety of projects and initiatives which include the following sponsors: Shell International Exploration and Production, Inc., Pioneer Natural Resources, Exxon/Mobil, Denbury Resources, Kinder Morgan Energy Partners, L.P., Great Plains Institute, Linde/Praxair Corporation, Citation Oil and Gas, numerous independent oil and gas companies, the Interstate Oil and Gas Compact Commission, The Plains CO<sub>2</sub> Reduction Partnership, The Midwest Geological Sequestration Consortium, The University of Texas System, The University of Wyoming's Enhanced Oil Recovery Institute, the National Research Center for Coal and Energy, US Army, US Air Force, U.S. Dept. of Energy, and the Defense Advanced Research Projects Agency. Noteworthy recent projects include:

- Teaching multi-day short courses on CO<sub>2</sub> EOR for Denbury Resources, Occidental and the CO<sub>2</sub> Conference in Midland, TX
- Acting as Principal Investigator for three large publicly sponsored research projects investigating the origins, distribution, and flood response of residual oil zones (ROZs) and recruiting a multidisciplinary team for the effort.
- Directing the 28 long-running series of annual CO<sub>2</sub> Flooding Conferences in Midland, Texas attended by all of the leading CO<sub>2</sub> flooding professionals ([www.CO2Conference.net](http://www.CO2Conference.net)),
- Research on the newly understood issues of large volume water injection and its analog to deep saline formation, large volume CO<sub>2</sub> injection (CCS) projects.
- Planning and directing the 18 CO<sub>2</sub> Shortcourses (the most recently held in December 2022 and entitled "Carbon Capture and Geological Storage; Preserving Sound Practices in the Field),
- Organizing and teaching a CO<sub>2</sub> School, a four-day immersion in all aspects of CO<sub>2</sub> flooding with modules related to CO<sub>2</sub> storage.
- Contributing Author to the National Petroleum Council's 2018 report on Petroleum, the Dual Challenge and the Interstate Oil and Gas Compact Commission's 2010 report entitled "A Policy, Legal, and Regulatory Evaluation of the Feasibility of a National Pipeline Infrastructure for the Transport and Storage of Carbon Dioxide,"

- Co-Chairing the University of Texas School of Law's Continuing Education Conference on "Carbon and Climate Change" in Austin, Texas (February 3-4, 2009),
- Chairing the Carbon Sequestration Development and Finance Summit in Houston, Texas (July 11-13, 2007),
- Keynote Speaker for Enhanced Oil Recovery Institute's (Wyoming) CO<sub>2</sub> related events (May 2009, July 2012, and July 2022).
- Directing the full-day pre-conference seminar and coauthoring three papers at the 2009 SPE International Conference on CO<sub>2</sub> Capture, Storage, & Utilization, San Diego, CA, Nov 2-4, 2009
- Conducting the short course entitled "EOR and the Expanding Field of CO<sub>2</sub> Flooding" in Association with the 2006 AAPG National Convention, April 8, 2006, Houston, Texas,
- Contributing Author to the Interstate Oil and Gas Compact Commission 2005 report entitled "A Regulatory Framework for Carbon Capture and Storage (CCS),"
- Authoring the CO<sub>2</sub> EOR portions of the Clean and Diversified Energy Advisory Committee of the Western Governors Association 2006 report on Clean Energy, A Strong Economy and a Healthy Environment,
- Chairing the International Conference on Carbon Sequestration for the Oil, Gas and Power Industry – London, England, June 2001,
- Conduct of numerous oil and gas field resource evaluations including CO<sub>2</sub> flooding resource estimations, waterflood unitization studies, CO<sub>2</sub> and waterflood design reports, drill site recommendations, oil and gas leasing, and oil field operations;
- Participation in the design, conduct, and surveillance of the Pioneer Natural Resources Spraberry CO<sub>2</sub> Pilot Program at the E. T. O'Daniel Lease in Midland County, Texas,
- Planning and directing a Department of Energy Workshop on Carbonate Reservoirs and Pioneer Natural Resource Corporation's Spraberry Symposium,
- Formulating the strategic plans and economic modeling for a \$800 million helium and CO<sub>2</sub> field project with Ridgeway Petroleum of Calgary, Alberta Canada,
- Planning and directing a shallow offshore drilling, logging, and seismic project to develop insights on the nuclear craters at the Enewetak Atoll in the Marshall Islands of the Pacific Ocean, and
- Conducting a detailed hydrologic modeling study of a carbonate aquifer in Kentucky for the U.S. Army Waterways Experiment Station, Vicksburg, MS.

For the past ten years, Mr. Melzer has provided enhanced oil recovery consulting services for the oil and gas industry. From his extensive familiarity with a large percentage of waterfloods and a majority of the CO<sub>2</sub> floods in the Permian Basin, he has helped companies redefine their EOR targets to include vertical expansions to transition and residual oil zones and evaluate and select analogs for forecasting oil response. Prior to forming his consulting practice, he was the initial Director of the Petroleum Industry Alliance, a part of the University of Texas System and located at the Center for Energy and Economic Diversification between Midland and Odessa, Texas. His responsibilities included defining and directing all oil and gas research efforts, defining and directing area wide technology transfer activities, and assisting with economic development in the Permian Basin area. His organization also represented and assisted the oil and gas professionals and their companies within the Permian Basin in their dealings with Federal and State research and regulatory agencies.

Mr. Melzer was formerly a Department Manager and Senior Geotechnical Engineer for Science Applications International Corporation, a large consulting firm headquartered in San Diego, California. He headed the Midland, Texas office for SAIC from 1978 until October 1992.

Mr. Melzer has been actively engaged in oil and gas exploration and development through a family-owned business, Melzer Exploration Company. The partnership, formed with

his father in 1978, has invested in more than 85 successful oil and gas wells. Prior to accepting the post at the Center for Energy and Economic Diversification, he supervised drilling and production operations in over twenty-five company-operated wells.

## **SPECIFIC PROFESSIONAL EXPERIENCE**

### **Melzer Consulting (May 1997 to Present)**

Consultant, Midland, Tx. Mr. Melzer performs consulting services for a variety of commercial energy companies, non-governmental organizations and associations. His clients have included Shell International Exploration and Production Inc., Eastman Chemical Company, KinderMorgan CO<sub>2</sub> Company, Praxair, Inc., Plains CO<sub>2</sub> Reduction Partnership, Mobil Exploration and Producing, U.S., Inc., PetroSource Carbon Company, Pioneer Natural Resources, Colorado Interstate Gas (El Paso Corporation), The University of Texas of the Permian Basin, Permian Basin Petroleum Association, Illinois Geological Survey, and others. The work includes providing background materials and advising clients of business strategies related to CO<sub>2</sub> EOR and CCS, conducting economic evaluations of State and Federal policy matters, CO<sub>2</sub> market reports, water and CO<sub>2</sub> flood project economic projections, and conduct of shortcourses and seminars on CO<sub>2</sub> flooding.

### **Center for Energy and Economic Diversification (Oct 1992 - May 1997)**

Director, Petroleum Industry Alliance - Midland, Texas. In October of 1992, Mr. Melzer was named to be the initial Director of the Center for Energy & Economic Diversification/Petroleum Industry Alliance. The organization is a part of the University of Texas System and represents a cooperative government/industry alliance with startup funding from the University of Texas Lands and the University of Texas of the Permian Basin. Mr. Melzer was instrumental in identifying the need and formulating the concept of the Petroleum Industry Alliance. Mr. Melzer is the director of the annual CO<sub>2</sub> Flooding Conference in Midland and continues to perform those duties for the Petroleum Industry Alliance.

### **Melzer Exploration Company (1978 to Present)**

Partner and Co-owner. Mr. Melzer formed a family partnership with his father, Mr. Larry S. Melzer, in May of 1978 for the purpose of exploring for and developing oil and gas properties. He oversaw the generation of prospects for in-house drilling and reviewed other prospects for participation recommendation to an investor group. The Company does not currently generate prospects nor operate wells but remains active in investing in new prospects for drilling.

### **Science Applications International Corporation (1978 to Oct 1992)**

Department Manager and Senior Geotechnical Engineer - Midland, TX. Managed four-person office in southwest Texas performing geotechnical studies and analyses. Provided site characterization capabilities to the DOD for the execution of field tests including a multi-million dollar field test program in a very specific geological environment at Ft. Knox, KY. Also planned and provided cost estimates for two oil industry/Department of Energy cost share programs for enhanced oil recovery field projects, and performed drilling and completion of wells at the ASARCO and US Bureau of Mines in-situ copper leaching pilot cost share project near Casa Grande, Az.

### **Air Force Weapons Laboratory, Kirtland AFB (Albuquerque), NM (1969-1978)**

Active Duty Air Force Project Officer and Civil Service Research Engineer (GS-13). Developed airblast and ground shock weapon effects test requirements, formulated test site selection criteria, performed test site selection, and was program manager for material property determination for use in theoretical calculations of conventional and nuclear weapon effects. Conducted studies of soil and rock response to blast loadings in a wide variety of soil and rock types. Was test director for large, multimillion dollar high explosive test program code-named MIDDLE GUST located in southeastern Colorado.

### **CURRENT AFFILIATIONS**

Mr. Melzer is the past president of the Texas Carbon and Capture and Storage Association based out of Austin, Texas. He is the immediate past president of the Applied Petroleum Technology Academy, a Midland based technology training non-profit corporation, and a member of the City of Midland's Convention Center Advisory Board. He is an active member in the Society of Petroleum Engineers, American Association of Petroleum Geologists, West Texas Geological Society, and the Society for Independent Professional Earth Scientists.

### **RECENT AWARDS**

Mr. Melzer was recently honored with 2023 Midland College Buno Hanson Environmental Excellence award and the Plains CO<sub>2</sub> Reduction Partnership Pioneer Award recognizing efforts in CO<sub>2</sub> Sequestration. He was also recognized and received the 2007 Hearst Energy Award for Technology in the Oil & Gas Industry. In 2004 he was given the Regional Service Award in the Southwestern North America Region of the Society of Petroleum Engineering in recognition of his significant industry publications, his time and effort in developing, directing and continuing to improve the Permian Basin CO<sub>2</sub> Conference and being instrumental in its success.

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Member of National Coal Council Study Task Force and coauthor of Chapter 4: Enhanced Oil Recovery Technology in NCC Report entitled Harnessing Coal's Carbon Content to Advance the Economy, Environment, and Energy Security, Nat'l Coal Council, 6-22,12, [http://www.nationalcoalcouncil.org/reports/07-10-12-NCC\\_Harnessing\\_Coals\\_Carbon\\_Content\\_to\\_Advance\\_Economy\\_Environment\\_EnergySecurity.pdf](http://www.nationalcoalcouncil.org/reports/07-10-12-NCC_Harnessing_Coals_Carbon_Content_to_Advance_Economy_Environment_EnergySecurity.pdf)

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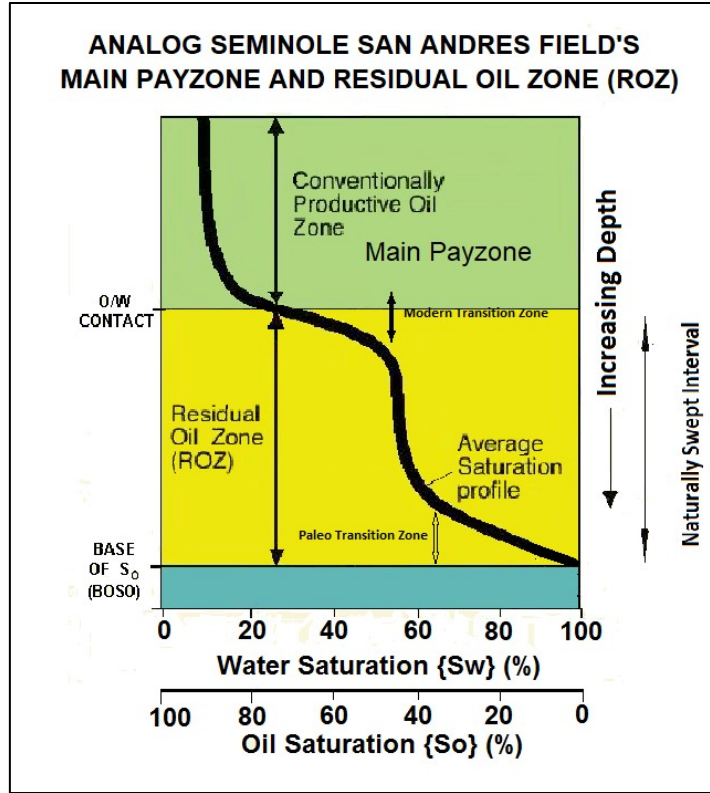
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### EXHIBIT C-1



## EXHIBIT C-2

### How is a Residual Oil Zone Defined?

A ROZ is often defined as that interval beneath the main pay interval (MPZ) within an oil field where water production exceeds 85%\* during the primary phase of production

That depth where the ROZ begins is now defined to be equal to the historically defined producing oil/water contact (POWC)

Almost always in the Permian Basin's San Andres formation, the ROZ extends several hundreds of feet below the POWC and contains a huge oil resource that is immobile under primary or secondary (water flood) recovery

*\* Might also be 100% or a lower percentage – is dependent on the unit's defined operating plan*

## EXHIBIT C-3

## Log Evidence of ROZs and Other Diagnostic Tools for Discriminating MNWs\* of San Andres ROZs\* from MPZs\* and Non Oil Bearing Intervals

	PROCESS/TOOLS	DIAGNOSTIC	SPECIFIC EVIDENCE	CLASSIC INTERPRETATION	ROZ INTERPRETATION	FURTHER EXPLANATION
1	ROZ Specific Diagenesis as opposed to Burial Stage Diagenetic Processes and due to MNW's* pore volume sweep in the presence of oil**					
1A	Log Manifestations	Logging - 1	Bow Shape Porosity Character	Normal Depositional Explanation	Porosity enhancement due to pervasive dolomitization diagenesis	Peak Porosity represents best original porosity zone and maximum pore volume sweep; diagenesis spreads vertically up & down from there
		Logging - 2	Separation of Sonic Porosity & Density Porosity Logs	Secondary Porosity	Secondary Porosity due to Pervasive Dolomitization in ROZ interval	The late stage dolomitization process redistributes the rock matrix into vug porosity types
		Logging - 3	3-3.2 PE Log values for thick depth intervals	Depositional or burial stage Reflux Dolomitization	Late Stage Dolomitization due to microbial alternation of disseminated anhydrite to calcite to dolomite	San Andres is a three mineral formation - the anhydrite and calcite are converted into dolomite by microbial processes - anhydrite nodules may remain
		Logging - 4	Rw values different than MPZ	Not unusual / No significance	ROZ water chemistry less saline & sulfate rich than MPZ	Rw is different because the meteoric derived sweep is composed of lower salinity water
		Logging - 5	So > 30% in calculations	Possibly productive	ROZs are oil wet and values are residual to MNW*	Rw is different because the meteoric water derived sweep is composed of lower salinity water (mixed water zones)
		Logging - 5	Different M an N than MP needed	Not unusual / No significance	Rock fabric destructive dolomitization in ROZ only	Rocks have undergone a second (late stage) diagenetic event
		Logging - 6	Excellent and Laterally Correlatable Porosity	Not unusual / No significance	Shallow Shelf (Good Reservoir) Cycles + Sweep associated dolomitization	Thicker, laterally correlatable shallow water cycles usually capped by sabkha anhydrites, often bottomed by deeper marine wackestones (source rocks?)
	Logging - 7	Feaux Mobile Oil	set casing	Oil wet ROZs can have appearance of producible, mobile oil	Pervasive dolomitization, 30-40% residual oil, variable Rws make Archie calculations difficult	
1B	Core Observation & Testing Clues	Core Examination 1	Leached/recrystallized molds	Not unusual / No significance	Recrystallization and Leaching during MNW*	Recrystallization of fossil structure into casts
		Core Examination 2	Sulfur Crystals	Diagenesis - no interpretation	Free sulfur presence likely due to conversion of anhydrite to calcite (anaerobic SRBs)	Conversion by Sulfate reducing bacteria resulting in free sulfur
		Core Testing 3	So Values Ranging from 5%-20%	Loss of mobile oil due from in-situ pressure to lab	Flushed mobile oil - all MNW* residual oil	Mixed wet MPZs altered to oil wet ROZs and preserved Sorw saturations of 30-40% then degassed when brought to the surface and lab yielding 5-30% So values
		Core Testing 4	Matrix Densities of 2.8 gpcc	Early stage & burial stage diagenesis to dolomite	Early and burial diagenesis to dolomite with a significant overprint of late stage diagenesis	Microbial converted anhydrite (2.97 gpcc) and Mg-rich water sweep calcite (2.71) to dolomite (2.81) dominated matrix
1C	Mud Logging Clues	Mud Logging - 1	Cut in samples	Transition Zone / MPZ Remnant	Oil saturation present	Residual Oil Saturation is present
		Mud Logging - 2	Dull gold fluorescence in samples	Transition Zone / MPZ Remnant	"Water washed" oil	Indicative of Mother Nature's Waterflood. Removal of mobile oil
		Mud Logging - 3	Odor in samples	Transition Zone / MPZ Remnant	Oil saturation present	Indicative of residual oil remaining from Mother Nature's Waterflood
		Mud Logging - 4	Vertically decaying gas show	Transition Zone / MPZ Remnant	ROZ interval with less Pore Volume Sweep	Significant Lateral Sweep of MNWs* removes light ends and fluorescing components in the residual oils
		Mud Logging - 5	"Free" Sulfur crystals	No significance	Suggests MNW* flushing at top or base of ROZ	Result of activity of Sulfate Reducing Bacteria. Indicates Meteoric Derived Flushing.

\* MNW = Mother Nature's Waterflood, ROZs = Residual Oil Zones, MPZs = Main Payzones

\*\* all sediments and rocks undergo diagenetic changes when subject to burial. The ROZ diagenesis covered here is consists of an "overlay" and furtherance to those rock changing processes.

The overlaid diagenesis requires the nutrients (oil) for the microbial induced changes to the rock and indirectly demonstrates the presence of residual oil

**EXHIBIT C-4**

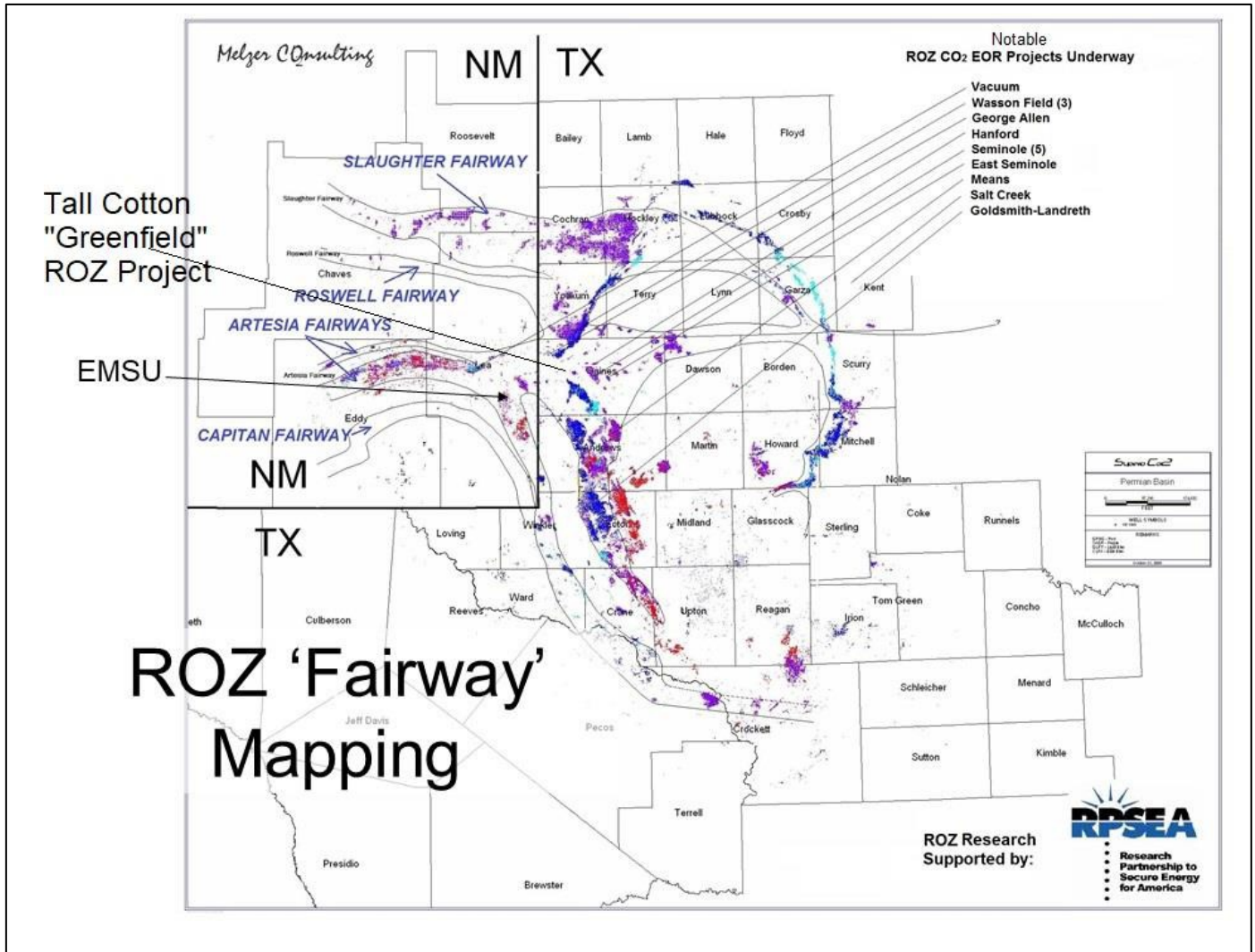
**ON-GOING ROZ CO<sub>2</sub> EOR PROJECTS  
IN THE PERMIAN BASIN REGION OF THE U.S.**

*Melzer Consulting*  
as of Jan 2022

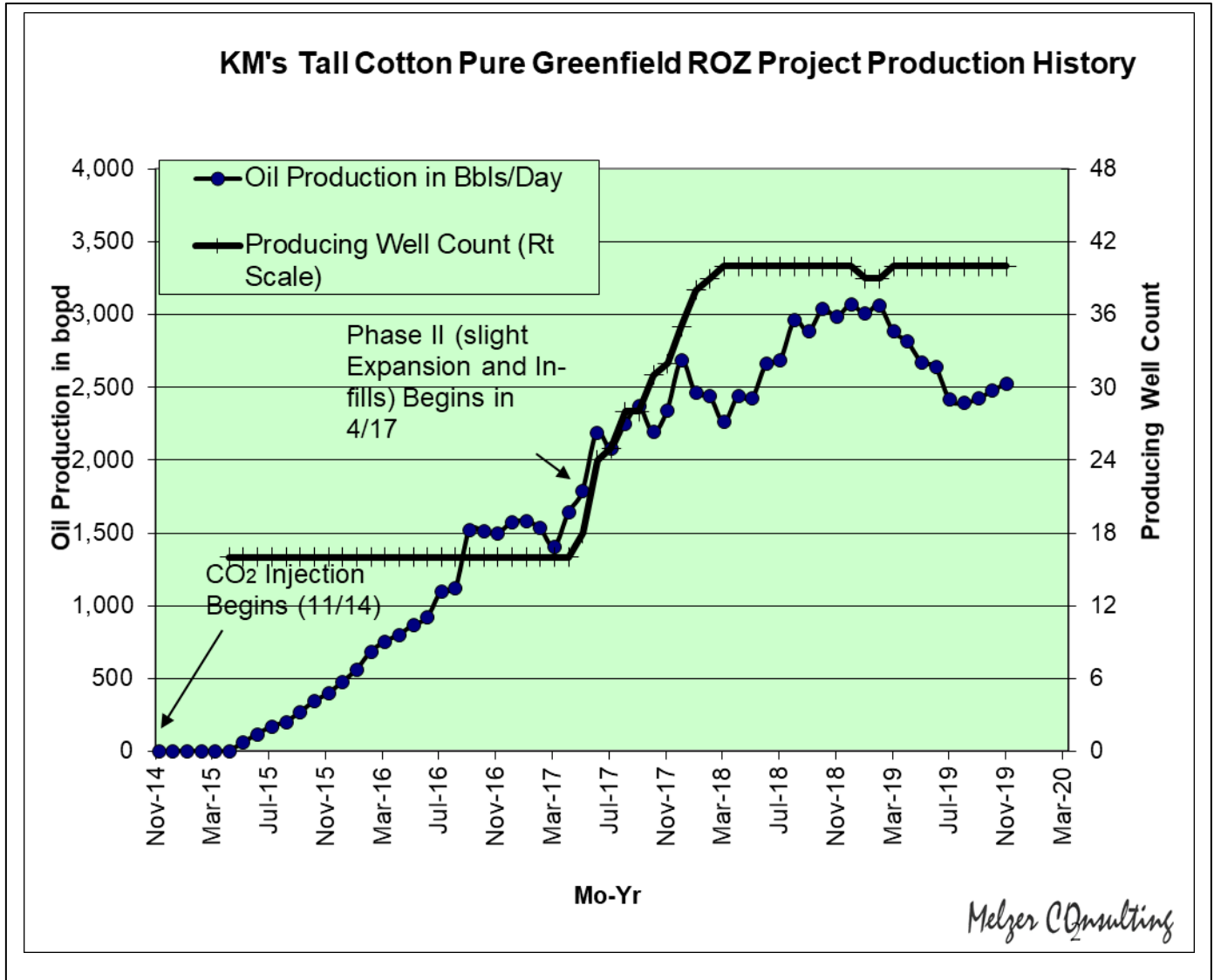
Type and operator	Field	State	County	Top MPZ		Lithology	MPZ Start date	MPZ Start Date	ROZ Start Date	ROZ Well Spacing (acres)	Strategy
				Depth, (ft)	Pay zone						
1	CapturePoint	Tex	Gaines	5,400	San Andres	Dolo.		1/13	1/13		Commingle
2	CapturePoint	Tex	Yoakum	4,900	San Andres	Dolo.	12/12	12/12	2012		Deepen&Drill
3	Fasken	Tex.	Gaines	5,500	San Andres	Dolo.	7/86	7/86	8/09		Commingle
4	Kinder Morgan CO2 Co	Tex.	Ector	4,200	San Andres	Dolo.	8/09	8/09	8/09	40	Commingle
5	Kinder Morgan CO2 Co	Tex.	Gaines	n/a	San Andres	Dolo.		n/a	11/14		Green Field ROZ
6	Kinder Morgan CO2 Co	Tex.	Gaines	n/a	San Andres	Dolo.		n/a	11/16		Green Field ROZ
7	Maverick Permian LLC	NM	Lea Co.	4,500	San Andres	Dolo.		1994	2015		Commingle
8	Morningstar Operating LLC	NM	Lea Co.	4,550	San Andres	Dolo.	2007	20015	2015		Commingle
9	Morningstar Operating LLC	NM	Lea Co.	4,550	San Andres	Dolo.	2007	2007	2007		Commingle
10	Occidental Petroleum	NM	Lea Co.	4,200	San Andres	Dolo.		3/03	2016		Commingle
11	Occidental Petroleum	Tex.	Kent	6,300	Canyon Reef	LS		Jun-05	1996		Commingle
12	Occidental Petroleum	NM	Lea Co.	4,200	San Andres	Dolo.		7/15	2018?		Commingle
13	Occidental Petroleum	Tex.	Hockley	4,950	San Andres	Dolo.		2018?	2018?		Deepen (Dedicated*)
14	Occidental Petroleum	Tex.	Yoakum	5,250	San Andres	Dolo.	6/95	6/95	2000		Commingle
15	Occidental Petroleum	Tex.	Yoakum	5,200	San Andres	Dolo.	4/83	4/83	1995**		Commingle
16	Occidental Petroleum	Tex.	Yoakum	5,200	San Andres	Dolo.		Nov-84	2005?		Commingle
17	Occidental Petroleum	Tex.	Gaines	5,500	San Andres	Dolo.	7/83	7/83	7/96	80	Commingle
18	Occidental Petroleum	Tex.	Gaines	5,500	San Andres	Dolo.	7/83	7/83	4/04	40	Deepen (Dedicated*)
19	Occidental Petroleum	Tex.	Gaines	5,500	San Andres	Dolo.	7/83	7/83	10/07	80	Commingle
20	Occidental Petroleum	Tex.	Gaines	5,500	San Andres	Dolo.		7/83	5/11	80	Commingle
21	Occidental Petroleum	Tex.	Gaines	5,500	San Andres	Dolo.		7/83	7/13		Commingle
22	Occidental Petroleum	Tex.	Gaines	5,500	San Andres	Dolo.		7/83	7/13		Commingle
23	ExxonMobil	Tex	Andrews	4,500	GrBrg/San Andr	Dolo.		Nov-83	1/12	40	Commingle
24	ExxonMobil	Tex	Andrews	4,500	GrBrg/San Andr	Dolo.		Nov-83	7/15		Commingle



### EXHIBIT C-5



### EXHIBIT C-6

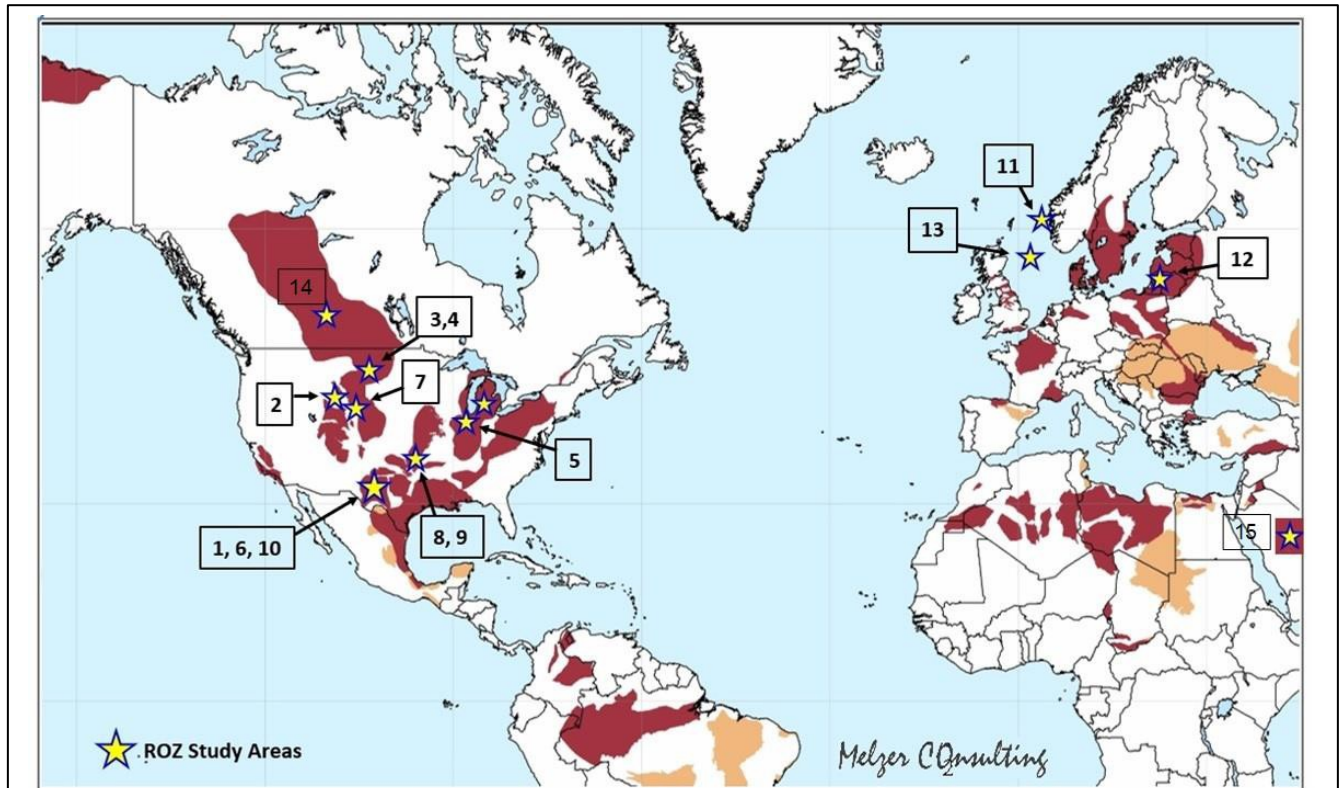


**EXHIBIT C-7**

<b>County by County San Andres Greenfield ROZ Study (LSM, ARI, RPSEA II/DOE)</b>							
<b>PB Texas</b>	County mi <sup>2</sup>	County Size (Acres)	ARI Est ROZ Acreage (Acres)	ARI TOTAL ROZ OIP Million bbls	ARI HIGHER QUAL ROZ OIP, Million bbls	15% OIL Recovery Factor Million bbls	20 Net Util Factor (mcf/Bbl) = Storage Vol (bcf)
Gaines	1,503	961,920	858,000	45,500	35,400	5,310	106,200
Yoakum	800	512,000	421,000	20,700	16,100	2,415	48,300
Terry	891	570,240	549,000	17,940	10,600	1,590	31,800
Dawson	902	577,280	562,000	27,770	14,610	2,192	43,830
Andrews	1501	960,640	657,600	37,130	31,230	4,685	93,690
<b>PB 5-County Area</b>			3,047,600	149,040	107,940	16,191	323,820 or 323.8 tcf or 16.2 billion Metric Tons of CO <sub>2</sub>

### EXHIBIT C-8

### Worldwide Residual Oil Zone Study Areas



Map ID	Basin name	Area name	Reservoir name(s)	Reservoir lithology(ies)
ROZ #1	Permian, W. TX, SE NM	ROZ Greenfields <sup>3</sup>	San Andres Dolomite	Carbonate (Dolomite, Ls)
ROZ #2	Big Horn, WY	ROZ Greenfields <sup>3</sup>	Tensleep	SS
ROZ #3	Williston (No Dak)	ROZ Greenfields <sup>3</sup> Cedar Creek Anticline	Red River	SS
ROZ #4	Williston (So Dak)	ROZ Greenfields <sup>3</sup> Cedar Creek Anticline	Madison Group & Mission Canyon	Limestone
ROZ #5	Illinois	ROZ Greenfields <sup>3</sup>	Cypress	SS
ROZ #6	Permian, W. TX, SE NM	ROZ Greenfields <sup>1</sup>	Delaware Mtn Group	SS
ROZ #7	Powder River	ROZ Brownfields <sup>2</sup>	Minnelusa	Carbonate (Dolomite, Ls)
ROZ #8	MidContinent (OK & KS)	ROZ Brownfields <sup>1,2</sup>	Red Fork	SS
ROZ #9	MidContinent (OK)	ROZ Brownfields <sup>2</sup>	Hunton	Carbonate (Dolomite, Ls)
ROZ #10	Permian, SE NM	ROZ Greenfields <sup>1</sup>	Yeso	Carbonate (Dolomite, Ls)
ROZ #11	North Sea	Troll (Norwegian Sector)	Viking Group (Jurassic)	Sandstone
ROZ #12	Baltic Syncline	Pocia	Vilkyciai	Sandstone
ROZ #13	North Sea	Pierce (Central Graben)	Palaeocene Sandstone and Chalk	SS
ROZ #14	Alberta	ROZ Brownfields <sup>2</sup>	Late Devonian	SS
ROZ #15	Persian Gulf	ROZ Brownfield <sup>1</sup>	Jurassic	Limestone

Tab 4.

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

**APPLICATIONS OF GOODNIGHT MIDSTREAM  
PERMIAN, LLC FOR APPROVAL OF  
SALTWATER DISPOSAL WELLS  
LEA COUNTY, NEW MEXICO**

**CASE NOS. 23614  
23615  
23616  
23617**

**SELF-AFFIRMED STATEMENT OF FRANK J. MAREK**

1. My name is Frank J. Marek. I am a registered professional engineer in Texas, and currently Senior Vice President of William M. Cobb & Associates, in Dallas Texas. I obtained a Bachelor’s Degree in Petroleum Engineering in 1977 from Texas A&M University. I have held leadership positions in industry organizations including the Society of Petroleum Engineers and the Society of Petroleum Evaluation Engineers. A copy of my resume is attached as Exhibit D-1. I have not previously testified before the New Mexico Oil Conservation Division.

2. I have been involved with numerous carbonate waterfloods in the Permian Basin since the early 1980’s. I also have significant experience with CO2 tertiary oil recovery projects in the area. This includes projects in Lea and Eddy Counties, New Mexico. I have specific experience with the Eunice Monument South Unit (“EMSU”) through a study my firm prepared in August 1987. The study evaluated the waterflood potential of the EMSU based on 80 acre well spacing, which was current at the time. I was also involved in an April 1988 follow up study that investigated the potential for infill drilling to 40 acre spacing and waterflooding on 80 acre 5-spot patterns.

3. I have been asked to evaluate the impact of saltwater disposal (“SWD”) operations within the San Andres interval at the EMSU, located in Lea County, New Mexico. The EMSU is a secondary oil recovery project (waterflood) formed in 1984. The unitized interval at EMSU is defined 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 at -100 foot subsea datum, whichever is higher.”

This captures the entire Grayburg and San Andres interval.

Exhibit D

WILLIAM M. COBB & ASSOCIATES, INC.

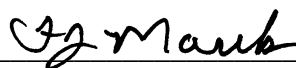


4. Exhibits D-2 through D-4 present cross sections showing well logs for the Goodnight Ryno SWD #1 well, EMSU #679, EMSU #660, and the R. R. Bell #4 well. The NuTech processed log for the Ryno SWD #1 well shows oil saturation throughout the entire San Andres interval, top to base. Current perforations are shown on all of the well logs. Clearly, water is being disposed of (injected into) the unitized San Andres interval. Although water injection into the Ryno SWD #1 well is structurally deeper than producing perforations in nearby wells, water is being injected into a documented residual oil zone (“ROZ”). The high-water disposal rates will cause higher pressures in the ROZ, and higher potential for hydraulic fracturing and vertical communication, all of which will impair Empire’s ability to produce hydrocarbons from the ROZ.

5. Based on my many years of experience and the above analysis, it is my opinion that Goodnight’s proposed injection of produced water into the unitized interval will detrimentally impact Empire’s ability to recover hydrocarbons from the ROZ and therefore result in waste of oil and gas. As a result, such water disposal should not be allowed at the EMSU.

6. I understand that this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date identified next to my signature below.

**WILLIAM M. COBB & ASSOCIATES, INC.**  
Texas Registered Engineering Firm F-84



Frank J. Marek, P.E.  
Senior Vice President



**Date: 10/16/2023**

**EXHIBIT D-1**  
**Frank J. "Deacon" Marek**

**EDUCATION:** B.S., Petroleum Engineering  
Texas A&M University, May 1977

**WORK EXPERIENCE:**

*1985 - Present*

*William M. Cobb & Associates, Inc.*

*Technical Advisor / Senior Vice*

*President*

- Specializes in oil, gas, and CO<sub>2</sub> reserve evaluation and economic analysis, waterflood and CO<sub>2</sub> EOR feasibility and performance analysis, and reservoir simulation studies
- Conduct in-house workshops to assist clients in evaluating waterflood potential
- Considerable experience in providing reserve and economic evaluations of offshore oil and gas properties located in the Gulf of Mexico, including deep water projects

*1982 - 1985*

*Cornell Oil Company*

*Reservoir Engineering Manager*

- Responsible for surveillance and reservoir management of a 5,000 BOPD West Texas waterflood and a smaller Oklahoma waterflood
- Developed economic analysis of an anticipated CO<sub>2</sub> project for the West Texas property which included CO<sub>2</sub> supply alternatives, CO<sub>2</sub> transportation, field production performance, and infill drilling
- Responsible for reservoir engineering and economic evaluation of exploration prospects
- Developed annual internal reserve reports and supervised preparation of external, third-party, company reserve reports

FRANK J. MAREK  
PAGE 2

***1981 - 1982***

***Buttes Resources Company  
Rocky Mountain District Engineer***

- Responsible for all operations in Montana, Wyoming, and Colorado, including management and surveillance of certain waterflood and polymer flood projects
- Designed and recommended development and exploration wells, well completions, and well workovers

***1977 - 1981***

***Hughes & Hughes Oil & Gas  
Petroleum Engineer***

- Prepared company's annual reserve report
- Evaluated drilling prospects
- Designed and analyzed pressure transient well tests
- Developed internal petroleum economics computer model
- Responsible for the design and implementation of development and exploration drill wells, new well completions, and workovers

**TECHNICAL AND PROFESSIONAL SOCIETIES:**

- Society of Petroleum Engineers - International (SPEI)
  - Management & Information Awards Committee 2003; Chairman, 2004
  - Economic and Evaluation Award Committee, 2002
  - Admissions Committee, 1994-1995
- Society of Petroleum Engineers – Dallas Section (SPE)
  - Chairman, 2004-2005
  - Hydrocarbon Economics & Evaluation Symposium

FRANK J. MAREK  
PAGE 3

- General Chairman, 1999
- Arrangements Chairman, 1997
- Arrangements Committee, 1995
- Program Committee, 1989
  
- Dallas Section Membership Chairman, 1993-1994
- Dallas Section Arrangements Chairman, 1991-1993
- Dallas Section Continuing Education Chairman, 1990-1991
- Dallas Section Secretary, 1989-1990
  
- Society of Petroleum Evaluation Engineers (SPEE), Dallas Chapter
  - Chairman 1993-1994
  - Membership Chairman, 1994-1995
  - Secretary and Treasurer, Dallas Chapter, 1991-1993

**HONORS AND AWARDS:**

- SPE Regional Service Award, 2007
- SPE Dallas Section Outstanding Engineer Award, 2005
- SPE Dallas Section Service Award, 1994

**REGISTRATION:**

- Registered Professional Engineer, State of Texas

**PUBLICATIONS:**

- Cobb, W.M., and Marek, F.J.: "Determination of Volumetric Sweep Efficiency in Mature Waterfloods Using Production Data." Presented at SPE Annual Technical Conference and Exhibition, San Antonio, Texas, October 5-8, 1997 SPE 38902.

FRANK J. MAREK  
PAGE 4

- Cobb, W.M., and Marek, F.J.: “Net Pay Determination for Primary and Waterflood Depletion Mechanisms.” Presentation at 1998 SPE Annual Technical Conference and Exhibition, New Orleans, Louisiana, September 27-30, 1998 SPE 48952.

#### **TECHNICAL PRESENTATIONS:**

- “Waterflood – A Tried and True Technique for Secondary Oil Recovery” presented to:  
NAPAC Conference, Dallas, TX, May 2012  
Austin Bar Association Oil, Gas and Mineral Section, Austin, TX, October 2012
- “Waterflood Evaluation...In A Hurry” presented to:  
SPEE Midland Chapter, Midland, TX., January 6, 2009.  
Dallas Wildcatter’s Luncheon Meeting, Dallas, TX., May 29, 2008.  
The SPE East Texas Section, Tyler, TX., November, 2005.  
The SPE North Texas Section in Wichita Falls, TX., April 2005.
- “Tertiary Oil Recovery Processes” presented to:  
NAPAC Convention, Dallas, TX., May 2001.
- “Due Diligence In Petroleum Property Evaluation” presented to:  
Desk and Derrick Society, Dallas, TX. September 2000.  
NAPAC Convention, Dallas, TX., May 2000.

#### **COMMUNITY INVOLVEMENT**

- Director and Secretary for Retina Foundation of the Southwest (RFSW), 2009 to 2018. The RFSW is an Eye Research Institute in Dallas, focusing on finding treatment and cures for debilitating diseases of the eye.

03/13

FRANK J. MAREK  
PAGE 5

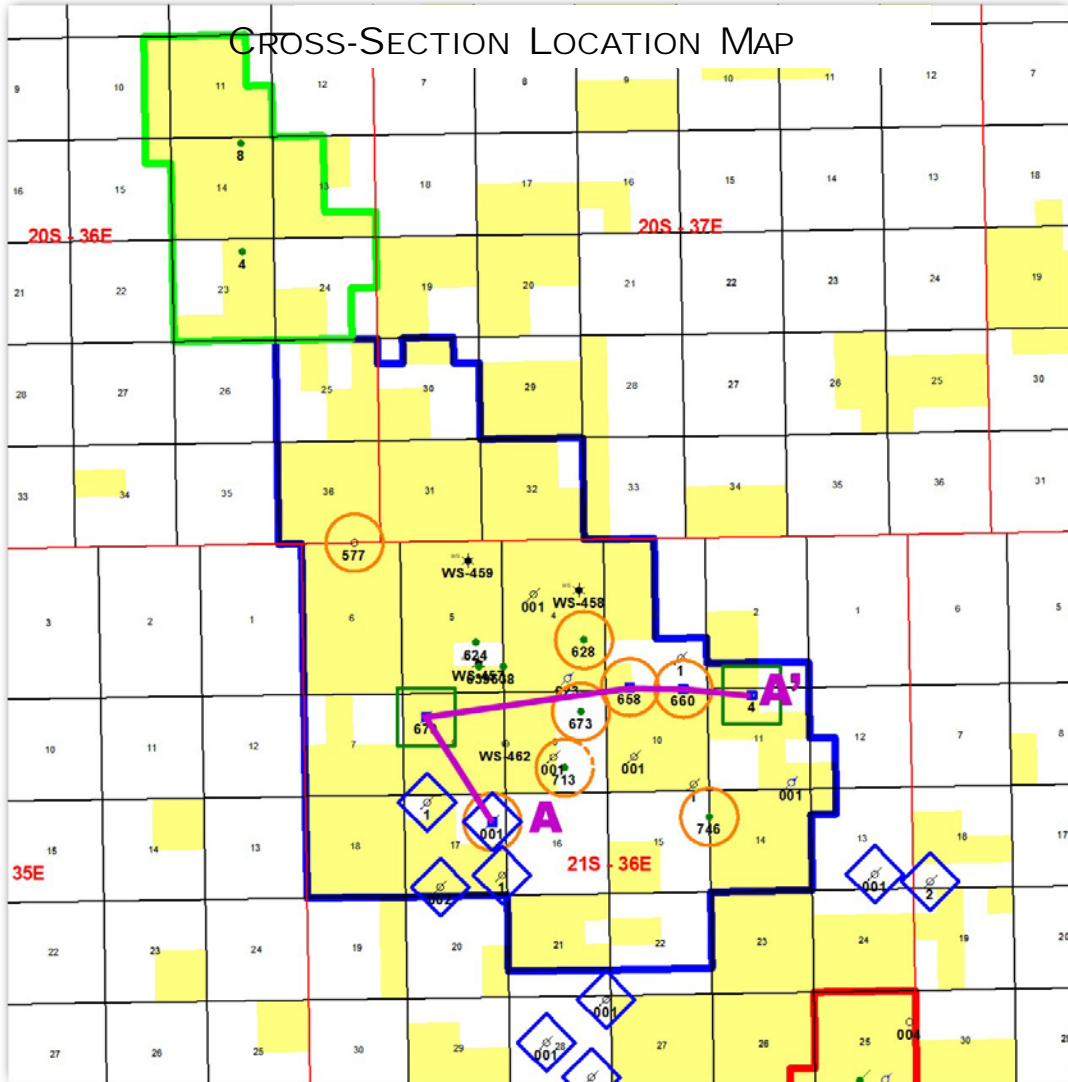


EXHIBIT D-2

WILLIAM M. COBB & ASSOCIATES, INC.



EXHIBIT D-3

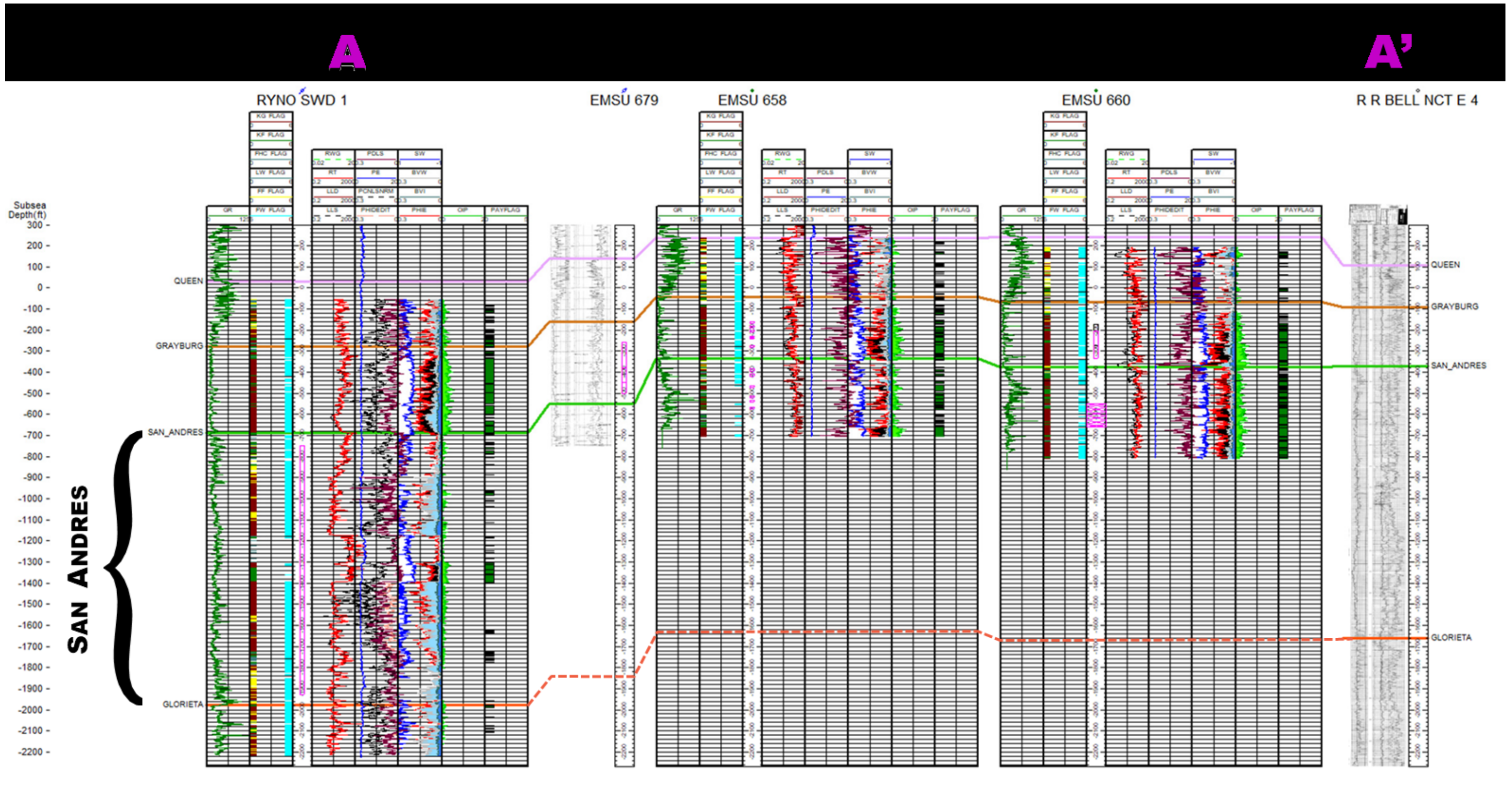
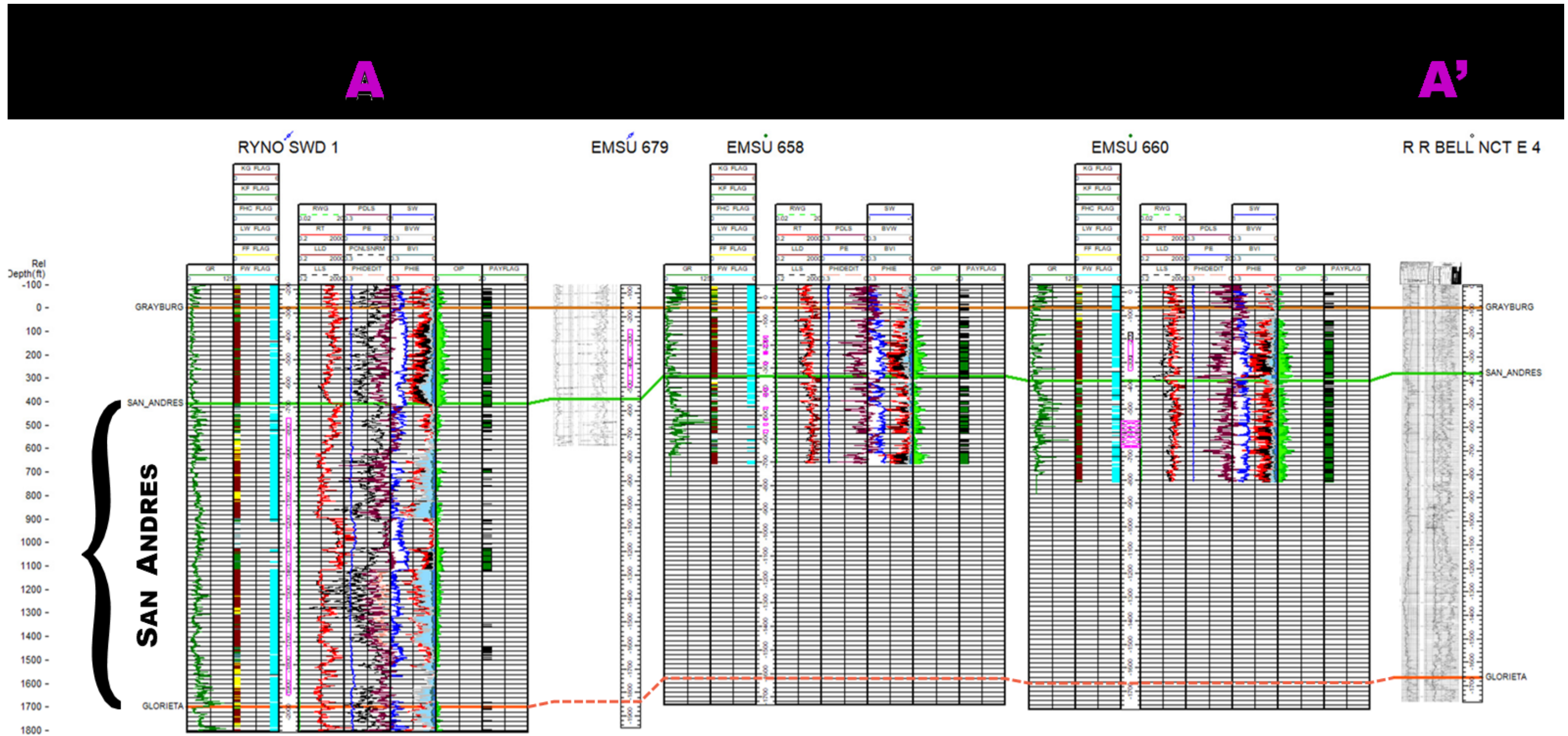




EXHIBIT D-4



Tab 5.

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

**APPLICATION OF GOODNIGHT MIDSTREAM  
PERMIAN, LLC FOR APPROVAL OF FOUR  
SALTWATER DISPOSAL WELLS  
LEA COUNTY, NEW MEXICO**

**CASE NOS. 23614  
23615  
23616  
23617**

**SELF-AFFIRMED STATEMENT OF GALEN DILLEWYN**

1. My name is Galen Dillewyn. I have been recognized as an expert in subsurface characterization. I was awarded a Bachelor of Science degree in Chemical Engineering from Texas Tech University in May 2000. Since July 2009, I have worked as an engineer for NUTECH Energy Alliance in Houston, Texas, supporting geological, petrophysical, completion engineering and optimization, and reservoir engineering services. This includes but is not limited to exploration of new fields and plays and development of existing fields.

2. In the present case, NUTECH analyzed the wireline logs on 10 wells. NUTECH was selected for this work from our technical approach to characterization and that we had done 8 wells in the field previously for XTO, who was the previous operator of the field. The only information provided by Empire Petroleum was the raw raster images of the data. NUTECH digitized the data for analysis.

3. The scope of analysis was to determine reservoir quality, porosity, permeability, and saturations. Table 1 shows the depths analyzed and the input curves used for each analysis. For the current wells analyzed, only open hole data, data which is obtained at the time of drilling, was used. No subsequent data was provided for analysis. In the case of Wells #614 and #142 a pulsed neutron tool was run before the analysis was completed and therefore the saturations take into account the more recent data. The pulsed neutron is a tool that can obtain data after the well has had pipe run on it and is cased off.

### ATTACHMENT

Wellname	API	Field	Top Depth	Bottom Depth	Input Curves
AGU #408	30025372860000	ARROWHEAD	3500.0	4537.0	CALI, DRHO, DTC, GR, PE, LLD, LLS, MSFL, RHOB, TENS
ESMU #713	30025373210000	EUNICE MONUMENT	3182.0	4182.0	CALI, DCAL, DRHO, GR, GRC, PE, LLD, LLS, RHOB, TENS
EMSU #673	30025373200000	EUNICE MONUMENT	3324.0	4324.0	CALI, DCAL, DRHO, GR, GRC, PE, LLD, LLS, MSFL, RHOB, TENS
EMSU #660	30025373190000	EUNICE MONUMENT	3386.0	4386.0	CALI, DCAL, DRHO, GR, GRC, PE, LLD, LLS, RHOB, TENS
EMSU #577	30025373180000	EUNICE MONUMENT	3210.0	4210.0	CALI, DCAL, DRHO, GR, GRC, PE, LLD, LLS, RHOB, TENS
EMSU #658	30025372800000	EUNICE MONUMENT	3315.0	4315.0	CALI, DRHO, GR, PE, LLD, LLS, RHOB, TENS
RYNO SWD #1	30025439010000	JESS BURNER	3685.0	5847.0	DEPT, GR, CALI, MSFL, LLS, LLD, DT, PE, DRHO, DPHI, NPHI, DEPTH, CALI, DRHO, DT, GR, NPHI, PE, DPHI, LLD, LLS, MSFL
EMSU #746	30025373560000	EUNICE MONUMENT SOUTH	3630.0	5368.0	DEPT, PE, GRD, NPOR_LS, CALD, DCOR, RHOB, TENS, LLD, LLS, MGuard, DEPTH, CALD, DCOR, GRD, LLD, LLS, MGuard, NPOR_LS, PE, RHOB, TENS
EMSU #628	30025372790000	EUNICE MONUMNET; GRAYBURG-ANDRES	3635.0	4546.0	DEPT, PE, GRD, CALD, DCOR, NPOR_LS, RHOB, TENS, MGuard, LLS, LLD, DEPTH, CALD, GRD, LLD, LLS, MGuard, NPOR_LS, RHOB, PE, TENS, DCOR
RYNO SWD #1	30025439010000	JESS BURNER	3685.0	5847.0	DEPT, GR, CALI, MSFL, LLS, LLD, DT, PE, DRHO, DPHI, NPHI, DEPTH, CALI, DRHO, DT, GR, NPHI, PE, DPHI, LLD, LLS, MSFL
EMSU #746	30025373560000	EUNICE MONUMENT SOUTH	3630.0	5368.0	DEPT, PE, GRD, NPOR_LS, CALD, DCOR, RHOB, TENS, LLD, LLS, MGuard, DEPTH, CALD, DCOR, GRD, LLD, LLS, MGuard, NPOR_LS, PE, RHOB, TENS
EMSU #628	30025372790000	EUNICE MONUMNET; GRAYBURG-ANDRES	3635.0	4546.0	DEPT, PE, GRD, CALD, DCOR, NPOR_LS, RHOB, TENS, MGuard, LLS, LLD, DEPTH, CALD, GRD, LLD, LLS, MGuard, NPOR_LS, RHOB, PE, TENS, DCOR
Eunice Monument South Unit 614	30025354530000	EUNICE MONUMENT; GRAYBURG-SAN ANDRES	2980.0	3992.0	DEPT, BSAL, CCLD, CIRF, CIRF_FIL, CURN, CURN_FIL, CRFI, CRNI, DCAL, ED, FBAC, GR, GTEM, INF, IRAT, IRAT_FIL, MWFD, ND, RSCF_RST, RSCN_RST, SBNA_FIL, SFFD, SFND, SIGM, STIT, TENS, TPHI, TSCF, TSCN, WINR_RST, WTEP, WPRE, DEPTH, DPHZ, DT, HCAL, HDRA, HLLD, HLLS, RXOZ, TNPH
Eunice Monument South Unit 142	30025044280001	Eunice Monument; Grayburg-San Andres	2900.0	4040.0	DEPT, CCLC, INF, INF_FIL, BSAL, SIBF, RSCF, MARC, RSCN, CURN_FIL, SIGM, TSCN_FIL, CIRF_FIL, TSCF_FIL, IRAT_FIL, TENS, TPHI, GR, WINR, CCLD, WPRE, WTEP

Table 1: Input data for analysis

4. NUTECH utilizes an eight-step process for analysis as indicated in Figure 1. This is known in the industry as our NULOOK analysis.

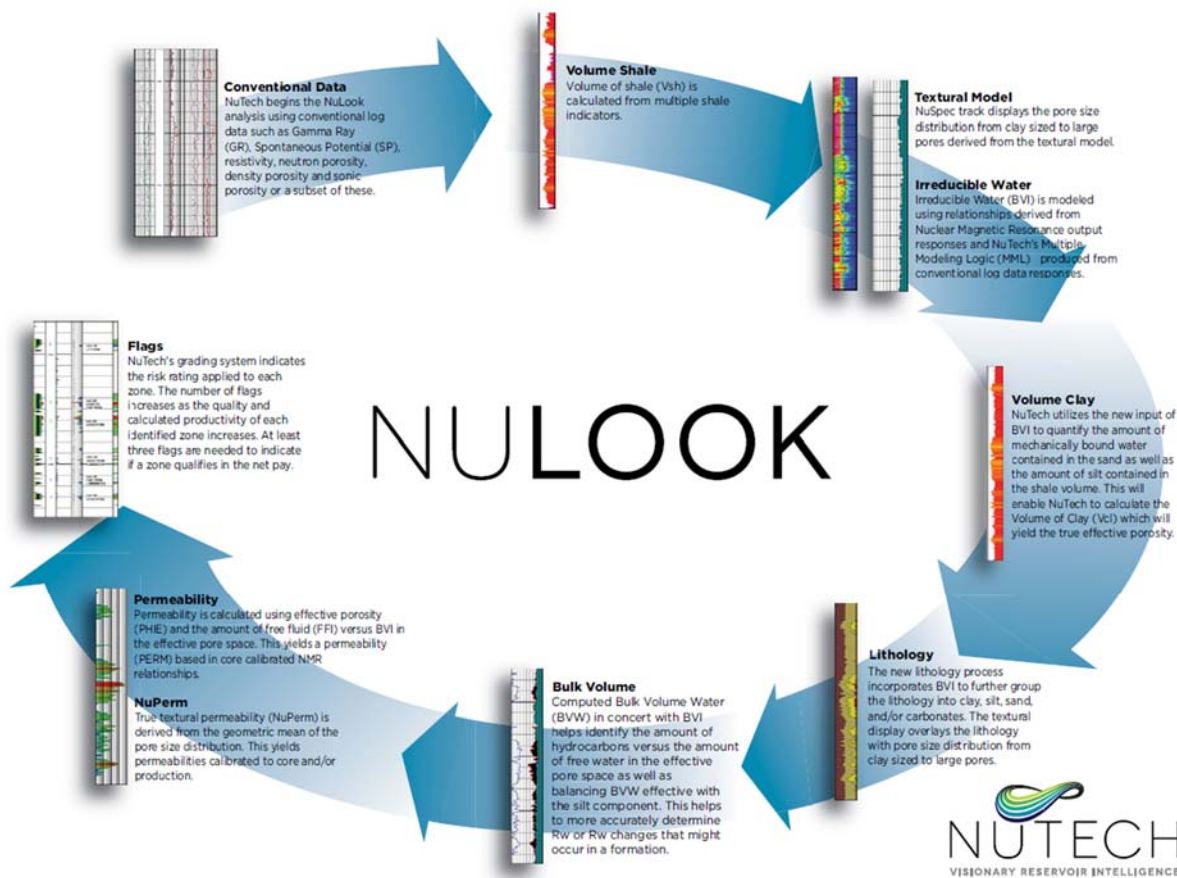


Figure 1: NULOOK Process



## ATTACHMENT

5. The NULOOK process is designed to remove analyst bias from the analysis process and let the wireline data tell the story of the subsurface.

Step 1 is to validate the data. As with any data provided not all data is of the same quality. Some of the wireline tools are run over decades and the quality of the tools is different, some boreholes are more rugous than others providing issues for the tools that require borehole contact for proper measurement. Also, different tools by different vendors are slightly different and are subject to calibration. NUTECH utilizes downhole calibrations to verify correct tool measurement and consistent tool readings.

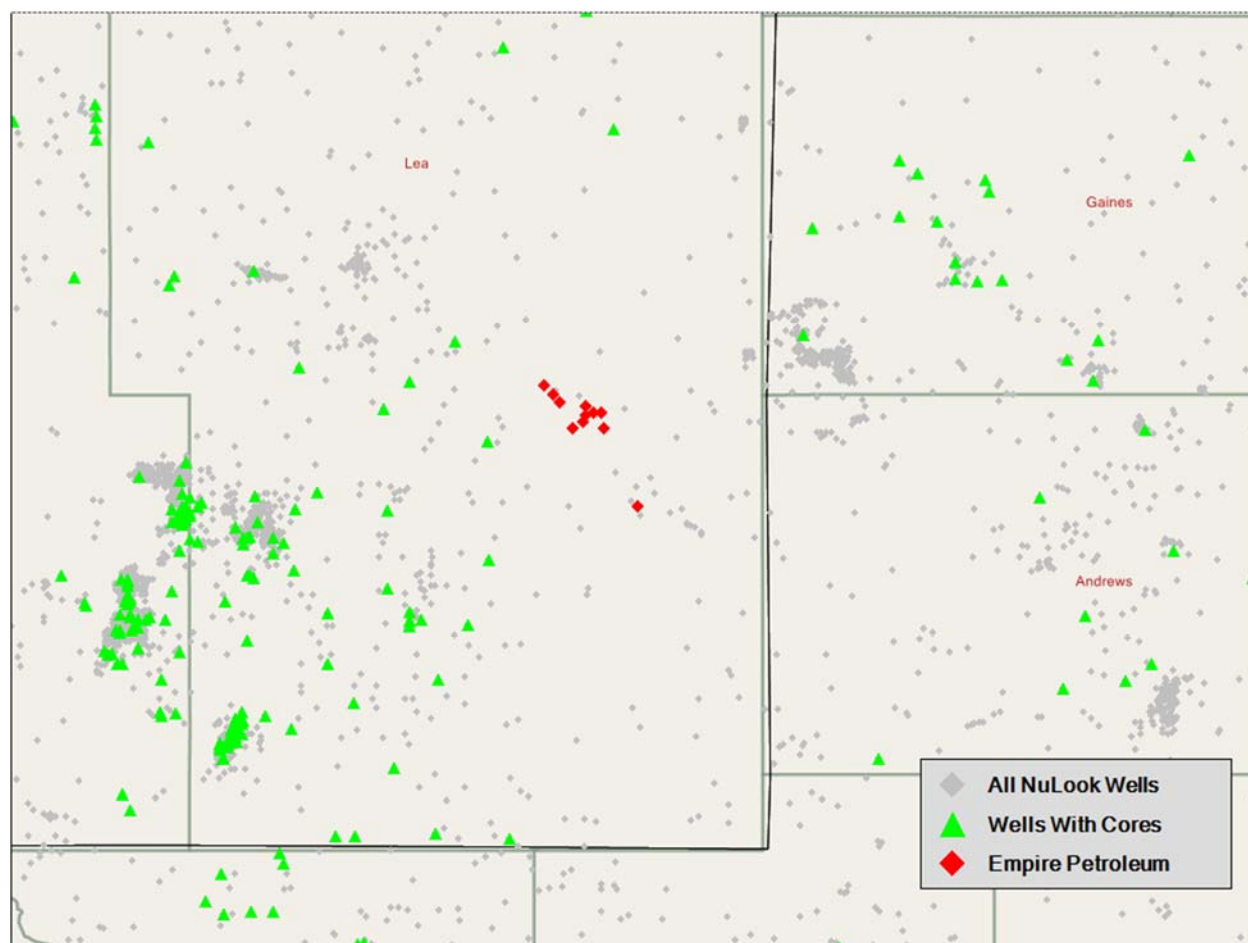


Figure 2: NUTECH wells analyzed, wells with core, and location of Empire Petroleum's analyzed wells

Step 2 calculates the volume of shale utilizing multiple indicators such as resistivity, gamma ray, spontaneous potential, and neutron-density difference.

Step 3 is where the irreducible water in the porosity is calculated.

Step 4 using the irreducible porosity from Step 3 the amount of clay can be determined.



## ATTACHMENT

Step 5 calculates the lithology in a volumetric basis. A variety of methods depending on the input data available are used. The primary method is the photoelectric effect (PE) curve. If mudlogs are available with descriptions that will also be utilized in a qualitative manner.

Step 6 is where the effective porosity is determined. This result is the same as core measured porosity. Once this is determined the water saturation is also calculated. A modified Simandoux equation is used for water saturation.

$$SW \cong \left\{ \left( \frac{a \cdot R_w}{\phi^m} \right) \left( \frac{1}{R_t} - \frac{V_{sh}}{R_{sh}} \cdot SW_{\text{guess}} \right) \right\}^{(1/n)}$$

Figure 3: Modified Simandoux equation

Step 7 has permeability calculated. In this instance a Timur Coates free fluid permeability equation is utilized.

$$K = \left( \frac{C \times \phi^{2W}}{W^4 \times (R_w/R_{tirr})} \right)^2$$

Figure 4: Timur Coates Free Fluid Permeability Equation

Step 8 is the ranking of pay using predetermined thresholds. Every log analyzed has the flag cutoffs and any other parameters used in the analysis listed in the log header.

6. The two formations analyzed were the Grayburg and the San Andres. An example of the work is in Exhibit D-2. The Resistivity of the Water (RW) used was 0.4 ohm @ 75 degF. This was balanced in the reservoir above the Grayburg and in the evaporite sequence above that. The San Andres and Grayburg are primarily a dolomitic rock with some interspersed limestones. Both formations show evidence of hydrocarbon saturation. The work done on the 2 wells with pulsed neutron data shows that hydrocarbon sweep has occurred in areas where the waterflood is active but that the sweep has not been 100% effective with intervals of no sweep having occurred. A curve description of all of the output work is included in Exhibit D-1. Of the 10 wells, 7 covered substantial portions of the San Andres interval and in each of the seven there is evidence of hydrocarbon saturation in the San Andres as shown in Figure 6 in Exhibit D-2.

Galen Dillewyn  
VP Business Development  
NUTECH Energy Alliance

I understand this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date next to my signature below.

  
\_\_\_\_\_  
Signature

10/26/23  
\_\_\_\_\_  
Date

## ATTACHMENT

**Galen P. Dillewyn**

4106 Pine Breeze Dr, Kingwood, Texas 77345

Telephone: (713) 857-0856

E-Mail: gdillewyn@hotmail.com

**PROFILE**

Extensive Engineering, Management, Business Development and Technical Sales experience in the Gas and Oilfield Industry: including, but not limited to: sales, wireline operations, personnel management, account management, petrophysics, completions design, geology and field optimization, SaaS development and commercialization, lateral integration across business units, and acquisition and divestiture assistance to clients.

**EDUCATION**

Texas Tech University, Lubbock, TX

Bachelor of Science in Chemical Engineering (2000)

**PROFESSIONAL EXPERIENCE****NuTech Energy Alliance****VP Business Development****2017-Present**

- Responsible for marketing and social media content
- Created the commercial interaction of the IRAD SaaS platform and handled customer support
- Added 79 client companies during COVID-19
- Acted as the lone sales person and have kept company with enough work to keep staffing levels constant for the last 36 months
- The technical liaison between clients and consultants to ensure accuracy and completeness of projects.
- Helped clients transact over \$120B worth of assets from 2016-2023

**Houston Sales Manager****2014-2017**

- Lead sales and growth in Texas
- Grew regional study sales 100%

**Area Account Manager****2009-2014**

- Responsible for liaising with clients and NuTech's technical staff to provide petrophysical interpretation, hydraulic fracture design, reservoir modeling, and core analysis products
- Represent NuTech in San Antonio, Corpus Christi, Austin, College Station, Dallas, and Houston
- Accountable for over \$4MM in sales per annum (25% of company total)

**Schlumberger Technology Corporation****2000 - 2009****Dedicated Sales Account Engineer, Houston TX****2008-2009**

- Coordinated and resolved quality-related issues, contract renegotiation, account maintenance, and opportunity exploitation
- Increased revenue from \$8.2MM to \$13.2MM and saved ExxonMobil more than \$10MM in completion costs thru implementation of new technology

**Operations Manager, Abilene, TX****2006-2008**

**ATTACHMENT**

- Oversaw day-to-day in 21 counties
- Managed and reviewed financial performance including P&L statement, asset allocation, inventory management, and procurement (successfully grew the location from 18 to 45 individuals including 2 Sales Engineers, a safety officer, and 10 field engineers.
- Managed personnel, including performing quarterly evaluation, mentoring, hiring/firing, and training
- Coordinated internal audits, special investigations, emergency plans, and business continuity plans
- Accomplishments:
  - Increased Revenue generation from \$4.3MM to \$13.6MM through increased sales, market share, and increased productivity and increased net from 18% to 28%
  - Awarded the North American Service Quality Award in 2008

**General Field Engineer, Houston, TX****2001-2005**

- Performed evaluation, inspection, and completion services for oil and gas well evaluation in the Gulf of Mexico
- Radiation Safety Officer responsible for regulatory management of radioactive material, employee training, and management consultation
- Led Quality Steering Committee to investigate and report trends, failures, and limit lost time
- Accomplishments:
  - Rewrote the wipe test procedures for radioactive sources for Schlumberger's Radiation Manual
  - Completed 2 Texas State Dept of Health audits with no violations
  - Exceeded operating efficiency of 99.9% during offshore tenure

**Field Engineer, Laurel, MS****2000-2001****Junior Field Engineer, Belle WV****2000****PROFESSIONAL ASSOCIATIONS & TRAINING**

---

- Houston Geological Society
- SPE
- Basic Geology
- Advanced Petrophysics
- Hydraulic Fracturing
- Reservoir Modelling
- Imaging and down hole sonic applications
- Nuclear Regulatory Commission and Auditing
- Production Logging and interpretation
- Perforation and Optimization
- Finance Training for Non-Financial People & Advanced Finance
- Incident Investigation Training
- Regulatory Risk Management
- Management Essentials
- Management Seminar on motivation and retention
- Trade Control and Compliance
- Bid and Sales Management
- Presenter at AAPG "Making Money with Mature Fields" 2016

## ATTACHMENT

- Presenter at SIPES “The New Austin Chalk” 2016

### **COMPUTER SKILLS**

---

Computer skills include but are not limited to Windows, MS Office Suite, SAP, Powerlog, and Petra

### **REFERENCES**

---

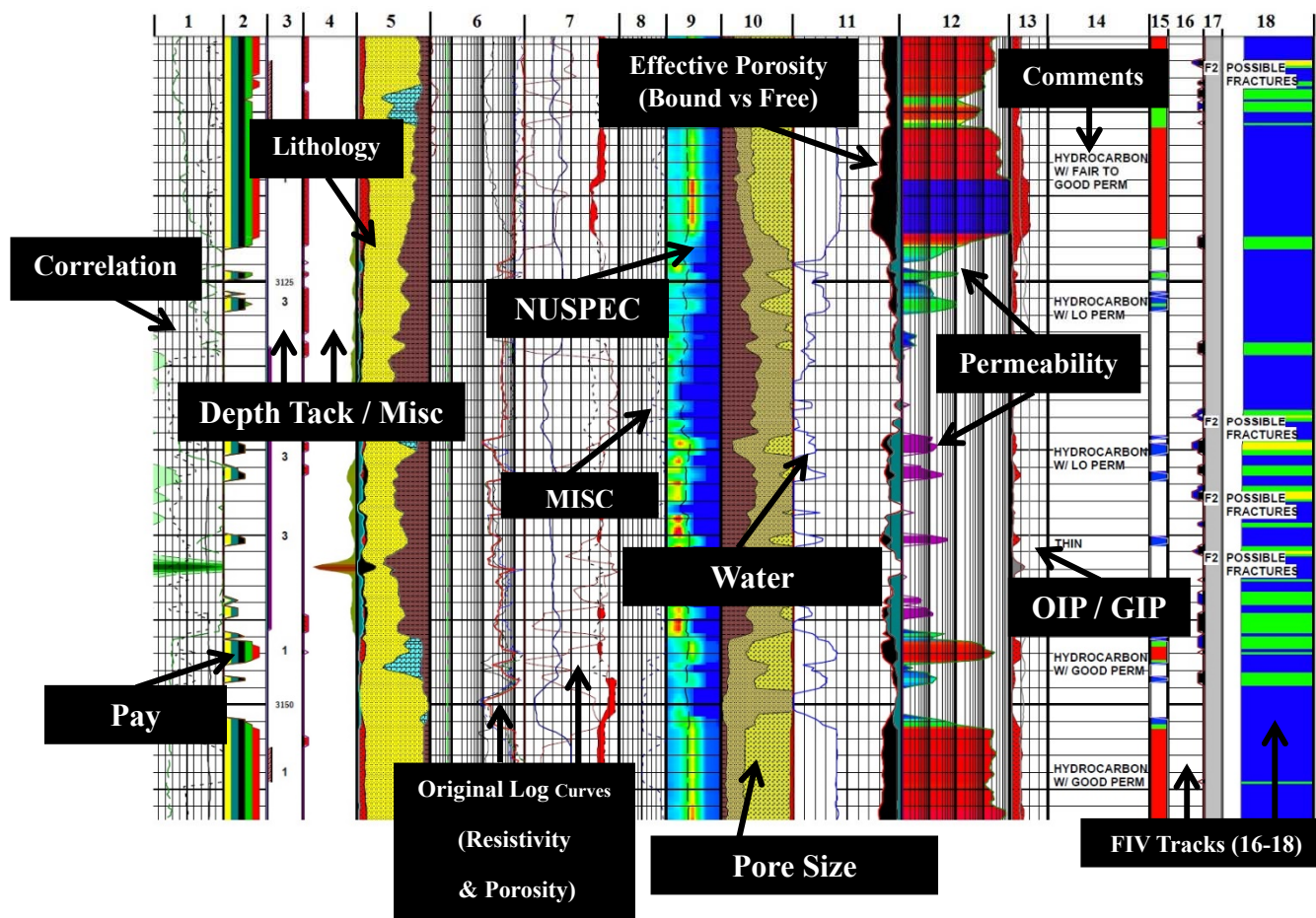
Available upon request



ATTACHMENT

EXHIBIT E-1

NULOOK™ WITH SHALE VISION TRACK DESCRIPTIONS



**Track 1 – Correlation:** This is the original log data and includes SP, Gamma Ray, and Caliper. GR which wraps is shaded with consecutively darker shading with each wrap.

**Track 2 – Reservoir Quality Flags:**

- A yellow flag appears when the thresholds for Vclay, free fluid, and Kmin are met.
- A dark-cyan flag appears when the free water is less than the set threshold for free water production.
- A black flag appears when the volume of hydrocarbon exceeds a set percentage of effective porosity.
- A green flag appears when the permeability exceeds a Kfair threshold.
- A red flag appears when the permeability exceeds a Kgood threshold.

**Note:** The permeability threshold values are determined by area, based on client information and experience. A light-cyan flag appears on the right of the track when free water exceeds the set threshold. For intervals where Shale Vision processing is utilized, a purple flag is displayed.

**Track 3 – Depth & Miscellaneous:** Pay Rating the quality of a zone from 1 to 3. The flags in Track 2 determine the Risk Rating for the identified zones. Three flags are required for a # 3 rated zone. Four flags

## ATTACHMENT

indicate a # 2 rating. Five flags indicate a # 1 rated zone. **Numbers rated 1 are always recommended for completion.** Zones rated 2 have lesser permeability and/or possible water production, and should be considered for completion. Zones rated 3 have low permeability and/or, are water producing, and are not usually recommended. An interval with fair permeability but low hydrocarbon volume is also rated 3. If perforations are available, they are displayed in this track. In addition, the SHALE FLAG (purple bar) is placed on this track indicating an unconventional zone with Shale Vision Analysis. Lastly, any completion information (such as PERF or DST) present is flagged accordingly.

**Track 4 – Miscellaneous:** Line Tension, Caliper Flag, TOC and CORTOC are presented in this track.

**Track 5 – Lithology:** PHIE, BVI, BVW as well as Volumetric Carbonate (Lime, Dolomite, Anhydrite), Quartz (Sand, Silica), Heavy (Unconventional), and Clay (Computed & Core Volumes)

**Track 6 – Resistivity:** Resistivity data provided by the customer (Shallow, Medium, Deep)

**Track 7 – Porosity/PE:** All porosity data (neutron, density, and sonic) provided by the customer. PE is presented in this track when available. If curves are normalized or edited they are present. Porosity may be presented on a Limestone Matrix or Sandstone Matrix dependent on formation type and preference.

**Track 8 – Supplemental Data:** MicroLog curves, density correction and Mud Log data when available.

**Track 9 – NUSPECTM:** This is a variable density display of the textural pore size distribution. The textural geometric mean (dashed curve) overlaid on the VDL is used in permeability calculation. This representation is similar to the bins produced in NMR log analysis.

**Track 10 – Pore Size Distribution:** The percentages of the various pores in the matrix are displayed. Clay content is brown, silt/small pores are tan, medium pores are yellow, and large pores are red. This representation is similar to the bins produced in NMR log analysis.

**Track 11 – Volumetric Analysis:** This track contains several curves:

- Water Saturation (Sw) is presented with a scale of 1 to -1, from left to right. With this representation for Sw, the left edge of the track corresponds to 100% water saturation and the center of the track corresponds to 0% water saturation.
- Effective porosity (PHIE) is presented as a red curve in decimal equivalent porosity units. It is scaled from 0.3 to 0 (or 0.6 to 0), and is presented across the full width of the track. Bulk Volume Water (BVW) is presented as a dark-cyan curve.
- Bulk Volume Irreducible (BVI) is the light-gray curve which is enhanced with dark-cyan shading. Free water is indicated with a light-cyan shading between BVW and BVI.
- The Free Fluid Volume is the difference between BVI and PHIE.
- The volume of hydrocarbons is indicated with black shading between PHIE and BVW.

**Track 12 – Permeability:** Permeability is presented in mili-Darcys with a color spectrum trending from blue to red as permeability increases. The scaling is determined from the values selected for risk ratings and

## ATTACHMENT

depends on the basin/formation. For intervals where Shale Vision processing is utilized, the color spectrum is set to purple, indicating that SHALEPERM is being calculated in micro-Darcys.

**Track 13 – “W” & In-Place:** “W” is a varying textural parameter derived from irreducible water (BVI) and effective porosity (PHIE) that takes into account the “m” and “n” values in the saturation equation. ADGAS (Adsorbed Gas), TOTGAS(Total gas) are presented in this track or Oil-In-Place based on hydrocarbon type or preference

**Track 14 – Comments:** Petrophysical Analyst comments on an identified zone.

**Track 15 – Code:** This coding provides a quick reference for the zone ratings. (See description for Track 2.) Intervals with Five flags have a code coloring of red intervals with Four flags have a code coloring of green, which intervals with Three flags have a code coloring of blue.

**Track 16 – Fracture Track:** Fracture Density Flags.

**Track 17– Fracture Track:** Gray flag to identify FIV zone and comments.

**Track 18 – Fracture Track:** Cumulative Fracture Height.

## EXHIBIT E-2

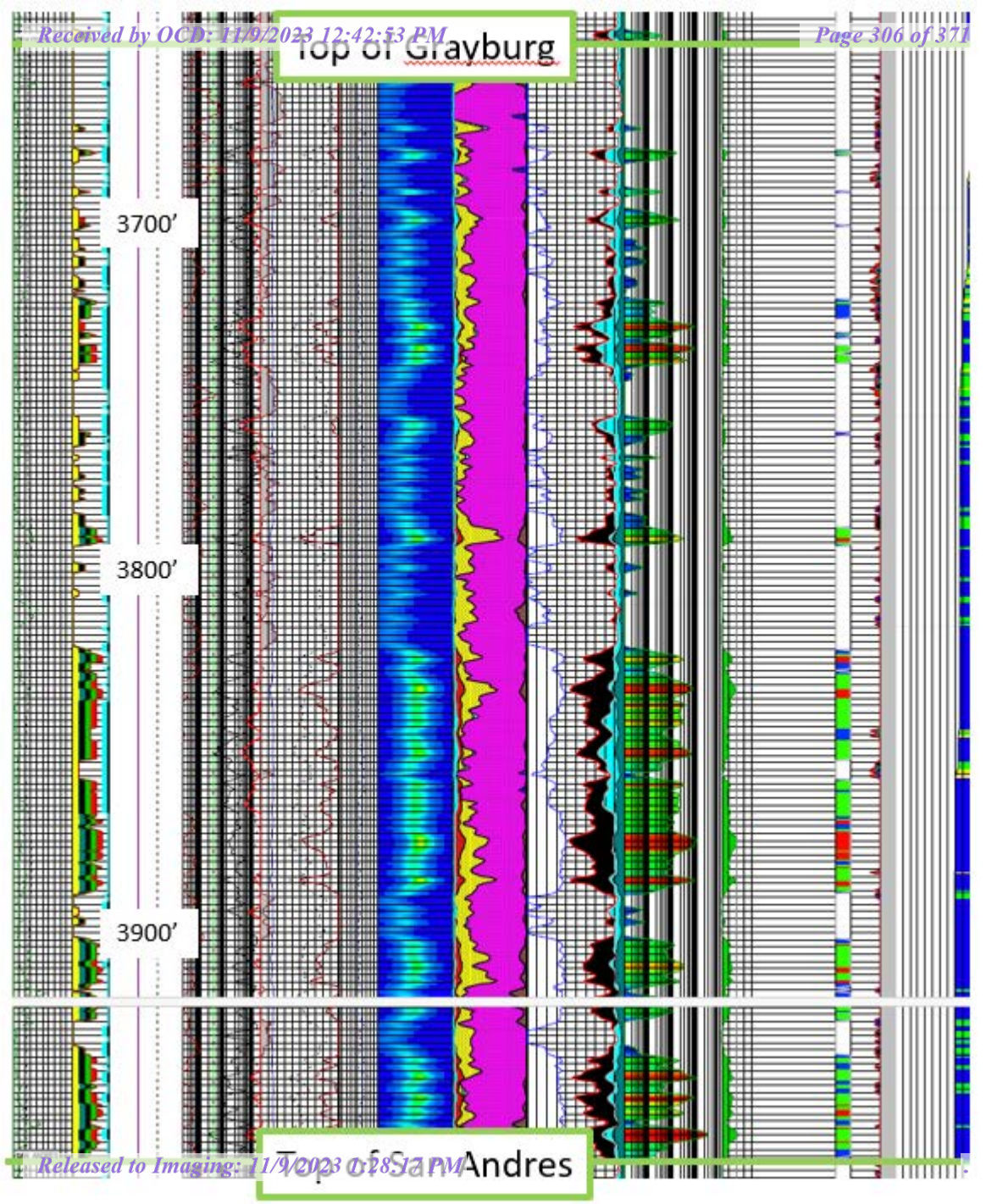


top of Grayburg

3700'

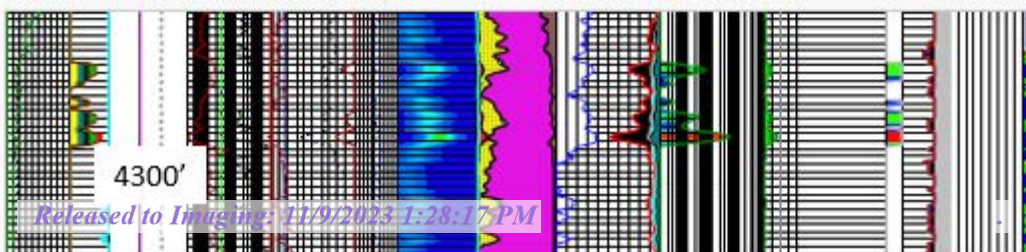
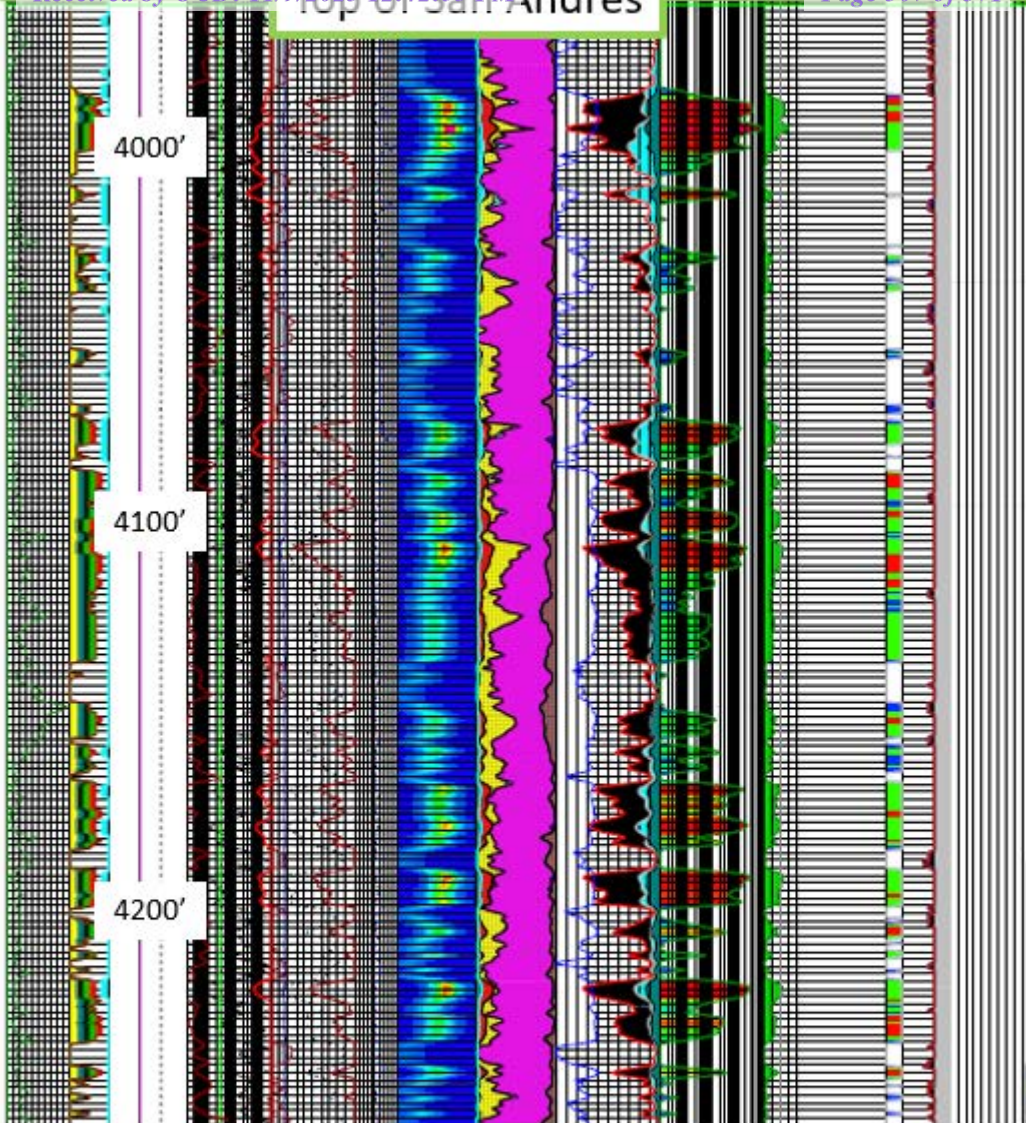
3800'

3900'





Top of San Andres





Tab 6.

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

<b>APPLICATIONS OF GOODNIGHT</b>	<b>CASE NOS.</b>	<b>23614</b>
<b>MIDSTREAM PERMIAN, LLC FOR</b>		<b>23615</b>
<b>APPROVAL OF SALTWATER DISPOSAL</b>		<b>23616</b>
<b>WELLS, LEA COUNTY, NEW MEXICO</b>		<b>23617</b>

**SELF-AFFIRMED STATEMENT OF NICHOLAS A. CESTARI**

1. My name is Nicholas Cestari. I am over eighteen years of age, have personal knowledge of the matters addressed herein, and am competent to provide this Self-Affirmed Statement. I have not previously testified before the New Mexico Oil Conservation Division (“Division”).

2. I obtained a Bachelor of Science degree in Geology from Baylor University in May 2013 and a Master of Science in Geology from the University of Kansas in May 2015. Since June 2015, I have worked as a petroleum geologist for Occidental Petroleum and now Empire Petroleum focused on the characterization, management and development of conventional oil and gas assets across the Central Basin Platform and Northwest Shelf in the Permian Basin. I have overseen drilling programs, developed pilot proposals for new secondary/tertiary floods, characterized residual oil zones within the San Andres formation across the Permian Basin, and assisted in modeling of carbonate ramp systems. A substantial portion of my work responsibility involves field level geologic characterization, mapping and well log interpretation in addition to well and development planning. I submit the following information in support of Empire’s opposition in the Goodnight saltwater disposal application.

3. In the present case, I performed a geologic review and study of the unitized interval at the Eunice Monument South Unit (“EMSU”) consisting of the Grayburg and San Andres formations.

4. As a part of my study on this matter, I have considered the following topics and prepared the exhibits referenced in the summary of each topic below:

- A. Geologic Overview of the EMSU**
- B. Cross-sections including the proposed Goodnight SWD wells and active wells showing Empire’s unitized interval (Exhibit F-1)**
- C. Subsea Structure maps for Grayburg and San Andres Reservoirs (Exhibit F-2)**

Exhibit F

**D. Log Analysis by Nutech Demonstrating Hydrocarbon Presence in San Andres (Exhibits F-3)**

**E. Proof of Residual Oil Zone within the San Andres Reservoir (Exhibit F-4)**

**F. Geochemical Evidence for Residual Oil Zone in the San Andres (Exhibit F-5)**

**G. Geologic Barrier between Grayburg and San Andres Reservoirs (Exhibit F-6)**

**A. Geologic Overview of the EMSU**

5. The Grayburg formation underlying the EMSU is a mixed carbonate-siliciclastic composite sequence, with porous to non-porous ramp dolostones and interbedded less porous dolomitic sandstones. The Grayburg was deposited in a distally steepened carbonate ramp setting containing inner ramp, ramp crest shoal, and middle ramp facies. The San Andres formation was deposited in an open marine setting as part of a carbonate ramp setting as well and consists of middle ramp and ramp crest facies. The San Andres also has evidence of subaerial exposure with collapse breccias infilling solution enhanced karst features. The trap at EMSU is structural and stratigraphic in nature with an anticlinal closure on the west, north and south and then stratigraphic to the east where the porous dolograinsstones are sealed up-dip by the inner ramp back shoal facies. In essence, the dip angle of the Grayburg and San Andres increases to 3-5 degrees on the west side of the EMSU creating the down-dip limit of the reservoir and up-dip on the eastern side the porosity degrades as a function of the depositional system.

**B. Cross-sections including the proposed Goodnight SWD wells and active wells showing Empire's unitized interval**

6. **Exhibit F-1** consists of a map displaying the EMSU with a Subsea San Andres structure map. The map depicts all wells that penetrate the San Andres formation, Goodnight's active SWD wells and proposed SWDs, and the location of two cross-sections. The two cross-sections detail the unitized interval that was defined in the Division's order approving the EMSU, which stated: "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 first cross-section depicts Empire's wells within the unit completed in the Grayburg-San Andres reservoir alongside Goodnight's active SWD wells and demonstrates that their perforated interval lies within Empire's unitized formation. The second cross-section details the same unitized interval with the pending SWD applications displayed on the NW-SE line through EMSU. Highlighted by the green brackets in each cross-section are the oil saturated zones as determined by Nutech's petrophysical analysis showing across the entirety of the EMSU unitized interval oil is present.

### C. Subsea Structure maps for Grayburg and San Andres Reservoirs

7. **Exhibit F-2** is a Grayburg Subsea Structure Map made from the top of Empire's unitized interval. The map shows a NW-SE strike with dip to the SW. There are no major faults present in the Grayburg section at EMSU. The geologic setting of EMSU is key in characterizing the stratigraphic framework and corresponding structure. The western edge of EMSU experiences a much steeper dip at around 3-4° compared to  $\leq 2^\circ$  on the eastern edge of the unit. Deep-seated structures moved during the Laramide orogenic event, causing deformation and leading to the current asymmetric anticline.

8. The San Andres Subsea Structure Map is made from the base of Grayburg/top San Andres exposure surface that is characteristic of the top G9 (Sequence Stratigraphic top of San Andres) regionally. The contour interval is 100' with the lowest known oil from core marked at -750' for reference. The map shows a strike similar to the Grayburg at NW-SE with a SW dip.

### D. Log Analysis by Nutech Demonstrating Hydrocarbon Presence in the San Andres

9. **Exhibit F-3** identifies wells across the entire Eunice Monument South Unit that were chosen for detailed open hole ("OH") log analysis to evaluate the presence of hydrocarbons in the San Andres reservoir. This exhibit contains a base map detailing the location of the 7 analyzed wells, 4 of which were recently evaluated using 2005 vintage OH triple combo logs. All 7 of the wells, EMSU 628, 660, 713, 746, 673, 658, and Ryno 1 SWD wells, indicate the presence of hydrocarbons in the San Andres reservoir. The analysis uses a standard Simandoux equation approach with an m & n that fits with San Andres intervals across the Permian. For all of the Nutech logs analyzed; the far left track contains Gamma Ray and Caliper; Track 2 contains an array of Reservoir Quality Pay Flags using a range of different parameters including the free fluid flag, free hydrocarbon flag, low water flag, fair permeability flag, good permeability flag, resistivity mineral flag, permeability mineral flag, gas mineral flag, and porosity mineral flag; Track 3 is Depth; Track 4 contains Resistivity; Track 5 contains Neutron, Sonic and Density Porosity; Track 6 contains Density Correction; Track 7 contains Clay Volume Indicator; Track 8 contains the Lithology Track; Track 9 contains Bulk Volume Water, Bulk Volume Irreducible, Water Saturation and Effective Porosity; Track 10 is calculated Permeability; Track 11 contains calculated Oil in Place per 640 acre section ("OIP/sec") and Track 12 contains an estimation of fracture density.

10. The EMSU 658 well covers approximately 400' of the San Andres formation and has multiple packages of pay identified and estimated OIP of 60.9 MMBO/sec. The EMSU 673 well had a Triple Combo (TCOM) OH log run in 2005 covering approximately 400' of the San Andres reservoir with 75-100' of hydrocarbons present and an estimated OIP of 61.1MMBO/sec. The next well in the Exhibit is EMSU 713 which had an TCOM OH log run in 2005 covering approximately 200' of the San Andres reservoir. From the log analysis Empire can see approximately 40' of hydrocarbons present and an estimated OIP of 13.6MMBO/sec. The next

Well, EMSU 660 had a TCOM OH log from 2005 that was analyzed over approximately 400' of the San Andres reservoir and shows ~170' of hydrocarbons present with an estimated OIP of 98.1 MMBO/sec. The next Well, EMSU 746 had a TCOM OH log run in 2005 that covers the entire unitized interval and all approximately 1000' of the San Andres. The analysis shows over 200' of hydrocarbons with an OIP of 174.5 MMBO/sec. Moving to the next Well, the Ryno 1, one of Goodnight's SWD wells that is currently disposing water into the San Andres, is within part of Empire's unitized formation that again shows presence of hydrocarbons in the log analysis. This Well is near the down-dip most portion of EMSU and has approximately 150' of pay identified with an estimated OIP of 91.5 MMBO/sec. The final Well in the Exhibit is the EMSU 628 which again had a modern TCOM OH log from 2005 that was analyzed over greater than 500' of the San Andres reservoir. The Simandoux calculation indicates greater than 250' of hydrocarbons present within the San Andres with an estimated OIP of 89.4 MMBO/sec.

#### **E. Proof of Residual Oil Zone within the San Andres Reservoir**

11. **Exhibit F-4** contains a mudlog that was run on EMSU 660 during drilling that indicates the presence of hydrocarbons. The description across 150' of the San Andres shows good to dull yellow fluorescence with regions of good cut and strong gas shows. The characteristics present in this mudlog align well with other San Andres residual oil zones actively being CO<sub>2</sub> flooded across the Permian Basin including the Hobbs Unit to the northeast of EMSU. It is typical for mudlogs and well logs within the San Andres Residual Oil Zone to show hydrocarbon presence, but then drill stem tests (DSTs) and production will include 100% water. This occurs because during the Late Cretaceous, there was a regional uplift to the west, causing hydrodynamic flushing with meteoric waters low in salinity, high in sulfate that resulted in the San Andres being left in an imbibition state at residual oil saturations that can only be moved utilizing tertiary recovery methods.

#### **F. Geochemical Evidence of a Residual Oil Zone in the San Andres**

12. **Exhibit F-5** is a geochemical analysis from EMSU 679 where the ratio of immobile to mobile oil is calculated utilizing the saturates versus aromatic compounds present and then a percentage aromatics versus depth plot is shown. It is found in literature (Aleidan et al., 2017) that a Residual Oil Zone will characteristically contain a lower percentage of aromatic compounds due to the hydrodynamic flushing of meteoric waters in the Late Cretaceous.

#### **G. Geologic Barrier between Grayburg and San Andres Reservoirs**

14. **Exhibit F-6** contains two different cross-sections that look at the Grayburg and San Andres reservoir sections across the EMSU. The first cross-section is from west to east and shows the Grayburg-San Andres reservoir section. The blue highlighting shows a dolostone package capped by collapse breccia features just beneath the unconformity surface and Premier Sandstone within the Grayburg. The highlighting is included to show that while not ubiquitous across all of the EMSU, reservoir quality rock with greater than 10% porosity exists just below the Grayburg with varying thicknesses of tight anhydrite layers at the top of San Andres. Near the crest of the structure this reservoir rock is commonly capped by collapse breccias containing fractures that act as fluid conduits. Included in this cross-section is a core description from the EMSU 679 well



detailing the collapse breccia features right at the top San Andres near the unconformity, which are known to contain fractures of varying heights and occurrence. There has been extensive work done both in outcrop and in core that shows the presence of dissolution features and fractures near the top San Andres. Also, during the Laramide orogenic event the basinal structural blocks were still shifting and adjusting causing a double-humped asymmetric anticline to form resulting in flexures and fractures. The fractures happen throughout the field but are more prevalent near the crest of the structure where historically the large plumes of San Andres water were seen. The crest of the structure is located where Goodnight's current proposed salt-water disposal wells are planned, increasing the risk of contaminating Empire's San Andres residual oil zone and communicating with Empire's Grayburg operations.

## I. Conclusions and Recommendations

15. Based on the above analysis and data, it is my conclusion that the San Andres formation within the EMSU contains a Residual Oil Zone that can be developed with enhanced oil recovery methodologies such as CO2 injection. **As a result, Goodnight's proposal to inject produced water into the San Andres formation would result in the waste of hydrocarbons and thereby violate Empire's correlative rights.**

16. The attached exhibits were either prepared by me or were compiled from company business records.

17. I understand this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date next to my electronic signature below.

I understand this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date next to my electronic signature below.

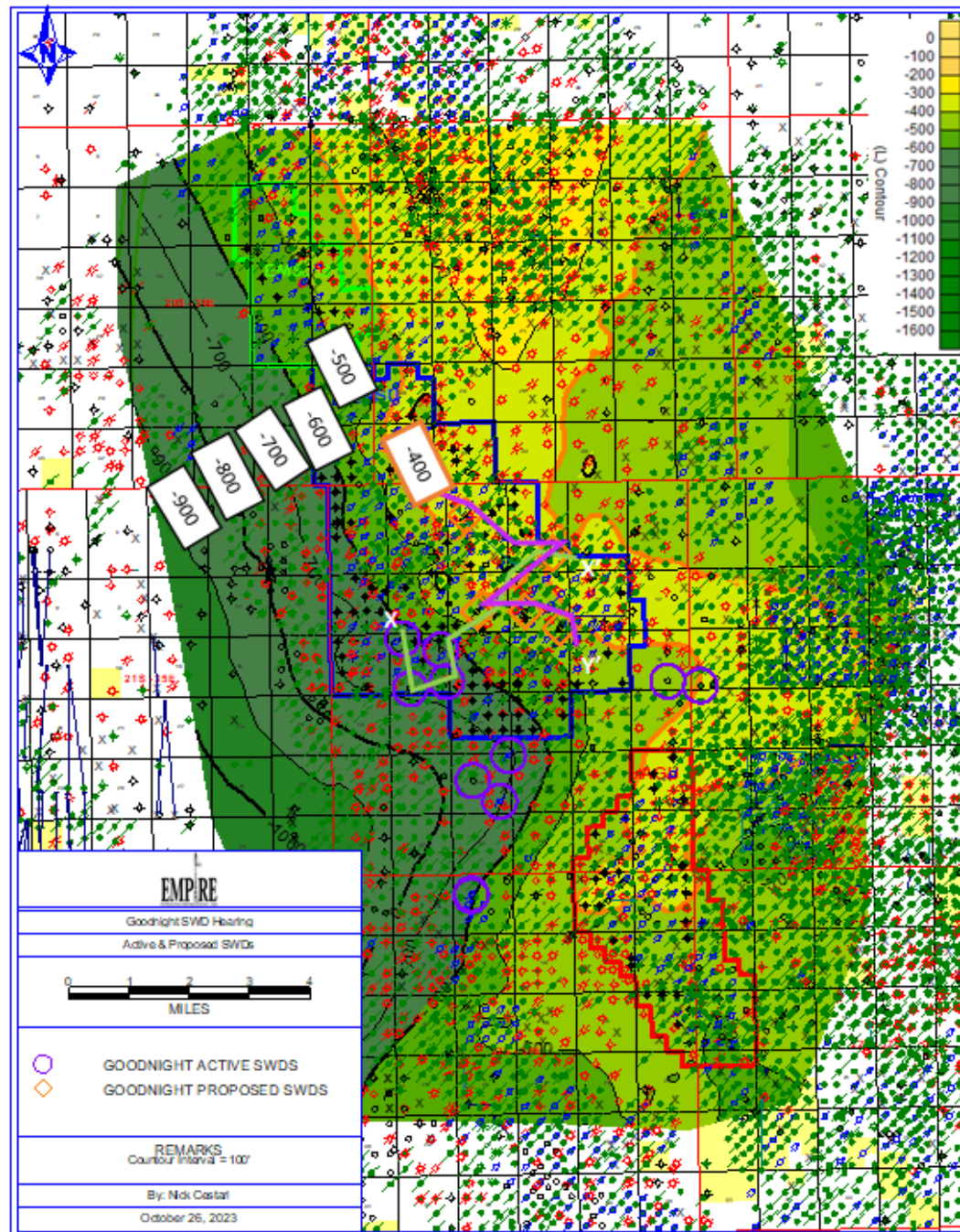


Nicholas A. Cestari

Date: October 26, 2023

# Exhibit F-1

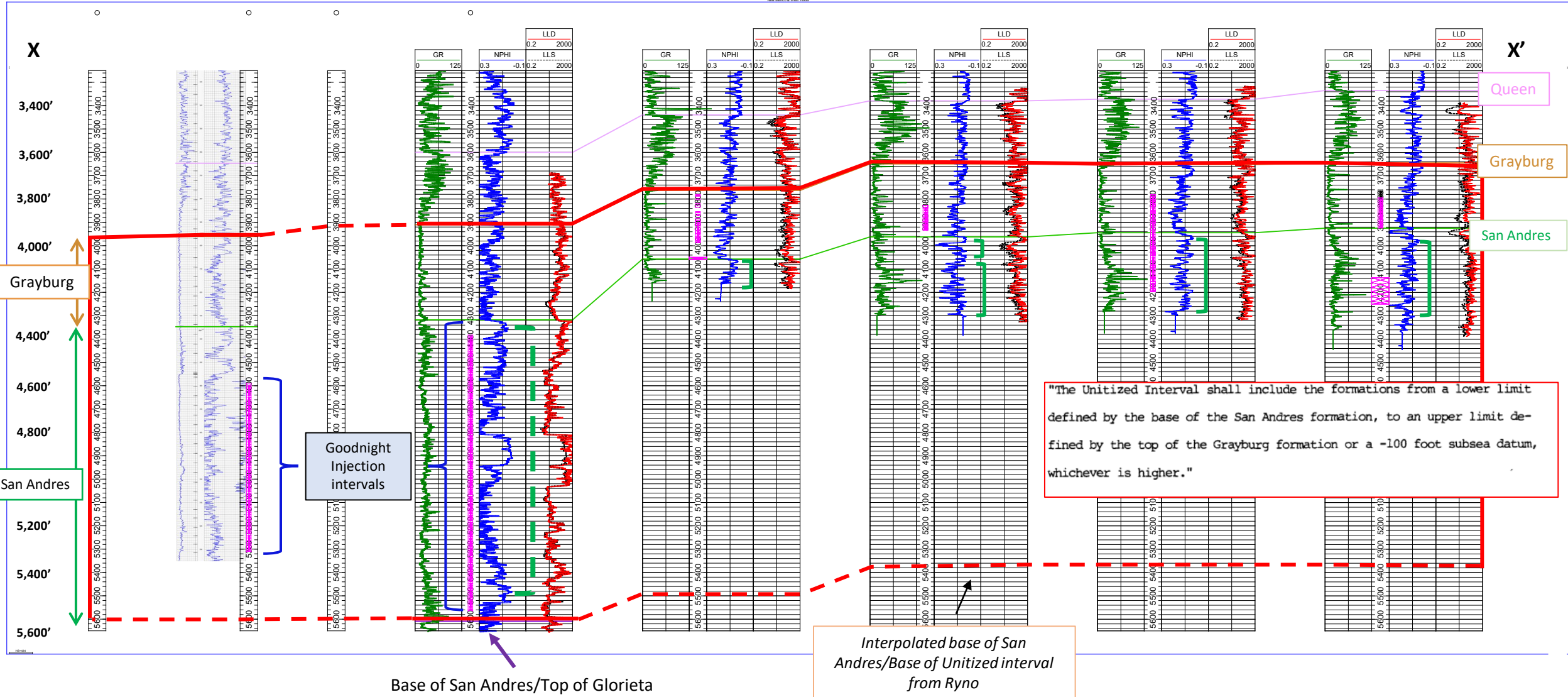
Top San Andres Structure displaying all wells in surrounding area around Eunice & Goodnights Active SWD wells and current pending applications



## KEY POINTS

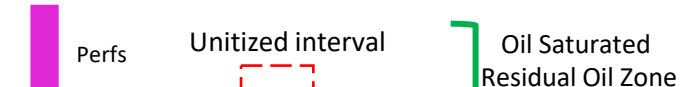
- There is a structural closure in the San Andres interval in the EMSU
- The disposal of water at high rates damages the reservoir and inhibits proper development of our **Unitized Interval**
- Oil in core shows that there is oil down to -750' ss at the EMSU

Active Goodnight SWDs

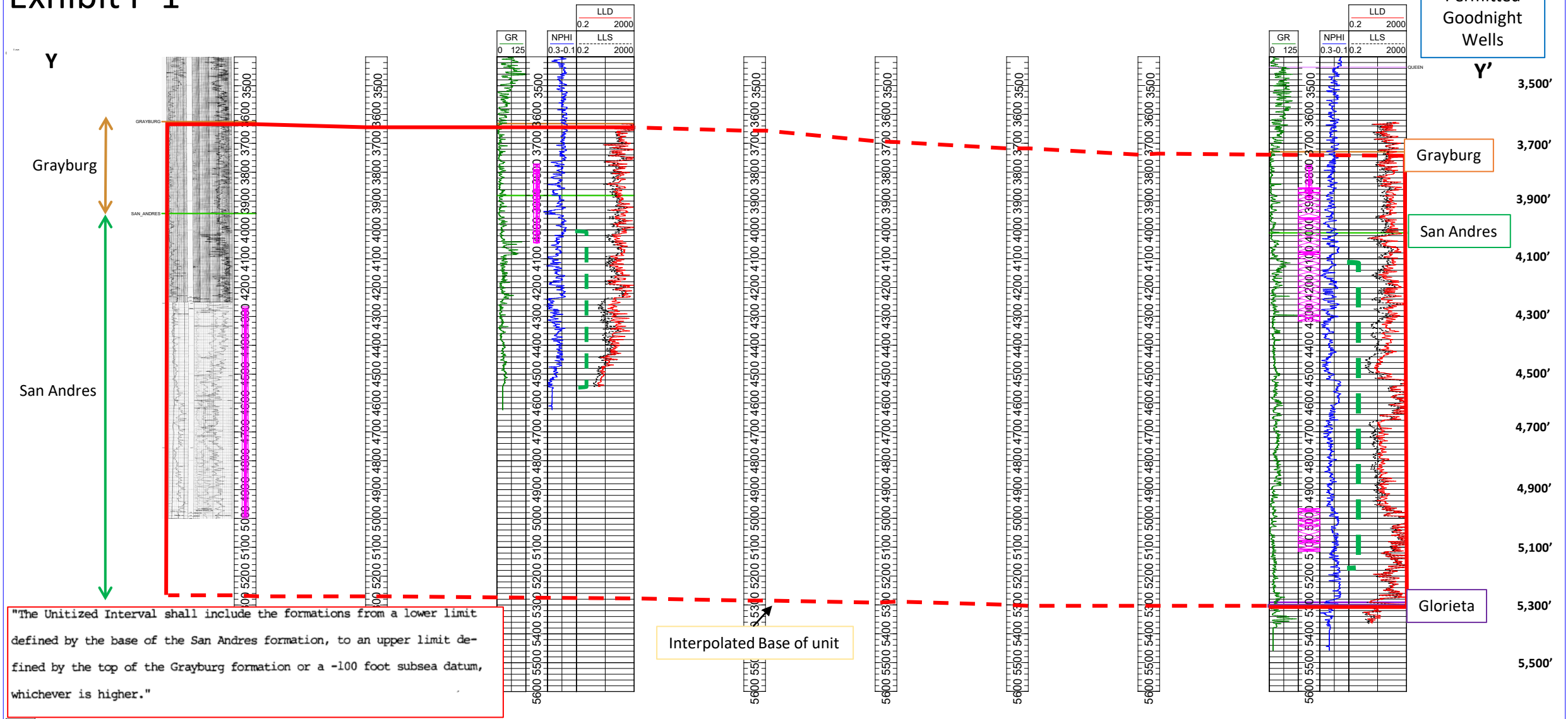


**KEY POINTS**

- Per the approved unitized agreement with the NMOCD our unit interval consists of the Grayburg and San Andres in their entirety
- There is oil saturation present across all of the EMSU, with some wells being tested and having produced oil from the San Andres
- The disposal of water into the San Andres therefore is damaging Empire's hydrocarbon reserves and violating their correlative rights



# EXHIBIT F-1



"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."

Goodnight Wells

Grayburg

San Andres

Glorieta

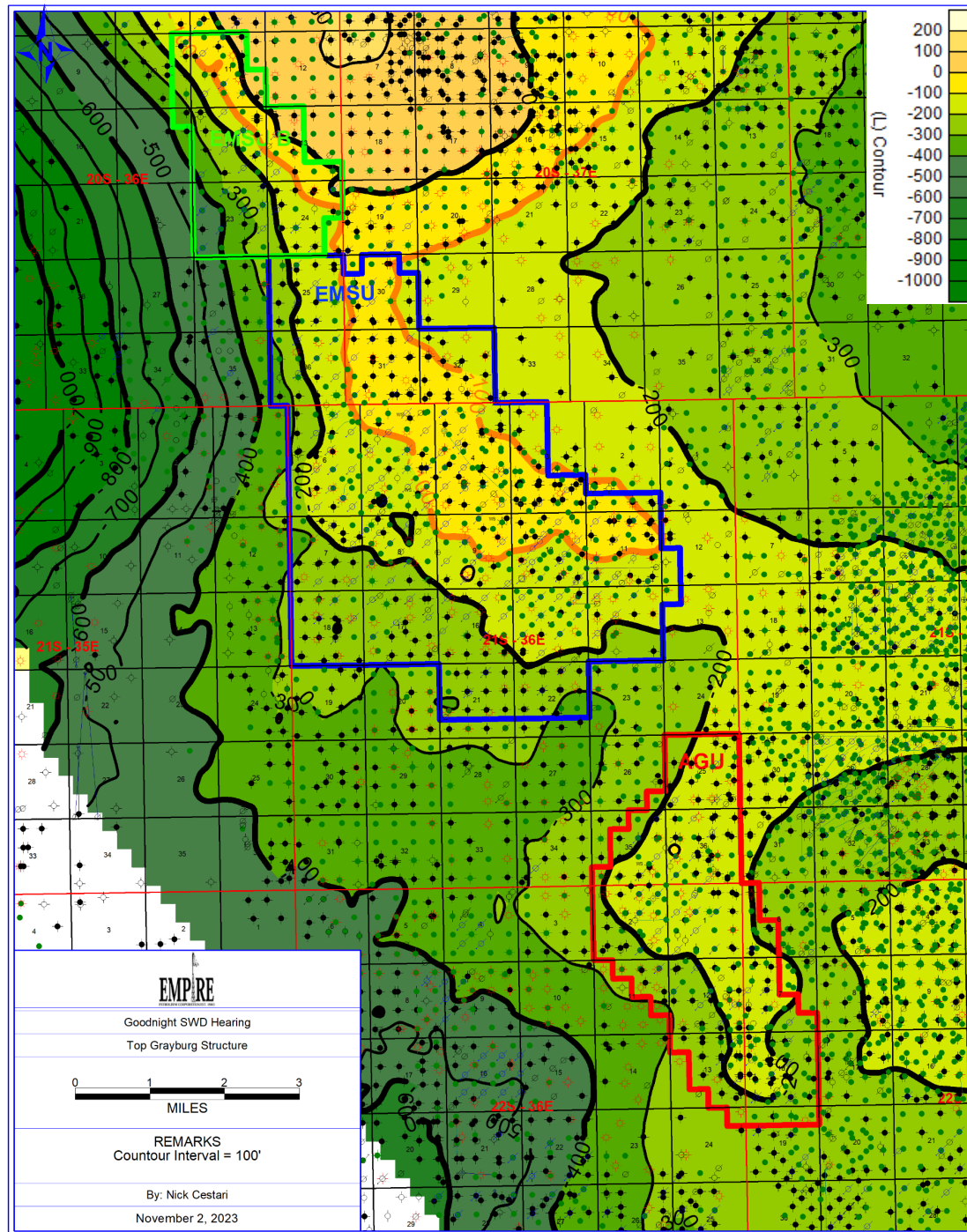
## KEY POINTS

- Per the approved unitized agreement with the NMOCD our unit interval consists of the Grayburg and San Andres in their entirety
- There is oil saturation present across all of the EMSU, with some wells being tested and having produced oil from the San Andres
- The disposal of water into the San Andres therefore is damaging Empire's hydrocarbon reserves and violating their correlative rights



# EXHIBIT F-2

## Top Grayburg Structure

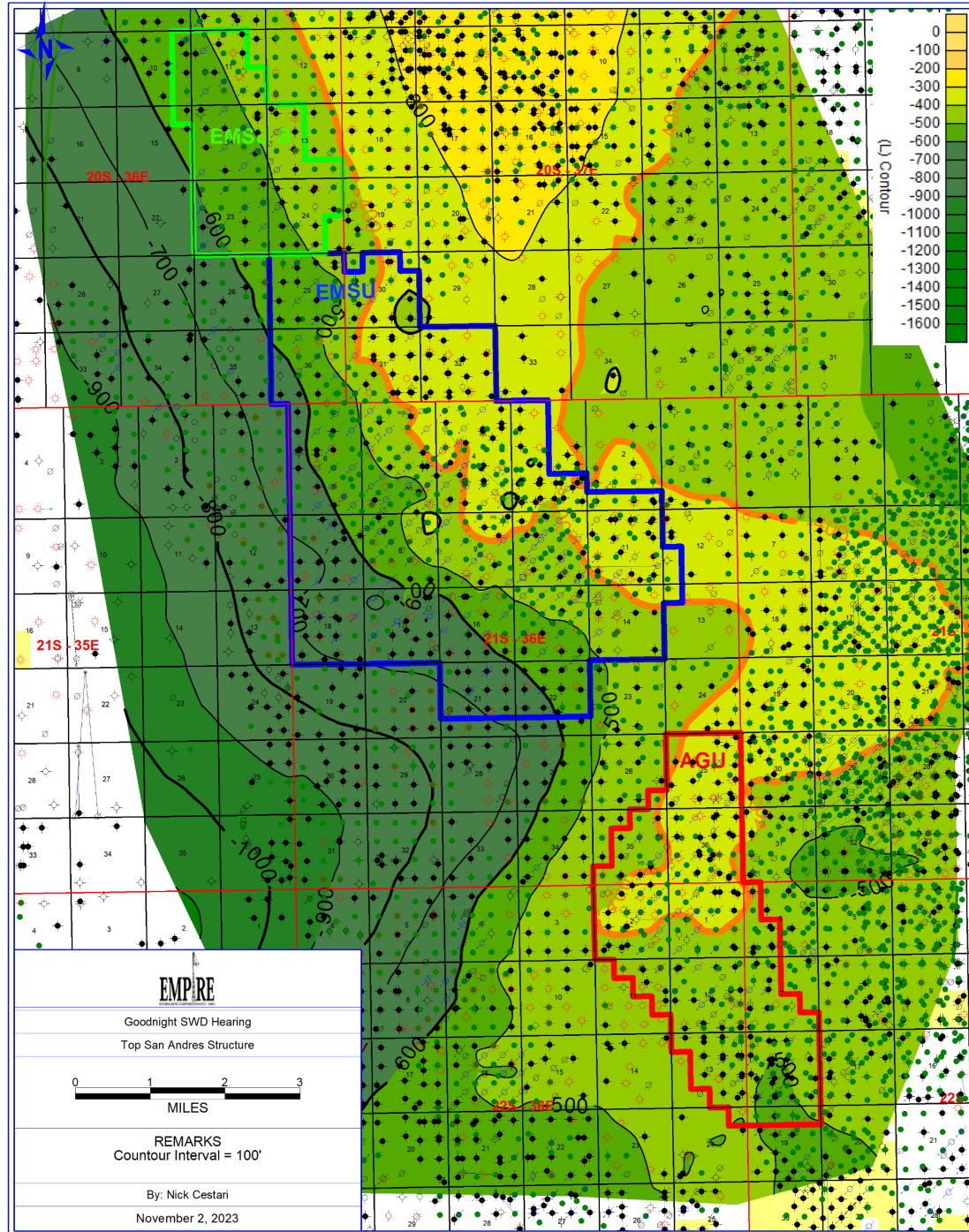


### KEY POINTS

- There is a structural closure in the Grayburg interval in the EMSU
- The disposal of water at high rates into the San Andres damages existing waterflood operations in the Grayburg
- No third-party disposal should be allowed inside of the unitized interval as it damages oil and gas production

# EXHIBIT F-2

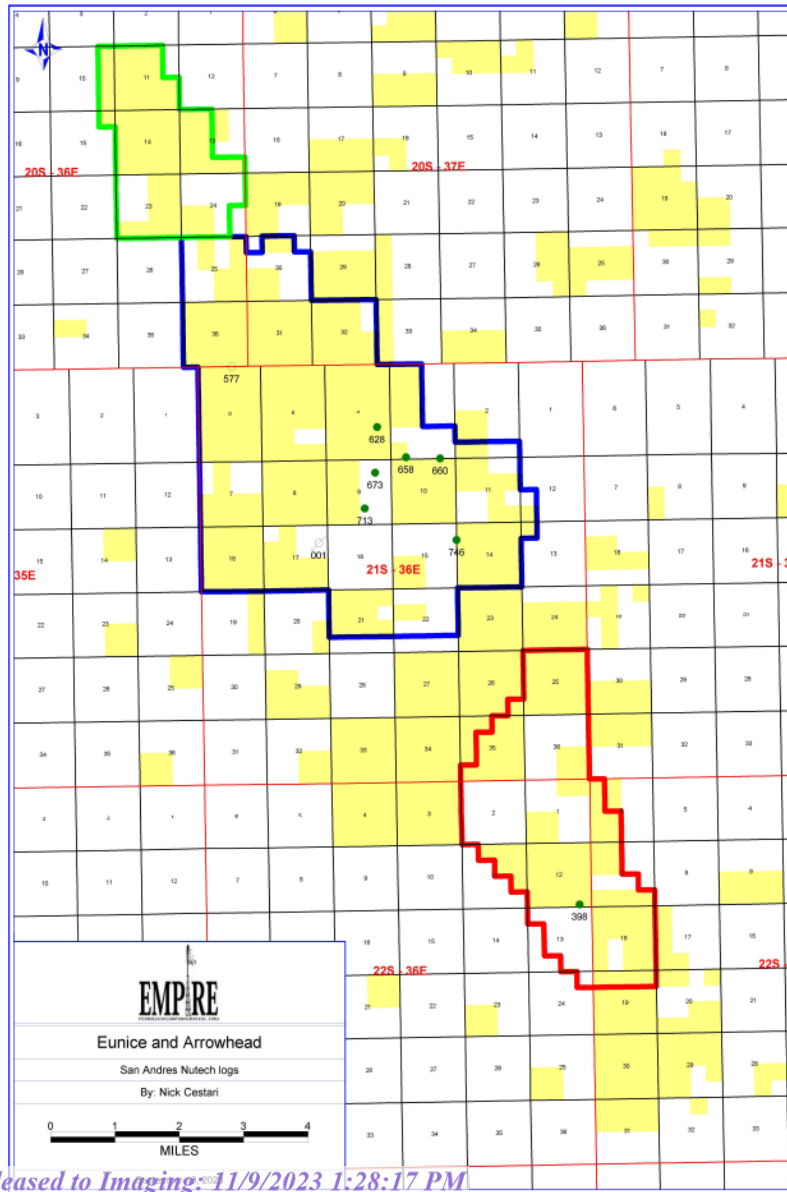
## Top San Andres Structure



### KEY POINTS

- There is a structural closure in the San Andres interval in the EMSU
- The disposal of water at high rates damages the reservoir and inhibits proper development of our **Unitized Interval**
- Oil in core shows that there is oil down to -750' ss at the EMSU

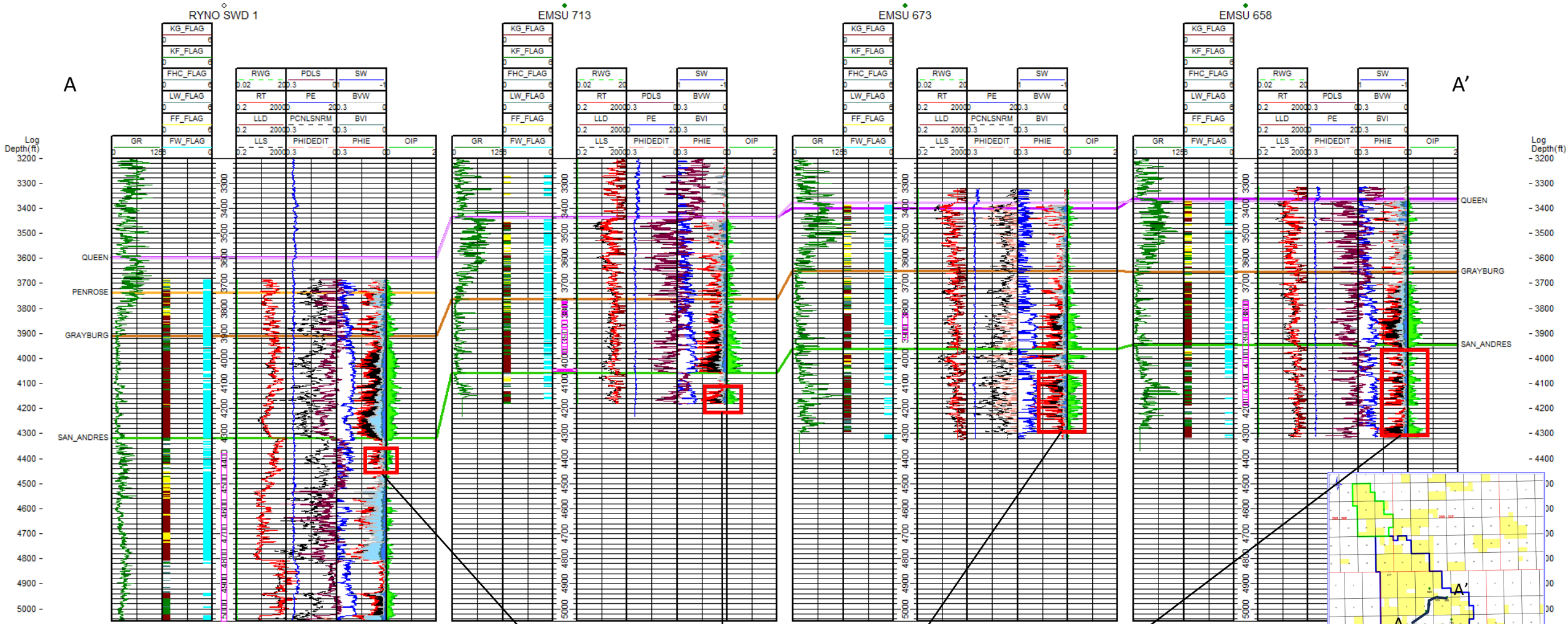
# Exhibit F-3 - Nutech log analysis – 7 wells covering the San Andres



- There were 9 legacy interpreted logs done by Nutech and of those 7 covered some portion of the San Andres reservoir within the Eunice Monument South Unit
- 4 of these were performed recently on 2005 vintage OH logs to evaluate the San Andres for hydrocarbons

## KEY POINTS

- One of these wells was Goodnight's Ryno SWD Well
  - According to Nutech's analysis the OIP/section for the Ryno SWD is **91.5 MMBO/sec**
- The wells are aerially distributed across the EMSU representing both down-dip and up-dip reservoir and prove hydrocarbon presence throughout the structure of the EMSU
- On average the wells cover greater than 200 feet of the San Andres reservoir with two (Ryno SWD and EMSU 746) covering over 1000 ft.
- Oil in place volumes were calculated on a per 640 section basis and range from 13 MMBO/sec to 174.5 MMBO/sec



Ryno SWD 1  
 OIP: 91.5 MMBO/sec  
 \*HydroPorFt: 24

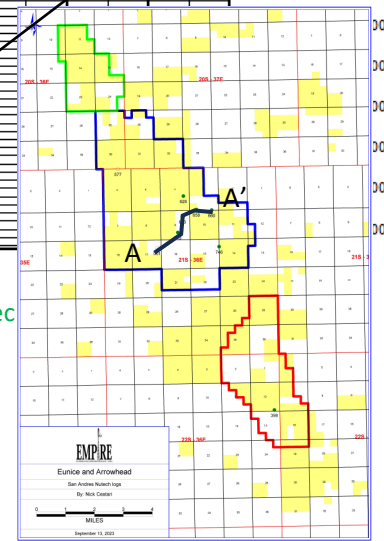
EMSU 713  
 OIP: 13.6 MMBO/sec  
 \*HydroPorFt: 3.6

EMSU 673  
 OIP: 61.1 MMBO/sec  
 \*HydroPorFt: 16

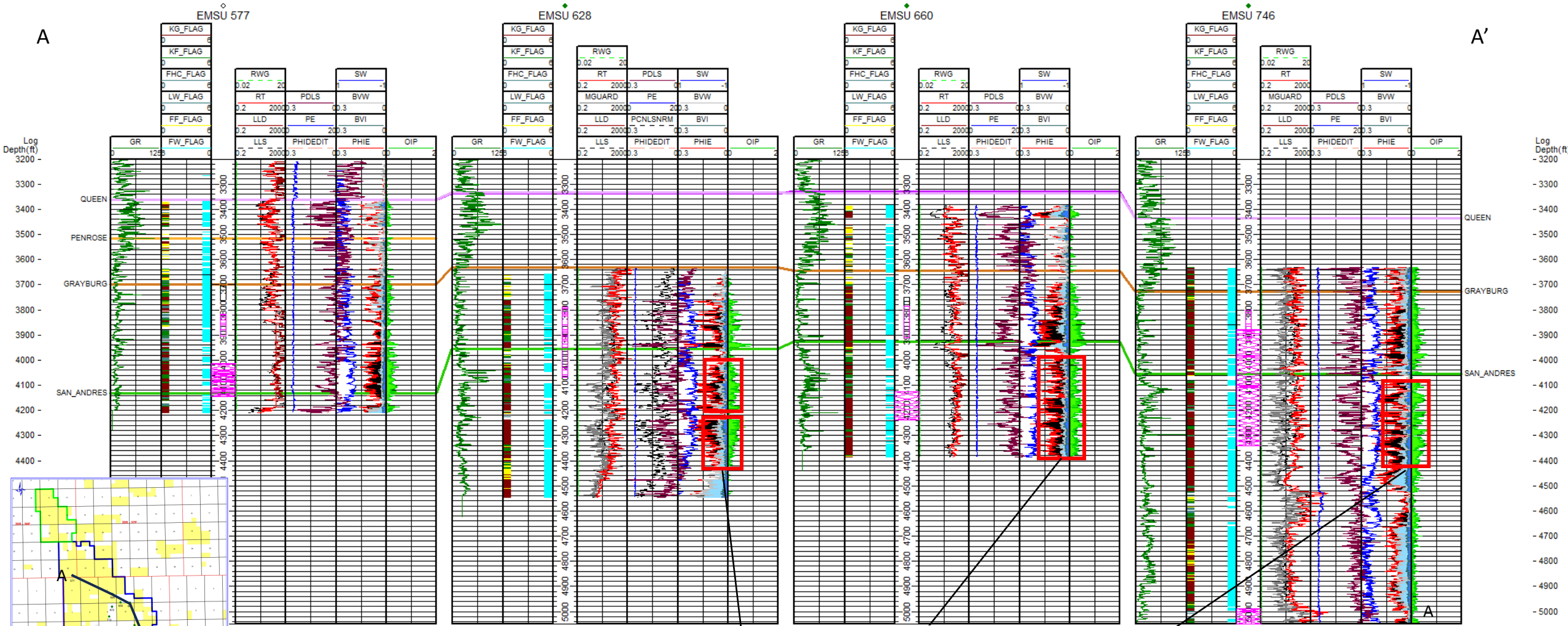
EMSU 658  
 OIP: 60.9 MMBO/sec  
 \*HydroPorFt: 15.9

**KEY POINTS**

- Nutech analyzed wells from west to east – cross-section shows that there are hydrocarbons present throughout the San Andres interval from the down-dip most western edge to the up-dip most eastern edge of the EMSU
- The disposal of Delaware basin water into the San Andres is damaging the hydrocarbon reserves present at the EMSU







EMSU 628  
 OIP: 89.4 MMBO/sec  
 \*HydroPorFt: 23.4

EMSU 660  
 OIP: 98.1 MMBO/sec  
 \*HydroPorFt: 25.7

EMSU 746  
 OIP: 174.5 MMBO/sec  
 \*HydroPorFt: 45.7

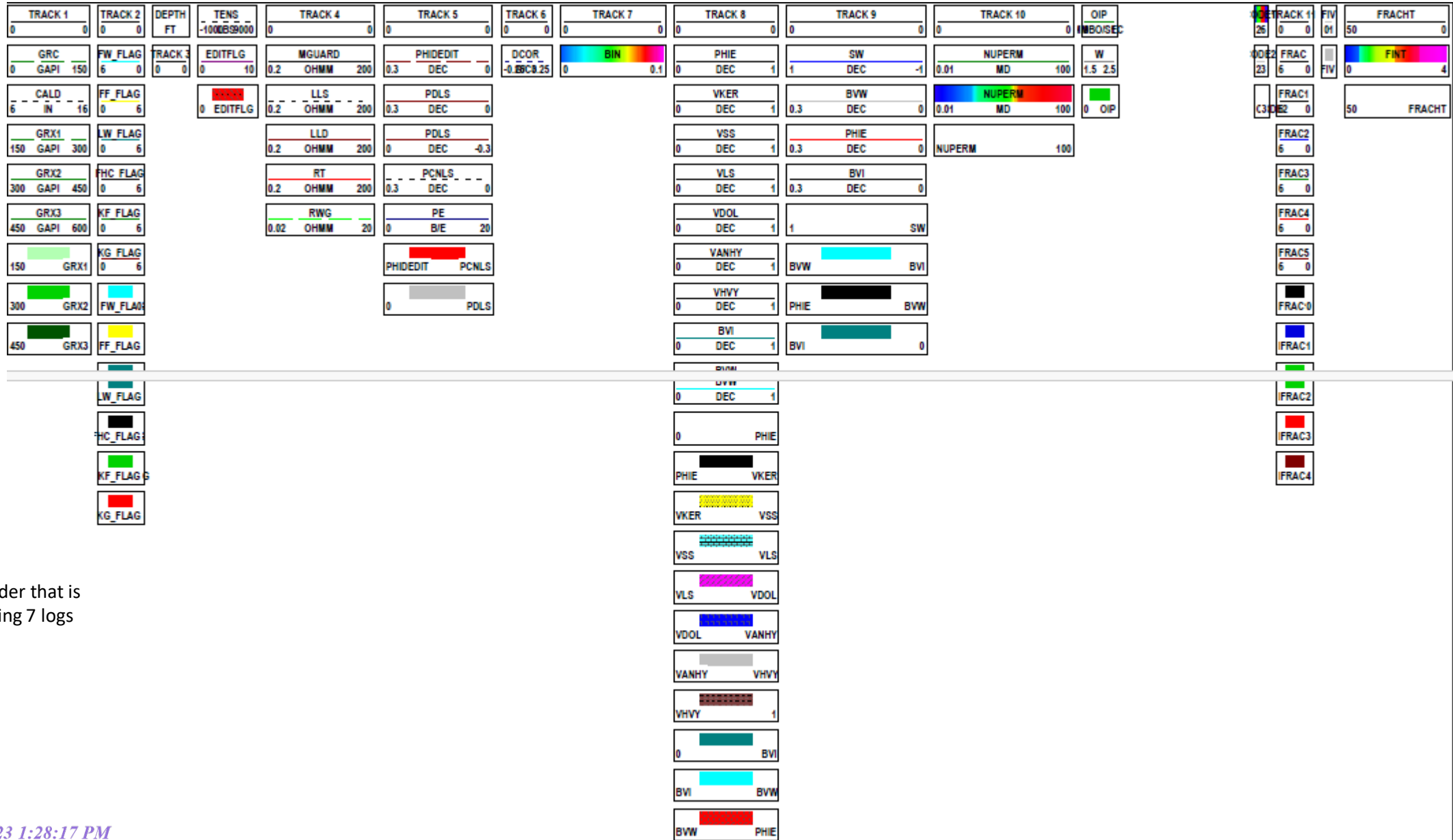
**KEY POINTS**

- Nutech analyzed wells from northeast to southwest– cross-section shows that there are hydrocarbons present throughout the San Andres interval at the crest of the structure at the EMSU
- The disposal of Delaware basin water into the San Andres is damaging the hydrocarbon reserves present at the EMSU

\*HydroPorFt – saturated footage (Porosity x h x S<sub>o</sub>)



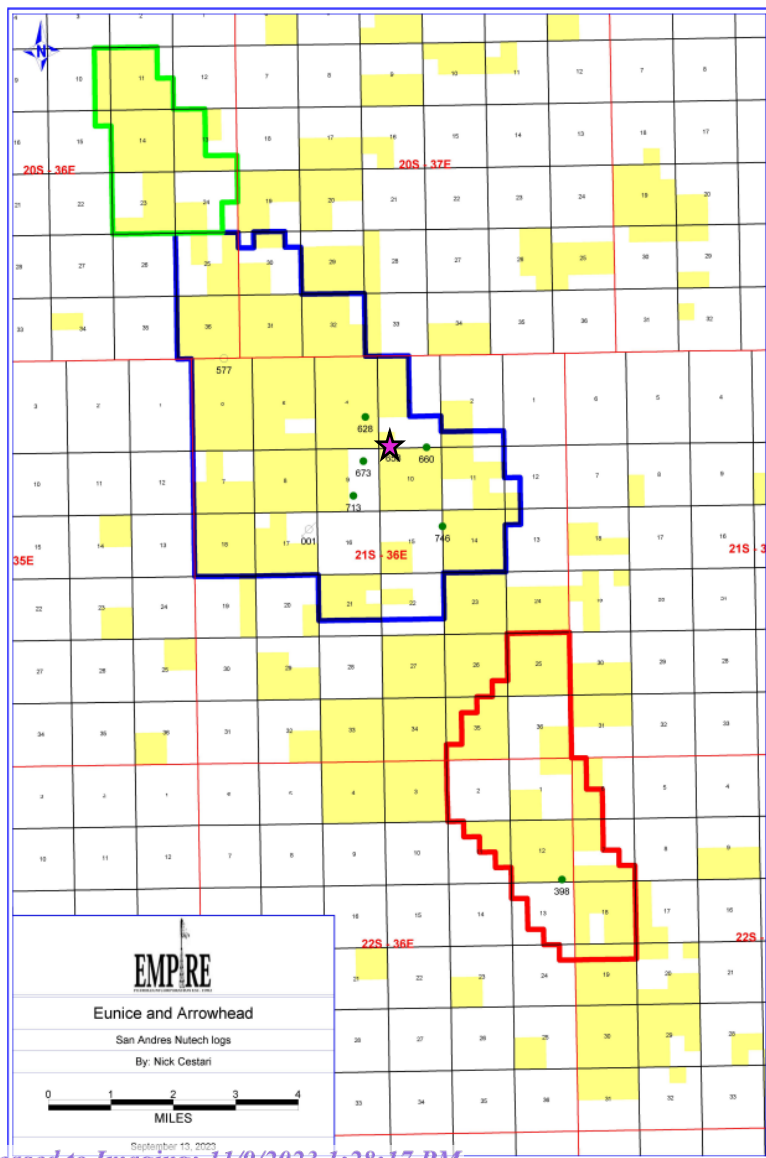
# Nutech analysis of San Andres EMSU



## KEY POINTS

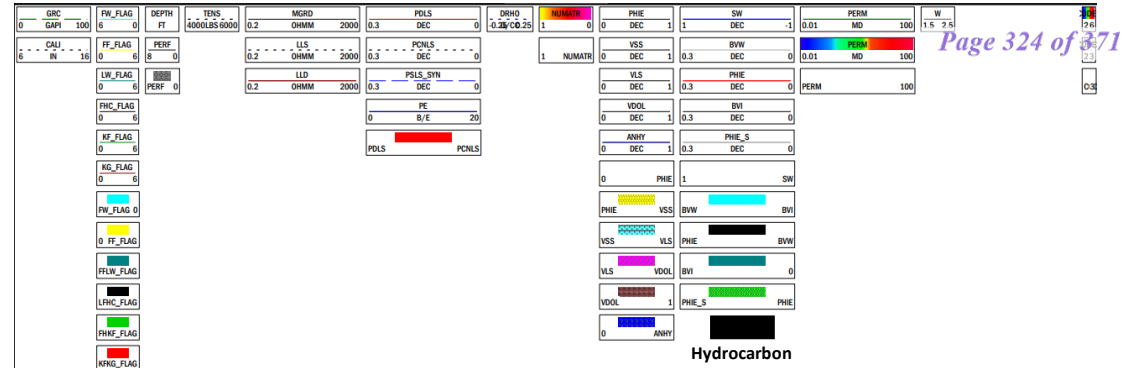
- Nutech curve output header that is referenced on the following 7 logs

# Nutech analysis of San Andres EMSU



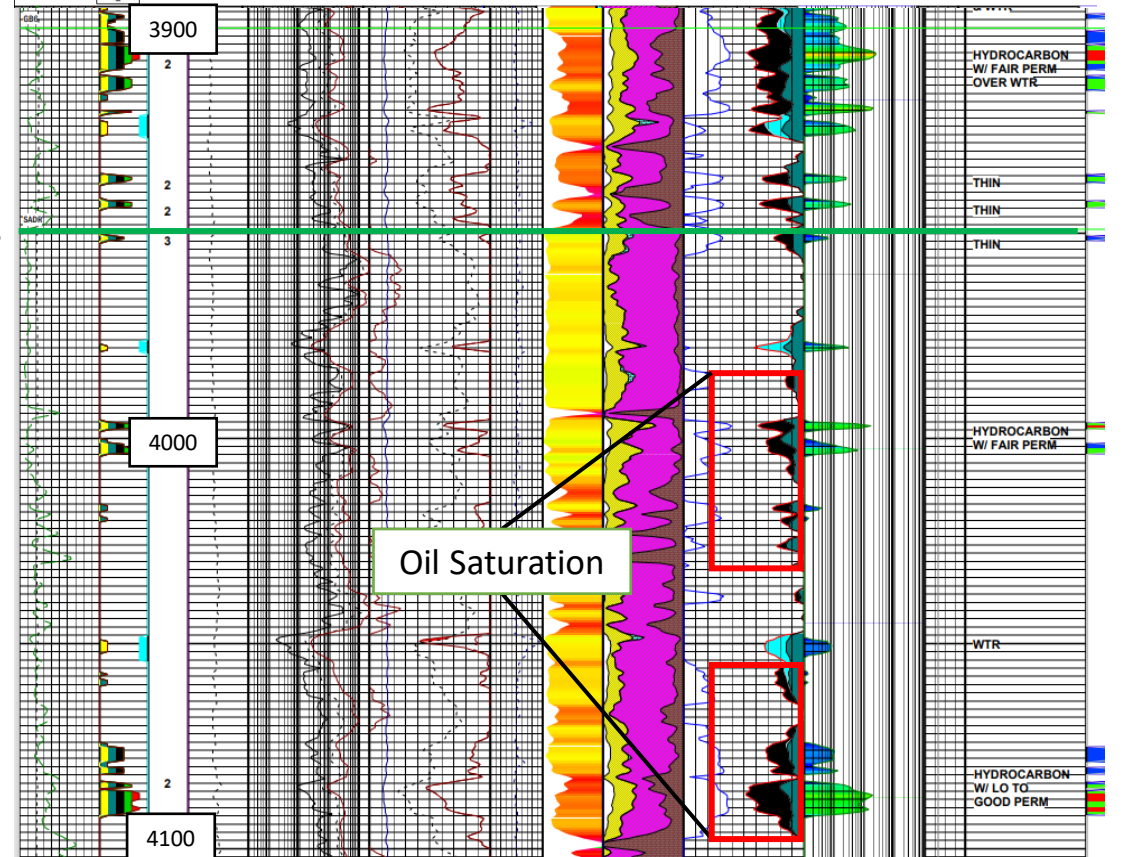
## KEY POINTS

- The petrophysical analysis proves the presence of hydrocarbons in the San Andres interval
- EMSU 658 – 60.9 MMBO/sec



EMSU 658

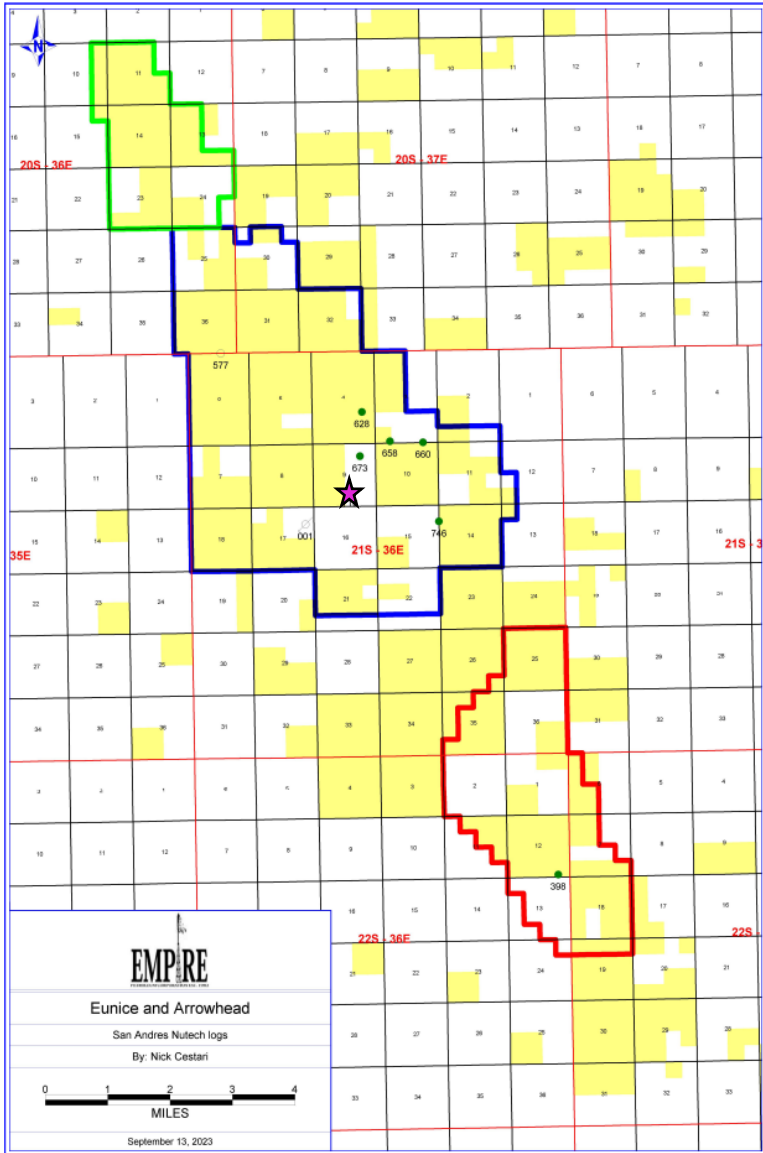
San Andres



Zone	Summaries							
DEPTH FT	GROSSFT	PAYFT	PHIE DEC	SW DEC	NUPERM MD	HydPorFT POR-FT	NUPERMFT MD-FT	OIP MMBO/sec
SAN ANDRES	371	208	0.072	0.505	1.121	15.947	415.965	60.906
	TOT	TOT	AVGX	AVGX	AVGX	CUM	CUM	CUM



# Nutech analysis of San Andres EMSU

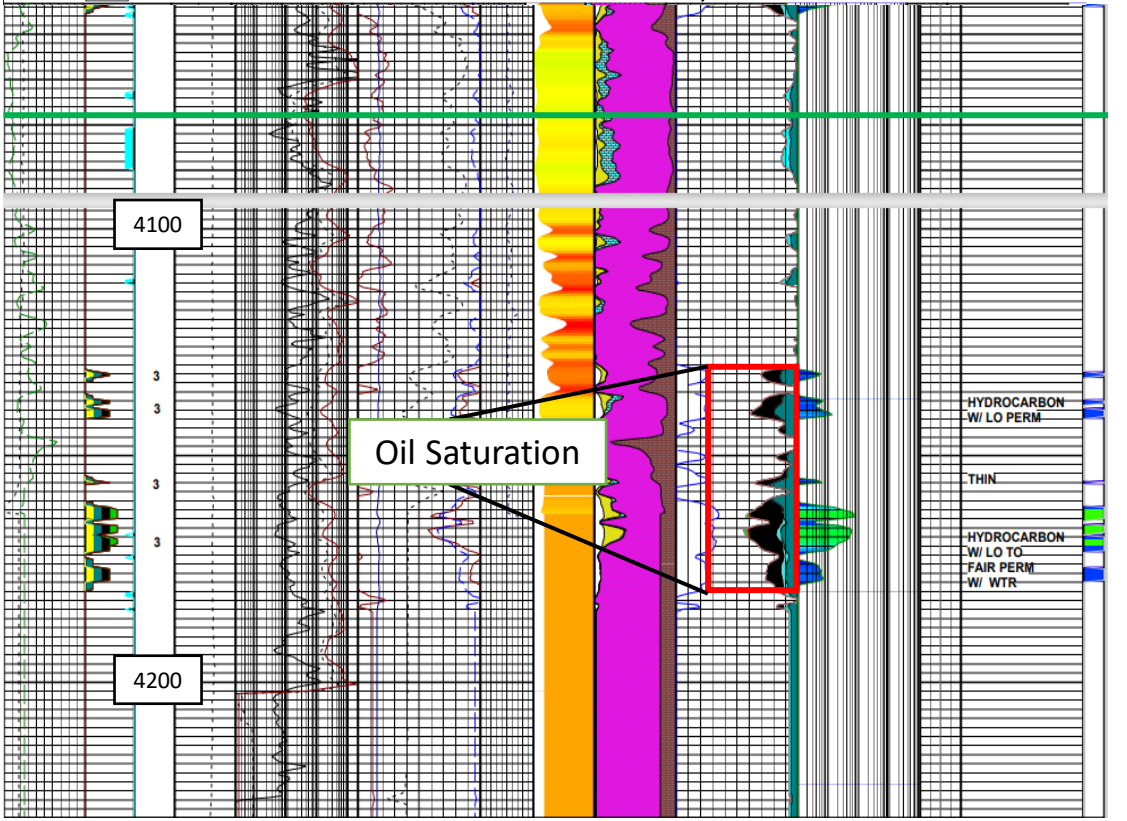
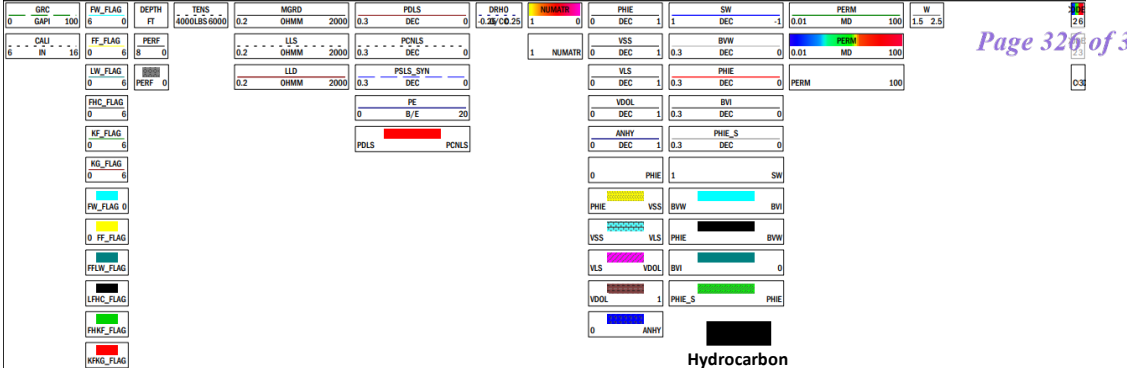


EMSU 713

San Andres

### KEY POINTS

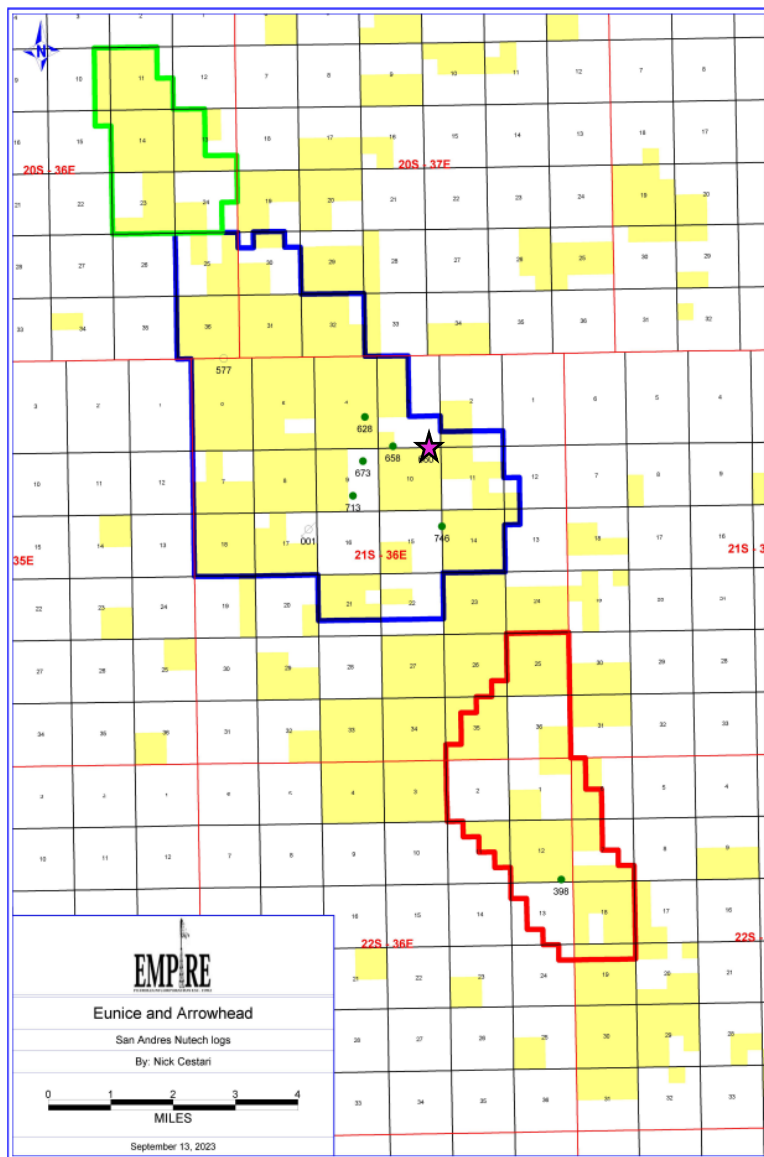
- The petrophysical analysis proves the presence of hydrocarbons in the San Andres interval
- EMSU 713 – 13.7 MMBO/sec



Zone	Summaries							
DEPTH FT	GROSSFT	PAYFT	PHIE DEC	SW DEC	NUPERM MD	HydPorFT POR-FT	NUPERMFT MD-FT	OIP MMBO/sec
SAN ANDRES	125	45	0.057	0.665	0.451	3.575	56.403	13.653
	TOT	TOT	AVGX	AVGX	AVGX	CUM	CUM	CUM



# Nutech analysis of San Andres EMSU

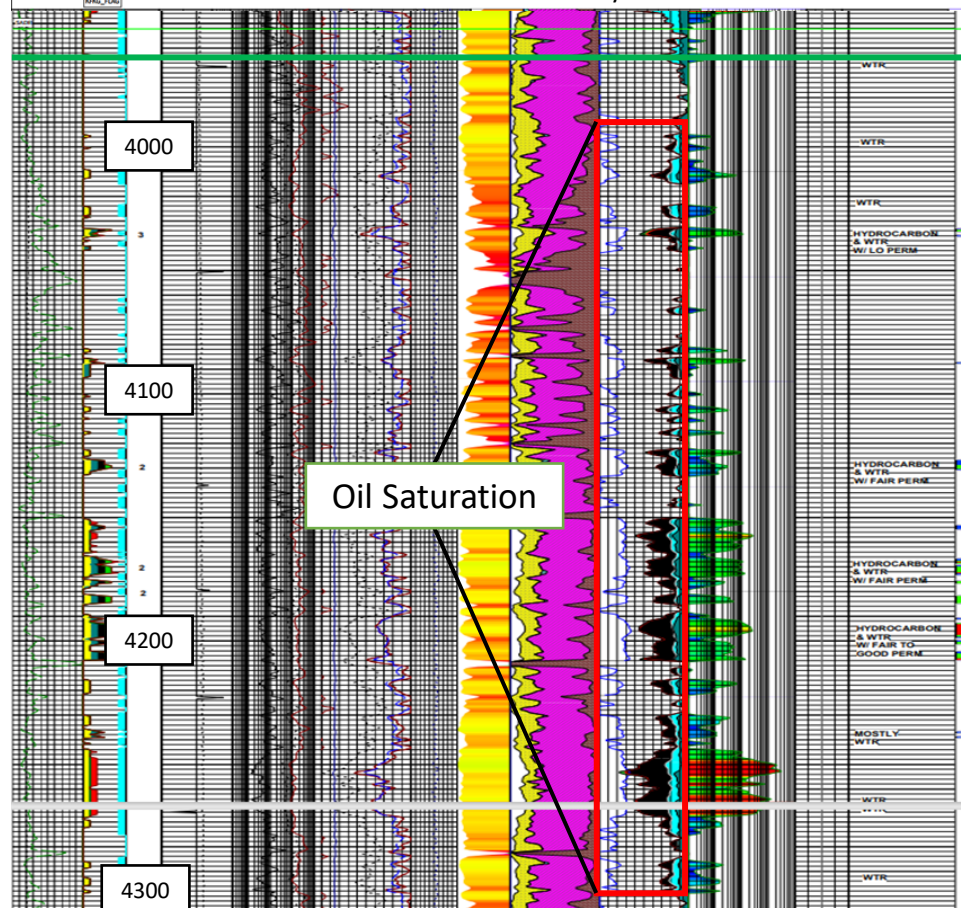
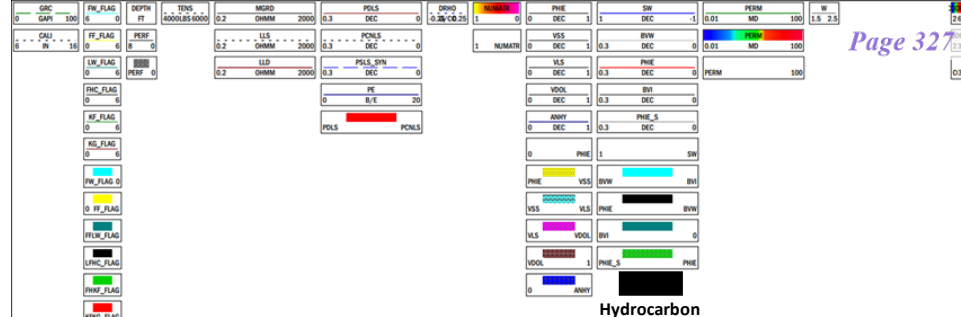


EMSU 660

San Andres

### KEY POINTS

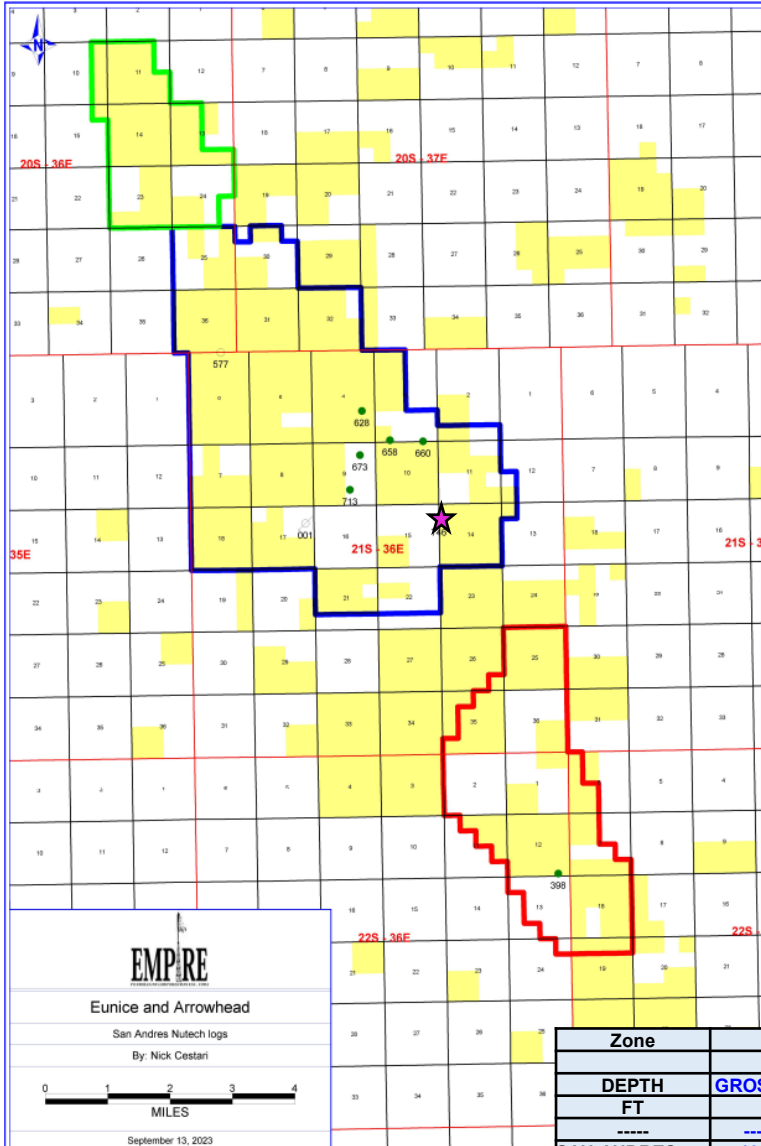
- The petrophysical analysis proves the presence of hydrocarbons in the San Andres interval
- EMSU 660 – 98.2 MMBO/sec



Zone	Summaries							
DEPTH FT	GROSSFT	PAYFT	PHIE DEC	SW DEC	NUPERM MD	HydPorFT POR-FT	NUPERMFT MD-FT	OIP MMBO/sec
SAN ANDRES	431	338	0.096	0.431	1.846	25.704	795.636	98.175
TOT	TOT	TOT	AVGX	AVGX	AVGX	CUM	CUM	CUM

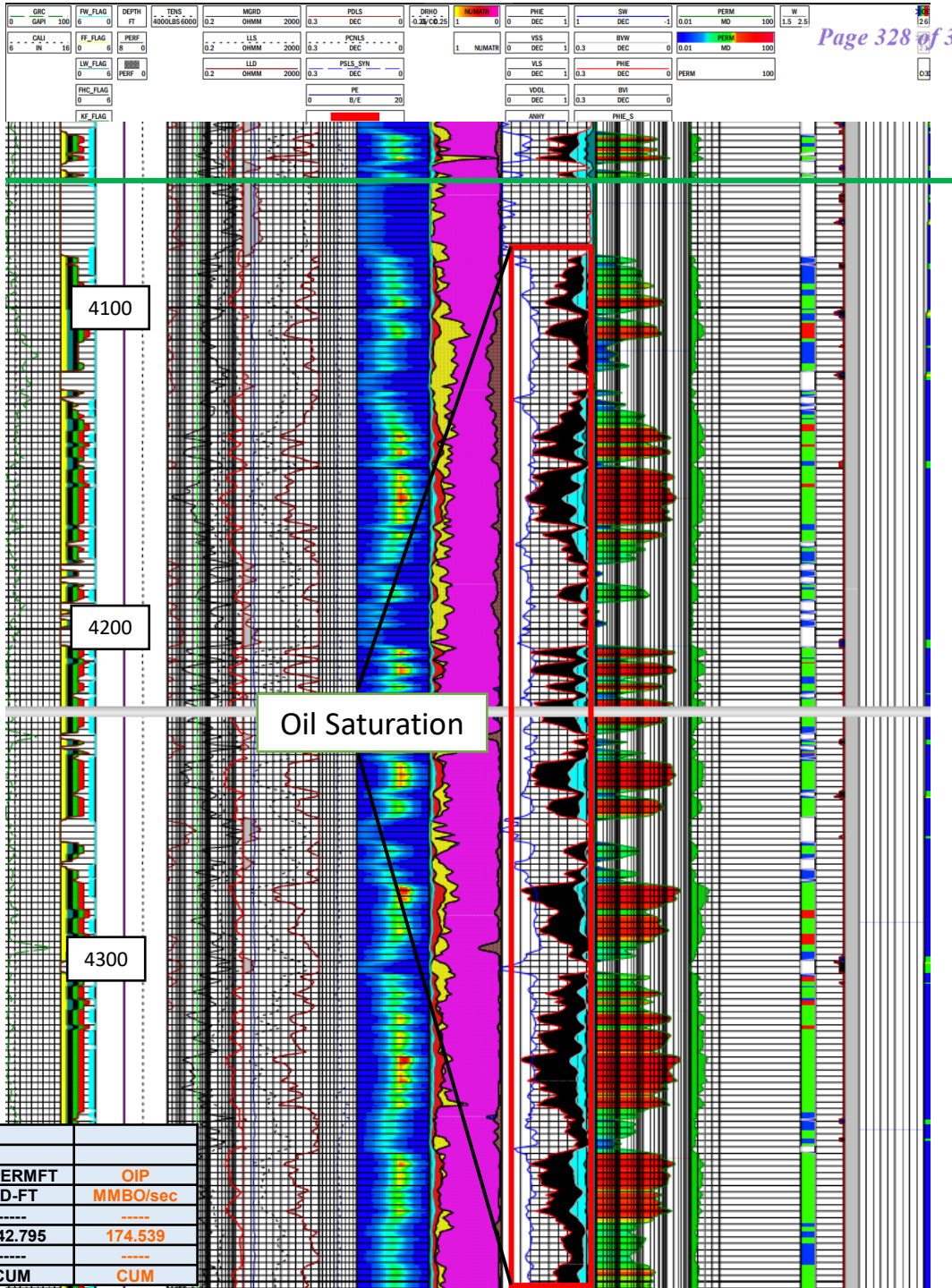


# Nutech analysis of San Andres EMSU



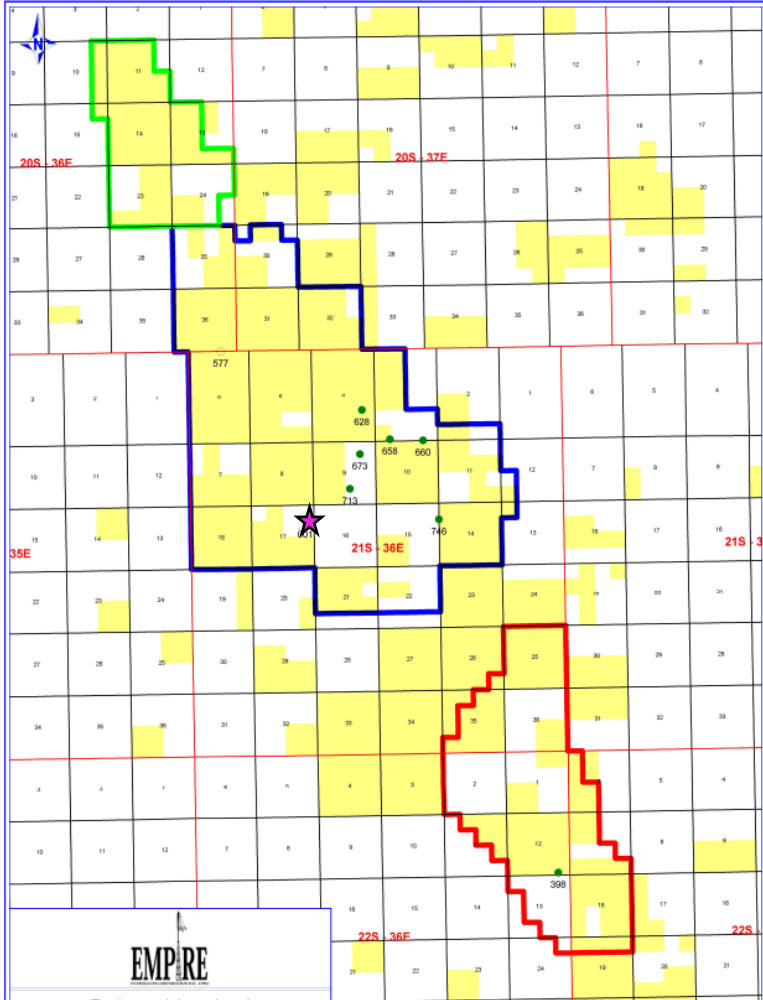
### KEY POINTS

- The petrophysical analysis proves the presence of hydrocarbons in the San Andres interval
- EMSU 746 – 174.5 MMBO/sec



Zone	Summaries							
DEPTH FT	GROSSFT	PAYFT	PHIE DEC	SW DEC	NUPERM MD	HydPorFT POR-FT	NUPERMFT MD-FT	OIP MMBO/sec
SAN ANDRES	1309	530	0.086	0.639	2.095	45.7	2742.795	174.539
	TOT	TOT	AVGX	AVGX	AVGX	CUM	CUM	CUM

# Nutech analysis of San Andres EMSU



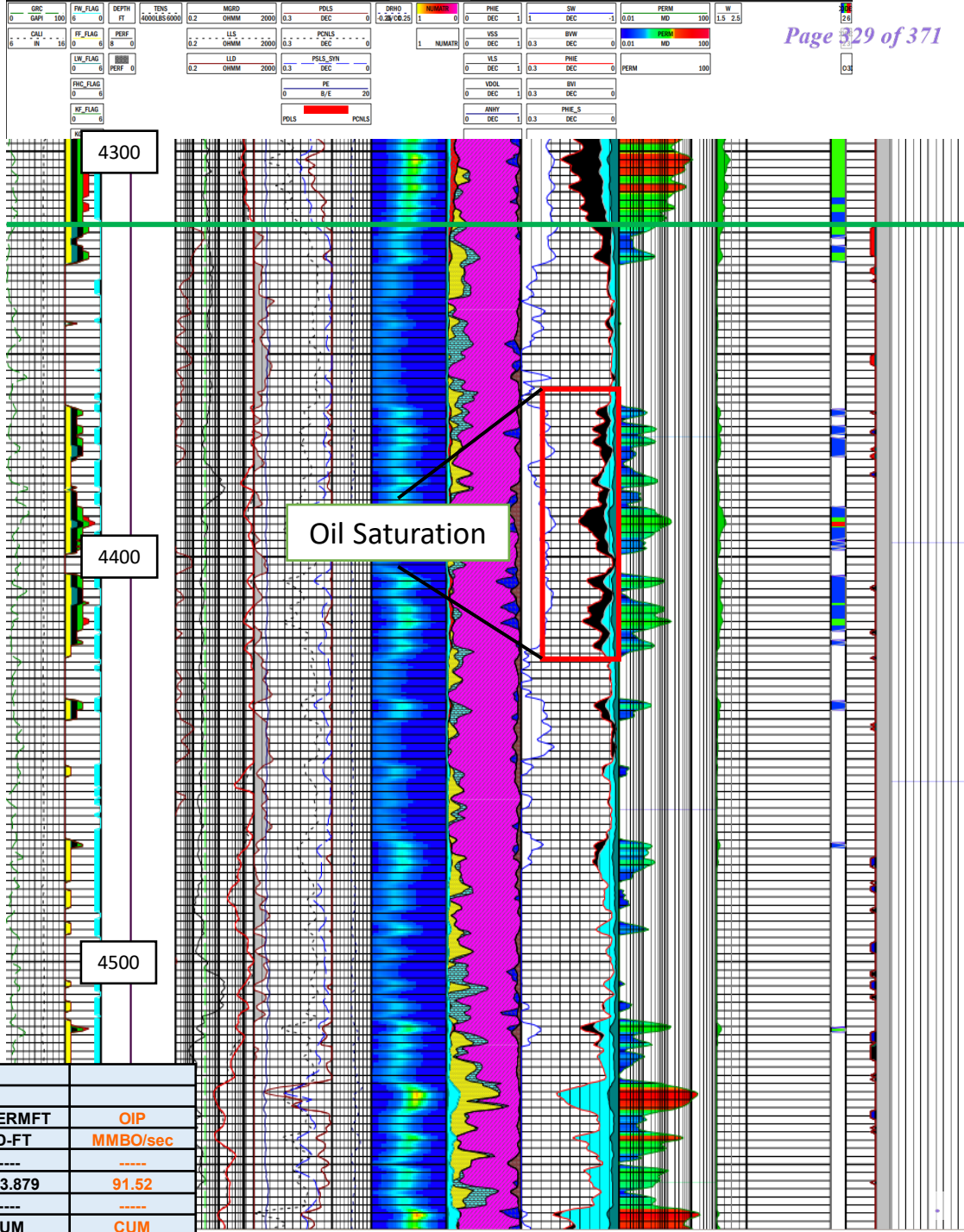
**EMPIRE**  
 Eunice and Arrowhead  
 San Andres Nutech logs  
 By: Nick Cestari  
 0 1 2 3 4  
 MILES  
 September 13, 2023

San Andres

Goodnight Ryno 1

### KEY POINTS

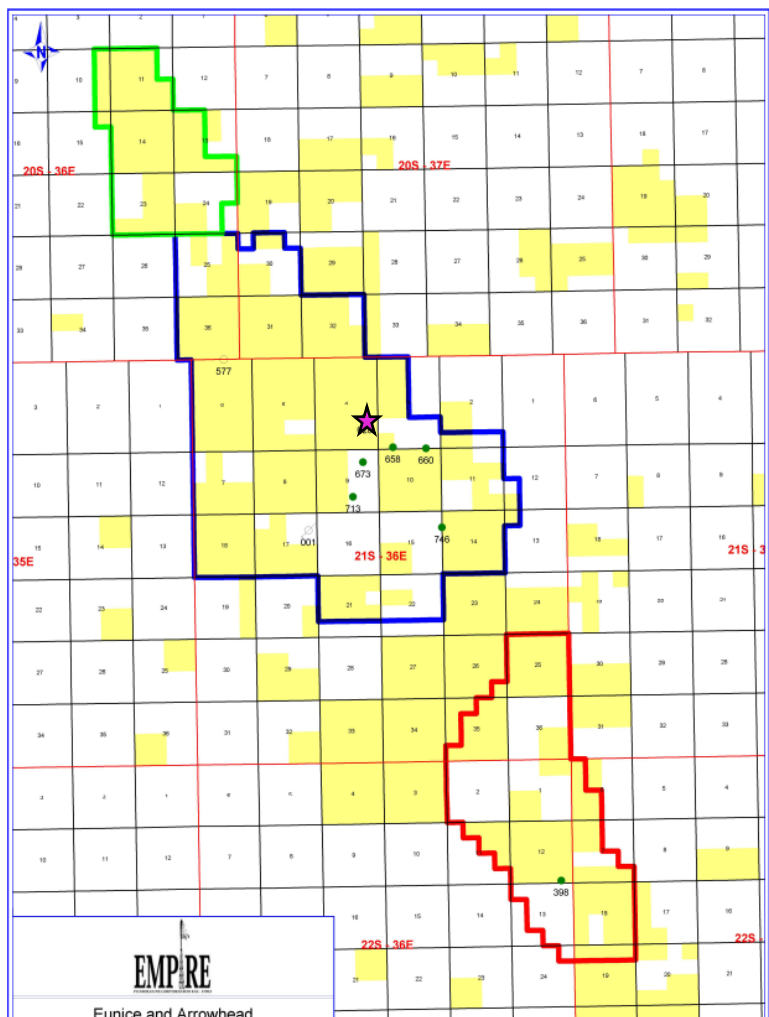
- The petrophysical analysis proves the presence of hydrocarbons in the San Andres interval
- **Ryno SWD – 91.5 MMBO/sec**



Zone	Summaries							
DEPTH FT	GROSSFT	PAYFT	PHIE DEC	SW DEC	NUPERM MD	HydPorFT POR-FT	NUPERMFT MD-FT	OIP MMBO/sec
SAN ANDRES	1298	191	0.090	0.780	1.808	24.029	2763.879	91.52
	TOT	TOT	AVGX	AVGX	AVGX	CUM	CUM	CUM



# Nutech analysis of San Andres EMSU



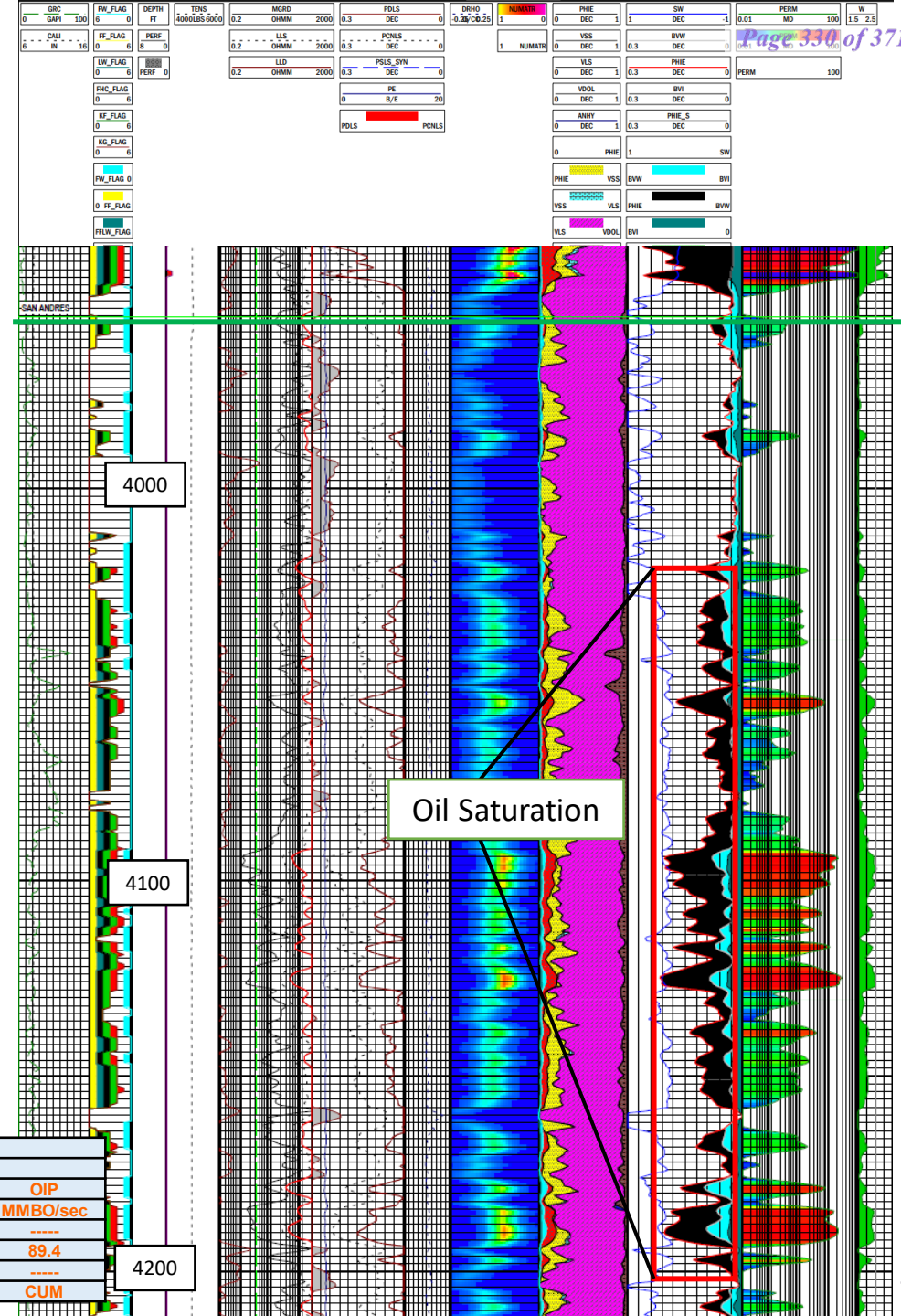
**EMPIRE**  
 Eunice and Arrowhead  
 San Andres Nutech logs  
 By: Nick Cestari  
 0 1 2 3 4  
 MILES  
 September 13, 2023

### KEY POINTS

- The petrophysical analysis proves the presence of hydrocarbons in the San Andres interval
- EMSU 628 – 89.4 MMBO/sec

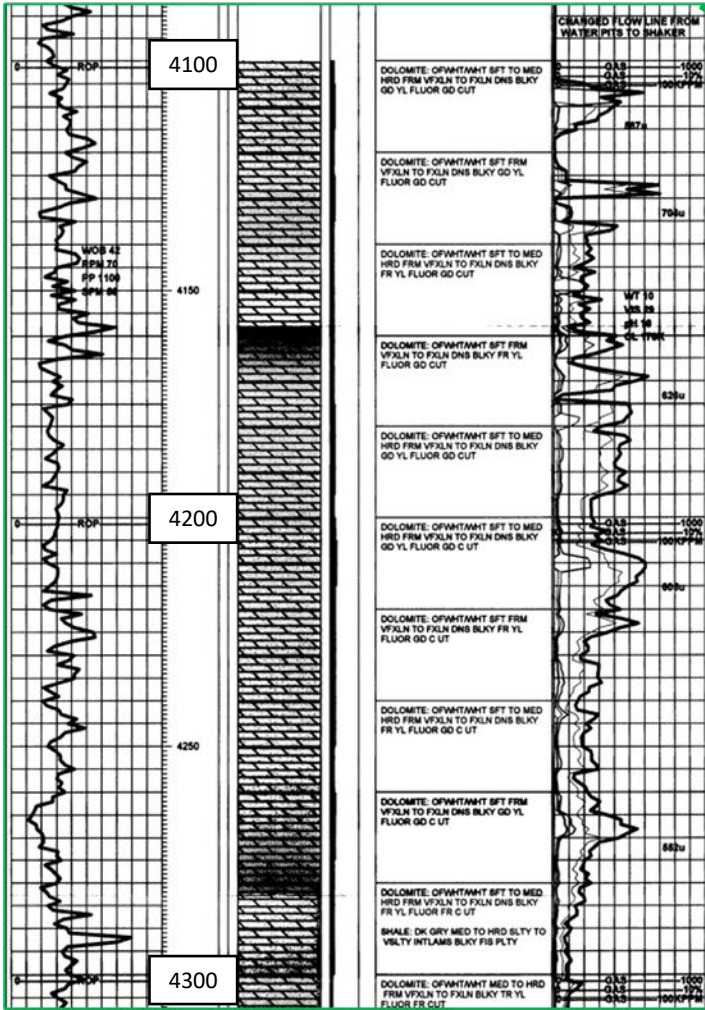
Zone	Summaries							
DEPTH FT	GROSSFT	PAYFT	PHIE DEC	SW DEC	NUPERM MD	HydPorFT POR-FT	NUPERMFT MD-FT	OIP MMBO/sec
SAN ANDRES	562	283	0.095	0.604	2.531	23.406	1422.605	89.4
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----	TOT	TOT	AVGX	AVGX	AVGX	CUM	CUM	CUM

San Andres  
 EMSU 628



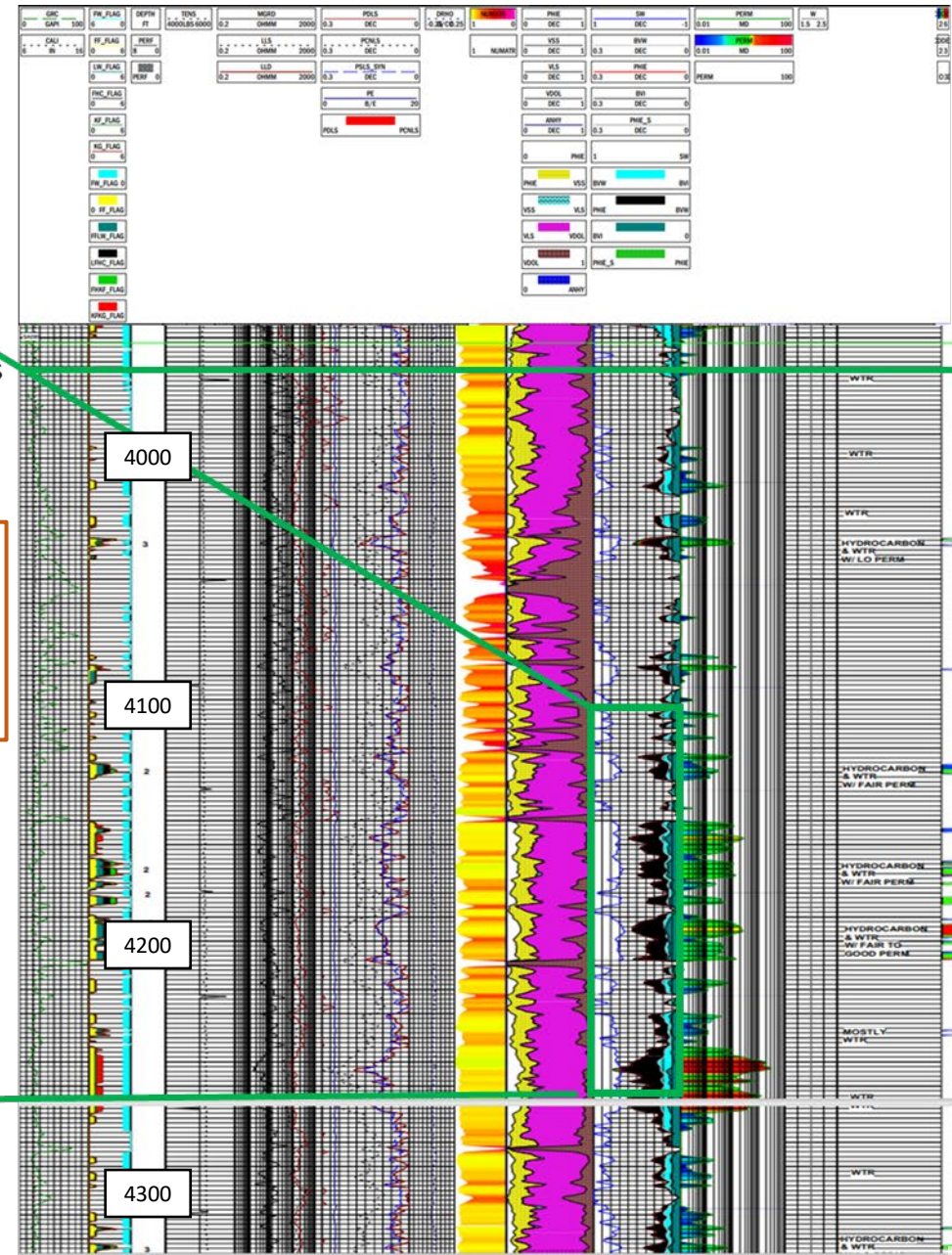


# Exhibit F-4 –Proof of Residual Oil Zone within the San Andres Reservoir



EMSU 660  
San Andres

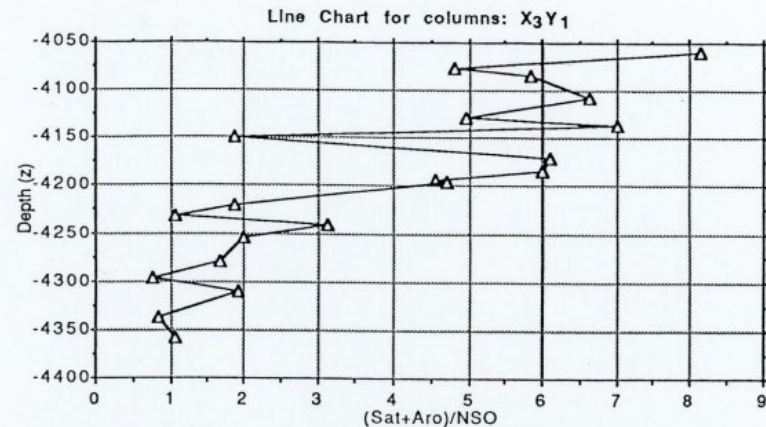
"This will result in the "Dull" as opposed to "Bright" fluorescence. This is, however, still an indicator of the presence of an ROZ." <sup>2</sup>



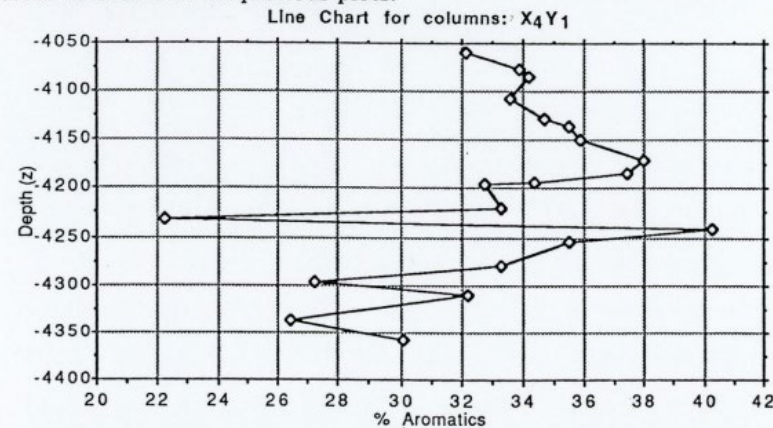
## KEY POINTS

- Multiple mudlogs were run at the EMSU all showing indications of a Residual Oil Zone in the San Andres
- As an example, the EMSU 660 has a 200' interval of yellow fluorescence with good cut within the San Andres interval

# Exhibit F-5 - Geochemical Evidence of a Residual Oil Zone in the San Andres



The sum of the saturates and aromatics can be related to the more mobile components of oil. Using the % NSO compounds as the denominator, (immobile component) a ratio of mobile (vs) immobile is calculated and plotted by depth. Again the same breaks in the depth curve occur as shown in the previous plots.



The aromatics maintained a fairly uniform percentage throughout the well with the exception of a break at 4232'. This indicates a high water content removed the aromatic compounds at this depth. Additional affects of water is shown at 4300' & 4340'.

## KEY POINTS

- The core study done on the EMSU 679 indicates the presence of a residual oil zone in the San Andres
- Aromatic compounds decrease as a result of Mother Nature's waterflood
- Mobile vs Immobile profile shows oil in the core down to -750'

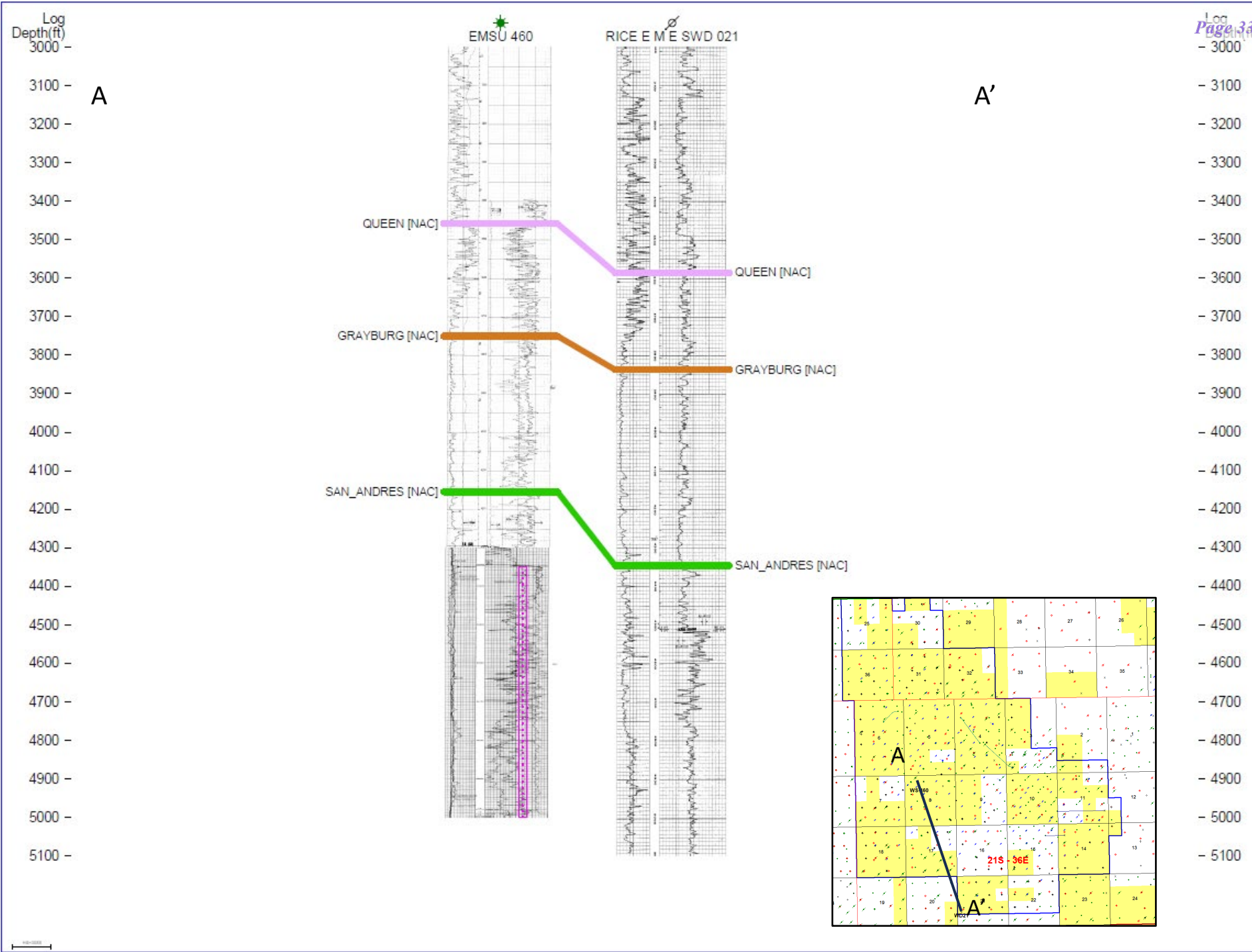
"A Fourier transform ion cyclotron resonance (FT-ICR) study, which zoomed into the heavier components, revealed that paleo oil has less aromaticity than MPZ oil and lacks aromatic sulfur and disulfur compounds, a negligible amount of nitrogen compounds, and no resin-type components."<sup>1</sup>

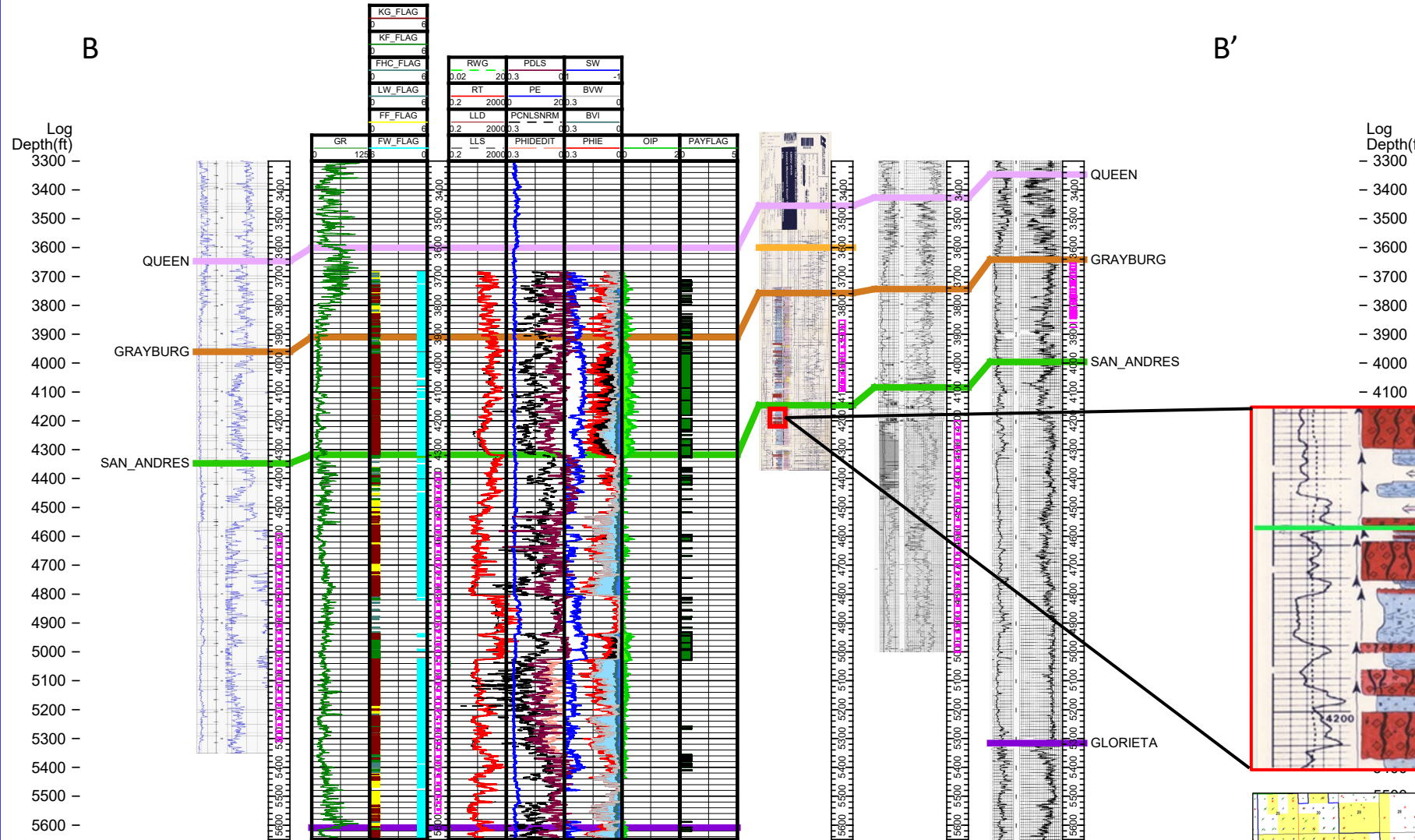


# Exhibit F-6

## KEY POINTS

- Due to lateral facies changes across the EMSU, there is not a consistent barrier between the San Andres and Grayburg reservoirs
- There are proven examples of communication throughout the field
- Basal blocks moved post deposition causing fractures to form creating pathways for fluid communication



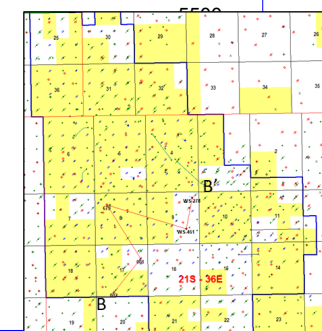


### KEY POINTS

- Due to lateral facies changes across the EMSU, there is not a consistent barrier between the San Andres and Grayburg reservoirs
- Core study done on the EMSU 679 shows collapse breccias with fractures throughout
- The flexure of the structure post deposition along with facies change allows for communication between the Grayburg and San Andres reservoirs

San Andres

Cross-section highlighting the varying thickness of anhydrite/tight dolostone barrier at the top of San Andres in addition to the flexure in the structure towards the crest where we see evidence of fractures and collapse breccia features



**Tab 7.**

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

<b>APPLICATIONS OF GOODNIGHT</b>	<b>CASE NOS.</b>	<b>23614</b>
<b>MIDSTREAM PERMIAN, LLC FOR</b>		<b>23615</b>
<b>APPROVAL OF SALTWATER DISPOSAL</b>		<b>23616</b>
<b>WELLS, LEA COUNTY, NEW MEXICO</b>		<b>23617</b>

**SELF-AFFIRMED STATEMENT OF WILLIAM WEST**

1. I am over the age of 18. I am a Petroleum Engineer working as Senior Vice President of Operations for Empire Petroleum Corporation and have personal knowledge of the matters stated herein. I have not previously testified before the Oil Conservation Division (“Division”). My credentials as an expert Petroleum Engineer may be found in the attached resume. In short, I graduated from Marietta College with a Bachelor of Science Degree in Petroleum Engineering in May 1999. I began my career with Marathon Oil Company and have been employed in the oil and gas industry since graduation. I have been the Senior Vice President of Operations for Empire Petroleum Corporation since May 2023. I am a Certified Professional Engineer in the State of Wyoming - WY ID # 12599. I have over 25 years of oil and gas experience and have worked in most of the major oil and gas producing basins and States including New Mexico in my career.

2. My area of responsibility for Empire Petroleum Corporation includes the area of Lea County, New Mexico. I am responsible for the secondary waterflood operations in the Eunice Monument South Unit (“EMSU”) and am working on developing the tertiary recovery CO2 Project there. I submit the following information in support of Empire’s opposition in the Goodnight saltwater disposal application.

3. In regard to Goodnight Midstream Permian, LLC’s applications to drill four new SWD wells<sup>1</sup> the following facts were considered:

- **The Eunice Monument South Unit (EMSU) waterflood currently produces approximately 830 BOPD; 67,600 BWPD; 540 MCFPD and injects approximately 67,600**

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<sup>1</sup> Goodnight also has a pending application for authorization to inject produced water into the Piazza SWD #1 and to increase the rate of water disposal into the Andre Dawson SWD #1 (API 30-025-50634) from 25,000 barrels water per day (BWPD) to 40,000 BWPD. As I will explain below, Goodnight proposes to inject all of this water into the same formation within Empire’s unitized interval, and the impact of the injection is cumulative.



**BWPD into the unitized Grayburg / San Andres Reservoir. The EMSU 14,189.84-acre Unit was formed December 27, 1984 and water injection began November, 1986.**

- **The Grayburg / San Andres unitized interval has produced as a single package since discovery in March, 1929 and production from the Grayburg interval resulted in an 18.5% drop in San Andres reservoir pressure prior to water injection in 1986 and any withdrawals from the San Andres to be used for water supply. In addition to this evidence of communication between the Grayburg and San Andres, water influx from the San Andres interval resulted in an increase in the EMSU water production and sulfur content from the Grayburg oil producing wells prior to unitization and water injection.**
- **EMSU-660 pumped 3 barrels oil and 1057 barrels water on January 10, 2006 from the San Andres interval with top perforation at 4126 feet and bottom perforation at 4239 feet. This demonstrates the San Andres oil bearing and productive. A CO<sub>2</sub> flood will enhance this production and is a viable production method.**
- **Disposal into the San Andres portion of Empire's unitized interval using the five proposed salt water disposal (SWD) wells will reach Empire's San Andres water supply wells (EMSU-278 and EMSU-459), which are less than 4000 feet away. This introduction of off lease water will result in higher salinity water (with chemicals from Delaware Basin fracture treatments) being disposed into the Grayburg interval when Empire re-injects this water, thus causing increased corrosion rates and scaling.**
- **There is communication between the Grayburg and San Andres intervals through natural fractures and breaches, which allows San Andres water to enter the Grayburg interval. This influx of San Andres water has been documented by water production maps of wells prior to unitization, increased sulfur content of the EMSU produced water, and the pressure drop in the San Andres interval which occurred before water supply well production.**
- **Corrosive disposal water into the San Andres will travel over long distances over a 1, 5, 10, and 20 year period, thus allowing corrosive disposal saltwater to enter the Grayburg interval through natural fractures and breaches between the two intervals. This corrosive water will then be produced by Empire's oil wells. This disposal will not only increase failure rates in wells and facilities but also prematurely water out Empire's wells.**
- **The San Andres reservoir portion of the unit contains a Residual Oil Zone (ROZ) which is confirmed by core and log analysis. By CO<sub>2</sub> flooding this San Andres ROZ interval it is estimated that 270 million barrels of this residual oil can be recovered, in addition to an estimated 300 million barrels of tertiary oil recovered from the Grayburg.**
- **Disposal of off lease high salinity and corrosive water by Goodnight into the EMSU unitized interval will negatively impact current waterflood and future CO<sub>2</sub> flood oil recovery. The added volume of water into the unitized interval will require that we displace the large volumes of water disposed by Goodnight and inject at higher pressures during the**



**CO<sub>2</sub> flood. We will need to displace an estimated 1.0 to 1.5 billion barrels of disposal water and then reinject it, thus increasing our operating cost for reinjection of the produced water.**

- **According to NMOCDD records, Goodnight has disposed of approximately 23 million barrels of water into the unitized interval of the San Andres reservoir inside the EMSU boundary as of July 1, 2023. This 23 million barrels of water disposal has forced an additional 23 million barrels of water to move through the reservoir, therefore impacting 302 acres inside EMSU. After one additional year the volume will increase to approximately 108 million barrels and the impacted area will grow to 1604 acres.. This volume was determined based on Goodnight's requested disposal rate of 40,000 BWPD per new well (including Andre Dawson SWD #1 and Ernie Banks SWD #1), with the other wells using their current rates of water disposal. By July 1, 2028 the cumulative disposal volume will be 1.08 billion barrels inside the EMSU and another 0.28 billion barrels outside the unit. This injection will impair Empire's ability to produce the underlying reserves and thereby violate its correlative rights.**
- **Goodnight has leased 40 acre tracts in Sections 3, 4, 9, and 10 of Township 21, Range 36 (Lea County) for saltwater disposal. Information contained in the Surface Use and Salt Water Disposal Agreement Exhibit B indicates that Goodnight has assigned five acres to each disposal well. Based upon estimated three million barrels water disposal since January, 2023 into the Andre Dawson SWD #1, Goodnight has already impacted 29.7 acres with their water disposal and will impact 174.1 acres by July, 2024 based on 40,000 BWPD rate. The disposal volume displaces water which is already in the reservoir and it moves outward away from the well.**
- **Regarding the Andre Dawson SWD #1, Goodnight produced information that shows it has operated the well at rates in excess of the 25,000 BWPD (permitted volume) for 60 days since the well became active on January 18, 2023. Goodnight disposed of more than 40,000 BWPD on four separate days, with the highest daily disposal rate being 41,937 BWPD on April 1, 2023.**
- **The Ryno SWD #1 (30-025-43901 previously Snyder SWD #1) was a Devonian saltwater disposal well from September 2019 through September 2021 when it was recompleted to a disposal well in the San Andres within the EMSU unitized interval. It appears that no notification was given to XTO during the administrative approval of this work, thereby allowing this well to dispose of 6.3 million barrels saltwater into Empire's unitized interval and impacting 69.3 acres as of July 1, 2023.**

**A. Discussion of Exhibits**

4. **Exhibit G-1** shows the location of the five proposed SWD wells inside the EMSU.
5. **Exhibit G-2** shows the above five wells and the four active SWD wells Goodnight already operates within the EMSU that are disposing of water into the unitized interval. No disposal volumes have been reported to the Division for the Andre Dawson SWD #1 but Goodnight's correspondence demonstrates it has been disposing of water since January, 2023. The

Ernie Banks SWD #1 has also been utilized for disposal since May 2023 but disposal volumes have not been reported to the Division

6. **Exhibit G-3** shows the results from an openhole Repeat Formation Test (RFT) taken on April 8, 1986 in the EMSU-211 well prior to the start of water injection. The results show the depths where pressure measurements were made and the subsea depth associated with these measured depths based on a well elevation of 3576 feet. The original reservoir pressure in 1929 was measured to be 1450 psi at subsea depth of -250 feet. We assume a 0.43 psi per foot pressure gradient to determine the original reservoir pressure at the various depths where the RFT pressure measurements were taken. The top of San Andres has been picked at 3975' measured depth in the EMSU-211 well and this depth equates to -399' subsea. We then compare the original reservoir pressure at each depth with the measured pressure in 1986 and see that the pressure at the one depth tested in the San Andres has declined by 282 psi or 18.5%. The pressure in the Grayburg has declined by over 1000 psi at the top of the interval due to oil, water, and gas production from wells completed in the Grayburg since 1929. No wells have produced from the San Andres at EMSU, so the only way this San Andres pressure could have dropped is through communication with the Grayburg.

7. **Exhibit G-4** is a graphical representation of **Exhibit G-3** showing the measured pressures plotted on the X axis and the measured depth plotted on the Y axis. The graph shows the 282 psi (18.5%) pressure depletion in the San Andres in the area shaded in red at the bottom of the graph. The only physical explanation is that fluids from the San Andres interval migrated into the Grayburg interval. This confirms the two formations are hydraulically connected.

8. **Exhibit G-5** shows the water production during 1981 prior to unitization and includes the location of Goodnight's five proposed disposal wells for reference. The exhibit shows that there are wells in the central portion of the field which produced high water volumes even though wells around them produced low water volume. This difference in water production is an indication that there is communication between the Grayburg and San Andres intervals which is letting water into the Grayburg from below. This concept was confirmed by the sulfur content of the produced water increasing as San Andres water entered the Grayburg interval. The five proposed SWD application wells are located in the area where the largest influx of San Andres water occurred, demonstrating the wells are in an area which will do the most harm to Empire's unit if allowed to dispose of water. The EMSU-239 produced the most water during 1981 and it is very close to the proposed Hodges SWD #1.

9. **Exhibit G-6** is taken from the Technical Committee Report – April 1983 – “Proposed Eunice Monument South Unit, Lea County, New Mexico”<sup>1</sup> which was written prior to unitization. It is a 3-D visualization prepared by Chevron to show the plumes of water production from the Grayburg wells. These locations are where the greatest influx of San Andres water will occur if saltwater disposal is allowed.

10. **Exhibit G-7** cites a paragraph from Chevron's 1996 NACE paper number 181 “Utilization of Geological Mapping Techniques to Track Scaling Tendencies in the EMSU Waterflood”<sup>2</sup>. In this paper, Chevron concludes that San Andres water is finding its way into the wellbores and resulted in a barium sulfate scale, barite, and deposition problem. This problem

occurred prior to the injection of San Andres water into the Grayburg interval during the waterflood.

11. **Exhibit G-8** shows Goodnight's proposed five SWD wells in relation to Empire's two active San Andres water supply wells EMSU-278 and EMSU-459. Empire produces San Andres water to assist with the waterflood of the Grayburg interval. The EMSU-278 WSW is approximately 3511 feet from the proposed Piazza SWD #1 and approximately 3529 feet from the proposed Seaver SWD #1. The EMSU-278 well has produced an average of 5,567 BWPD during 2023. The EMSU-459 is approximately 3822 feet from the Hodges SWD #1 proposed well and has produced an average of 12,772 BWPD during 2023. The disposal of high salinity corrosive fluids into the SWD wells proposed by Goodnight will result in damage to these water supply wells and the high salinity water will then be re-injected into the EMSU injection wells causing further damage to Grayburg oil producers. These SWD wells should not be drilled and the existing SWD wells within the boundaries of the unitized interval must be shut-in to prevent further damage.

12. **Exhibit G-9** shows the relative magnitude of the saltwater chlorides that Goodnight is disposing into the EMSU versus the chlorides of the EMSU water. The disposal water chlorides average 86,147 mg/L based on water analysis provided from Goodnight's Wrigley facility over the period of November, 2022 to August, 2023. As shown by **Exhibit G-10**, Goodnight is gathering water with chlorides as high as 224,384 mg/L. **Exhibits G-11 and G-12** show historical water analyses for produced water from EMSU, with average chlorides content of 7,814 mg/L.

13. **Exhibit G-13** is the 2005-2006 XTO well completion report for EMSU-660, which demonstrates that the San Andres made water during swabbing operations but made 3 BO and 1057 BW when it was produced using ESP (Electric Submersible Pump). This shows that oil can be produced from the San Andres but requires CO<sub>2</sub> flooding to mobilize the residual oil.

14. **Exhibit G-14** shows the location of a CO<sub>2</sub> pipeline that runs south from Hobbs and within 7.5 miles east of EMSU. This pipeline can be used to transport natural (subsurface CO<sub>2</sub> resources) or anthropogenic (industrial emissions) CO<sub>2</sub> supplies to be used for the CO<sub>2</sub> flood. With 45-Q tax credits paying \$60/tonne (\$3.19/MCF) of CO<sub>2</sub> sequestered, parties interested in obtaining this tax credit for 12 years will have a location to inject the anthropogenic CO<sub>2</sub> they capture.

15. **Exhibit G-15** shows the 15 Goodnight SWD wells that are disposing of water in the San Andres interval and the calculated areas affected by disposal for current (July-1-2023) and 1, 5, 10, and 20 additional years of disposal. The San Andres has a net-to-gross interval of approximately 50% (portion of interval which can accept water) so we use half of the perforated interval in the calculation of impacted area. The San Andres has an estimated average porosity of 10%, initial connate water saturation of 30%, and residual oil saturation of 30%. The disposal water goes through the San Andres interval and pushes the San Andres water through the openings in the rock, but does not move the oil because it is residual to water. This residual oil reduces the volume of rock which can be filled up with disposal water, and therefore the saltwater disposal impacts a larger area with each barrel pumped. The area impacted is based upon the water disposal volume plus an equivalent volume of water which is displaced by the disposal.

16. **Exhibit G-16** shows the impacted areas of saltwater disposal into the San Andres as of July 1, 2023. These exhibits were prepared using 40,000 BWPD per well disposal rates for the five proposed SWD wells, the Andre Dawson SWD #1 and Ernie Banks SWD #1. The average June 2023 disposal rates were used for the other active SWD wells. The calculations in **Exhibit G-15** show that 302 acres has already been impacted inside EMSU and an additional 926 acres outside the Unit. The impacted area grows as more water is disposed, resulting in 18,224 acres being impacted by July-2033 (10 years additional disposal). These acreage values are used to create the impacted areas shown in **Exhibits G-16 to G-20**. After 5 years (**Exhibit G-18**) the areas start overlapping so three areas are used to represent the total area impacted after 5 and 10 years of additional disposal, **Exhibits G-18 to G-19**. After 20 years (**Exhibit G-20**) the impacted area around each well overlaps with other wells so one area is used to represent the total area impacted.

17. **Exhibit G-21** shows that at a disposal rate of 40,000 barrels of water per day, Goodnight will exceed the storage volume of the 5-acre tract assigned to each well in 13 days. Since disposal water will push water that is already in the reservoir, it is not just the volume of water which is disposed of which determines impacted area, but the disposal volume plus the equivalent volume of water which is moved by the water disposal. Disposal of water into assigned 5-acre tracts at 40,000 BWPD will impact the San Andres interval of other mineral owners in 13 days.

#### **B. Evidence of Communication Between San Andres and Grayburg**

18. As demonstrated by the following data, there is communication between the San Andres and Grayburg intervals.

- Sulfate (SO<sub>4</sub>) rich San Andres water (approximately 2800 mg/L) was produced by Grayburg oil wells prior to water injection. The Grayburg water had low sulfate concentration prior to this influx of San Andres water.
- The April, 1983 Technical Committee Report<sup>1</sup> shows that in 1981, there were plumes of water production from the San Andres in the central portions of the field.
- Openhole pressure measurement taken in the EMSU-211 on April 8, 1986 prior to water production from the San Andres shows a drop in reservoir pressure of 282 psi (18.5%) since discovery in 1929.

19. San Andres water was produced by unit wells completed in the Grayburg interval prior to unitization. This became apparent to Chevron when the sulfur content of the produced water increased and barium sulfate scale began to form. In Chevron's 1996 NACE paper "Utilization of Geological Mapping Techniques to Track Scaling Tendencies in the Eunice Monument South Unit Waterflood, Lea County, New Mexico,"<sup>2</sup> Chevron stated "that during the time of primary production prior to unitization and initiating the waterflood in the Eunice Monument field, barium sulfate scale deposition was experienced in a number of producing wells due to sulfate waters from the San Andres mixing with the barium contained in the Grayburg water. Although the drilling was confined to the Penrose and the Grayburg formations, apparently some

San Andres water was finding its way into the wellbores producing from the Grayburg and resulted in a barium sulfate scale, barite, deposition problem.” With the Grayburg water having low levels of sulfate prior to the waterflood, and the Goat Seep Aquifer containing no sulfate, the water had to originate from the San Andres. After water injection began in November, 1986, the San Andres water was used as make-up water for the waterflood and the sulfur content of the Grayburg water continued to increase.

20. Production data presented in the “Proposed Eunice Monument South Unit” Technical Committee Report <sup>1</sup> of April, 1983, prior to the waterflood, shows that the central parts of the field had high water production. **Exhibits G-5 and G-6** show the 1981 water production from wells in the EMSU prior to the start of water injection in 1986. The highest water producer, which was later designated as EMSU-239 (API #30-025-04468), produced around 1,000 BWPD in 1981 and was converted to a water injector after unitization. This well and the nearby EMSU-262H (30-025-04454) are located in the central portions of the field and surrounded by low water producers. The location of these high water producers indicate that water from the San Andres was entering through natural fractures or some other breach in the barrier caused by stresses in the rock during deposition. The EMSU-262-H was a vertical well when this high water production occurred, and the well was later sidetracked as a horizontal well in 2012.

21. The area where the highest water production occurred is near the location where Goodnight proposes to drill five new SWD wells. The Ernie Banks SWD #1 is also disposing of water very close to the EMSU-368 well, which had apparent high water influx from the San Andres prior to unitization. Goodnight’s disposal of water into the San Andres unitized interval is causing, and will continue to cause, irreparable damage to Empire’s wells, facilities, and reserves.

22. The San Andres and Grayburg original reservoir pressure was approximately 1450 psi at -250 subsea depth (approximately 3814 feet measured depth in EMSU-211) when discovered in 1927. Prior to water injection in April, 1986, the San Andres pressure had dropped from approximately 1,533 psi to 1,245 psi based on the EMSU-211 openhole pressure measurements. Although the pressure drop in the Grayburg interval was much larger than the pressure drop in the San Andres due to production of 121 million barrels of oil, the lower San Andres pressure indicates that the Grayburg and San Andres intervals are in communication.

### C. Estimated Area of Exposure of SWD High Salinity Water

23. **Exhibits G-15 thru G-20** were generated to show the radius of exposure of the Goodnight SWD wells over time if the existing wells are allowed to continue their disposal at current rates and the five application wells plus the Andre Dawson and Ernie Banks are allowed to dispose at 40,000 BWPD. By year ten 18,224 acres (including disposal in the Scully State #1 not shown on map) are invaded and 35,219 acres are invaded by year 20.

24. Section 17 of Township 21S, Range 36E has the four active SWD wells that are disposing of saltwater inside the EMSU. **Exhibit G-16** shows that the water injected into the Sosa SA 17 SWD #2 has already encroached upon the property in Section 20 to the south if we assume uniform radial movement of the water. As shown in **Exhibit G-17**, one year from now all four wells in Section 17 will have disposal water exceeding the assigned surface leases and onto State,



Federal, and Private controlled property. Since water disposal is impacting Empire's unitized Grayburg / San Andres interval, it must be stopped.

25. Since the barrier between the Grayburg and San Andres is not continuous over all parts of the field, as shown by the sulfur increase, water production increase in the central portions of the field, and drop in San Andres reservoir pressure, the high salinity disposal water will move over large distances and find a natural fracture or breach in the barrier and begin interfering with our EMSU production. The location of the five proposed SWD wells are near the area where the greatest water production from the San Andres occurred. The high water production indicates that the Grayburg and San Andres intervals are in communication in the area; therefore the applications for these SWD wells should be denied.

26. As of July 1, 2023, Goodnight has disposed of 83.5 million barrels of water into the San Andres interval using the 10 active SWD wells shown on **Exhibit G-16**. The invasion areas shown in the exhibits represent fluid movement radially away from the wellbore due to water disposal volume plus an equivalent volume of San Andres water which is displaced by the disposal. The pressure response caused by the saltwater disposal will occur over a much larger distance and this pressure will force San Andres water into the natural fractures and breaches in the barrier with the Grayburg. This disposal of high salinity corrosive fluids will prematurely water out our producing wells and cause corrosion in the wells and facilities. **Disposal of saltwater into the San Andres impairs Empire's correlative rights and unit operations, and results in waste of oil and gas.**

#### **D. SWD Impact Upon Waterflood and CO<sub>2</sub> Flood Performance**

27. Empire has previously identified communication between the Grayburg and San Andres intervals. The entry of high salinity corrosive water into Empire's water supply wells and water injection system will result in production of corrosive water and impact waterflood performance both from an oil reserve recovery standpoint and also financially as Empire would need to address the contaminated water in its injection and production operations. Based on 40,000 BWPD disposed into the new wells and the Andre Dawson and Ernie Banks SWD wells, and June 2023 rates on the other active disposal wells, Goodnight will be disposing of 372,540 BWPD (135,977,100 barrels per year) in these wells. This saltwater disposal will impair Empire's ability to implement a CO<sub>2</sub> flood since the reservoir pressure will increase with the water disposal. To prevent further damage caused by these wells, they should be shut-in immediately.

28. It is estimated that 1.0 to 1.5 billion barrels of water will be produced by Empire as it injects CO<sub>2</sub> for enhanced oil recovery. Goodnight's disposal of water into the unitized interval will increase the reservoir pressure and make it more difficult for Empire to inject this produced water back into the reservoir. The disposal will increase Empire's capital and operating costs.

#### **E. Goodnight has violated at least one of its existing permits.**

29. Goodnight has requested that the OCD increase the maximum disposal rate of the Andre Dawson SWD #1 from 25,000 BWPD to 40,000 BWPD. Goodnight has leased 40-acre tracts in Sections 3, 4, 9, and 10 of Township 21, Range 36 (Lea County) for saltwater disposal.

Information contained in the Surface Use and Salt Water Disposal Agreement Exhibit B indicates that they have assigned five acres to each disposal well. Based upon estimated three million barrels water disposal since January 2023 into the Andre Dawson SWD #1, Goodnight has already impacted 14.8 acres with its water disposal and will impact 87 acres by July 2024 if they are allowed to dispose at the 40,000 BWPD rate. Goodnight's documentation on the Andre Dawson SWD #1 shows it has disposed at rates exceeding 25,000 BWPD for 60 days since the well started injecting on January 18, 2023. Goodnight disposed of more than 40,000 BWPD on four separate days, with highest daily disposal rate of 41,937 BWPD. This injection, in conjunction with the injection proposed for the four wells at issue here, is cumulative and will impair Empire's ability to utilize enhanced oil recovery techniques. This impairment will result in waste and violate Empire's correlative rights.

#### **F. Discussion of Reference Papers**

30. Reference 1 is the Technical Committee Report entitled "Proposed Eunice Monument South from April 1983," which was prepared prior to the Unit being formed. Page 4 defines the unitized interval and states: "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." This report also states on Page 22 that "after analyzing individual well production records it is obvious that the water production is not evenly distributed throughout the field. For example, in 1980, only 19% of the active wells produced more than 50 barrels of water per day for a total of 75% of all water produced." Figures 11 and 12 in the report show that some wells are experiencing high water production while surrounding wells are not. Based on Empire's analysis, this phenomena is due to communication with the San Andres.

31. Reference 2 is entitled "Utilization of Geologic Mapping Techniques to Track Scaling Tendencies in the Eunice Monument South Unit Waterflood, Lea County, New Mexico." This paper, which was presented by Chevron as Paper #181 at the Corrosion 96 NACE International Annual Conference and Exposition in Denver, demonstrates there is communication between the San Andres and Grayburg. On Page 181/2, Chevron states: "During the time of primary production prior to unitization and initiating the waterflood in the Eunice Monument field, barium sulfate scale deposition was experienced in a number of producing wells. Although the drilling was confined to the Penrose and Grayburg formations, apparently some San Andres water was finding its way into the wellbore of these wells and resulted in barium sulfate scale, barite, deposition problem." Because the Goat Seep Aquifer to the west does not contain sulfate and the Grayburg produced water had low levels of sulfate, the water had to originate from the San Andres. Table 1 in the paper shows water analyses taken, showing low chlorides for the EMSU produced water.

#### **G. Conclusions**

32. Based on the above analysis, my conclusions are as follows:

- **The EMSU is a valuable source of hydrocarbons and must be protected to prevent waste.**

- **Due to communication of the Grayburg and San Andres intervals, Goodnight’s saltwater disposal will cause waste, drown out the Grayburg formation, which is producing oil and gas, and will result in a loss of ultimate oil recovery as well as increase the failure rate of Empire’s wells and facilities due to corrosion rates.**
- **The area impacted by each SWD well is significant and increases the likelihood that corrosive, high salinity water will enter the Grayburg interval due to increased pressure in the San Andres and fluid contact with natural fractures or breaches in the barrier between the two intervals.**
- **These five new wells (Hernandez SWD #1, Doc Gooden SWD #1, Hodges SWD #1, Piazza SWD #1, and Seaver SWD #1 shown in Exhibit G-1, will exacerbate the damage that has already been caused by the active Goodnight disposal near the EMSU. These applications for additional SWD wells within the unitized interval should be denied as they will result in well and facilities damage and loss of oil and gas reserves.**
- **The Ernie Banks SWD #1 (30-025-50633), Andre Dawson SWD #1 (30-025-50634), Ryno SWD #1 (30-025-43901), and Sosa SA 17 SWD #2 (30-025-47947) shown in Exhibit G-2, dispose into the EMSU unitized interval. These wells should be shut in to prevent damage and protect the correlative rights to Empire’s wells and facilities, including loss of oil and gas reserves.**

33. The attached exhibits were either prepared by me or were compiled from company business records.

34. I understand this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date next to my electronic signature below.

\_\_\_\_\_  
 William West  
 Date: \_\_\_\_\_

**References**

- 1.) Technical Committee Report – April 1983 – “Proposed Eunice Monument South Unit, Lea County, New Mexico” prepared by
- 2.) L. N. Strickland, D. W. Beaty, A. B. Carpenter; “Utilization of Geological Mapping Techniques to Track Scaling Tendencies in the Eunice Monument South Unit Waterflood,

Lea County, New Mexico” Paper 181 presented at Corrosion 96 – The NACE International Annual Conference and Exposition March 24-29, 1996 Denver, Colorado

34. I understand this Self-Affirmed Statement will be used as written testimony in this case. I affirm that my testimony above is true and correct and is made under penalty of perjury under the laws of the State of New Mexico. My testimony is made as of the date next to my electronic signature below.



---

William West

Date: October 26, 2023



## Attachment

**WILLIAM WEST**

3510 Triple Crown Dr • Richmond, TX 77406 • 307.272.4624 • williamjwest@msn.com

## OVERVIEW

As a proven leader, William brings a wealth of knowledge and a proven track record of success, driven by his dedication and experience in operations engineering. His commitment to collaboration and continuous improvement has resulted in significant advancements in the companies he has served.

## EXPERIENCE

**EMPIRE PETROLEUM CORPORATION, The Woodlands, TX***Senior Vice President of Operations*

Jun 2023 – Present

- Oversee the strategic and day to day direction of Divisional Logistics, Transport, Sales, Financial and Field Operations
- Responsible for P&L, including department budget and cost control
- Carries out supervisory responsibly in accordance with the organizations policies and applicable laws
- Ensure that the operation's division is managed in the safest, most efficient, and cost-effective method possible
- Ensures safety is at the forefront of all actions and decisions and DOT Compliance standards are administered, monitored, and enforced
- Collaborate with managers and staff members to formulate and implement policies, procedures, goals, and objectives
- Understanding of all operating and financial systems current and future for the company and how to maximize use and return from each
- Strategically manage the network and identify key initiatives to drive year over year total cost improvements, using lean logistics principles and tools
- Assessment of equipment needs and completion of capital requests/business case to support oversight of employee-based driver pool management
- Lead operations management including oversight of maintenance operations, capital requirements, planning and administration, safety and cost management
- Remain current on industry trends and provide strategic recommendations to executive management that keep Empire on the "cutting edge"

**TREADSTONE ENERGY PARTNERS LLC I, II, & III, Houston, TX***Vice President of Operations*

Feb 2014 – Jun 2023

*TEP III (Dec 2021-Present)*

- Provide support for acquisition activities
  - *TEP II (Sept 2015 - Dec 2021)*
- Managed operations for 45,400 net acres in Milam, Burleson and Robertson Counties (165+ wells)
- Designed, operated, and managed increase of SWD system from 3,000 BWPD to 115,000 BWPD by adding 5 new SWD wells, facilities and pipelines
- Expanded electrical grid from 20 MW capacity to 80 MW capacity by expanding trunklines and a \$3MM substation upgrade
- Field production from 600 BOPD to 11,000+ BOPD through successful infield drilling program and facility upgrades
- Legacy production up from 600 BOPD to 1100+ BOPD at sale 6 years later due to diligent production and artificial lift operations

**WILLIAM WEST**

3510 Triple Crown Dr • Richmond, TX 77406 • 307.272.4624 • williamjwest@msn.com

*TEP I (Feb 2014 - Sept 2015)*

- Managed operations for 12,000 net acres in Fort Trinidad
- Field production from 3000 BOPD to 10,000+ BOPD in 7 months through drilling and facility upgrades
- Managed completion, facilities and production activities for 3 rig program
- Installed 2 SWD facilities and expanded SWD infrastructure
- Managed operations for 5500 net acres in Alabama Ferry field in Leon County (80 BOPD, 24 wells including water flood pilot program)

**SHERIDIAN PRODUCTION COMPANY, Houston, TX***Exploration Engineer*

Feb 2013 – Feb 2014

- Provide asset management and petroleum engineering support for Permian Basin properties in the Central Basin Platform
- Managed waterflood assets in: Grayburg, San Anders, Clearfork, and Tubb reservoirs
- Exploited reserves through conformance & recompletion work
- Recompletion and short radius lateral work in the Wolfcamp & Bone Springs reservoirs
- Installed and managed an openhole horizontal waterflood in the Powder River Basin

**EXARO ENERGY II & III LLC, Houston, TX***Petroleum Engineer*

March 2010 – Feb 2013

- Provide asset management and petroleum engineering support for South TX properties
- Designed LP gathering and fluid handling system capable of handling 30 MMCFD and 15 MBFPD at 6 psi
- Provided onsite supervision for all stimulation including coil controlled stimulation
- In 10 months increased field production from 1.9 MMCFD to 25 MMCFD
- Before start of drilling program dropped lifting cost from \$1.25/mcf to \$0.60/mcf
- Provided support in divesture of South TX properties
- Worked non-operated joint venture with Encana under Exaro III on WY Jonah properties

**CONTRACT CONSULTING, Cody, WY***Completions Engineer*

Nov 2009 – March 2010

- Contracted to Newfield Exploration in the Williston Basin
- Provide onsite supervision, operational and engineering support for multi-stage completion of Bakken & Three Forks wells and associated production facilities

*Production Engineer*

May 2009 – Nov 2009

- Contracted to Marathon Oil Company in the Big Horn and Oregon Basin Fields
- Responsible for field gas wells, horizontal Darwin Oil wells, field fracturing, drilling disposal wells and stimulation treatments
- Covered for workover foreman, prepared and implemented workover program

**LEGEND NATURAL GAS I, II, & III, Katy, TX***Operations Manager*

May 2006 – May 2009

## WILLIAM WEST

3510 Triple Crown Dr •Richmond, TX 77406 • 307.272.4624 • williamjwest@msn.com

- Supervise 11 company field employees (2 Field Foreman, 1 Construction Foreman, 1 Completion Foreman and 7 Lease Operators)
- Design & installation for a new venture pipeline infrastructure and compression facilities for ongoing 100 well development program; ultimate design for 1000+ wells
- Managed operating expenses and expenditures including over \$110 MM of capital in 2008 and resulting in \$130 MM of net revenue

### *Production Engineer*

March 2004 – May 2006

- Directed five company employees and contract employees for natural gas production operations in south Texas; more than 200 wells and production in excess of 30 MMCFD
- Designed facilities & pipelines for 16 well exploration programs with production of 30 MMCFD
- Increased mature field's oil production from 50 BOPD to 250 BOPD with design and implementation of new water handling facilities; increase water disposal capabilities from 5,000 BWPD to 25,000 BWPD

### **VERNON E. FAULCONER INC., Breaux Bridge, LA**

*Production Engineer/Area Manager*

July 2000 – March 2004

- Responsible for natural gas operation for over 100+ wells in 5 states exceeding 10 MMCFD
- Areas of work: TX, LA, MS, AR, OK, KS, WY and NM
- Provided onsite supervision for facility installations, workover and operational troubleshooting
- Managed daily operations, troubleshooting, and maintenance of 28 company owned compressors (over 3500HP) and an active purchase and rebuild program

### **MARATHON OIL COMPANY, Lafayette LA**

*Production Engineer & Reservoir Engineer, Gulf of Mexico*

May 1999 – June 2000

- Prepared workover, recompletion, and sidetrack AFE packages
- Finished reservoir evaluation of a mature GOM field and proposed future projects

## EDUCATION

### **PROFESSIONAL ENGINEER**

2009-Present

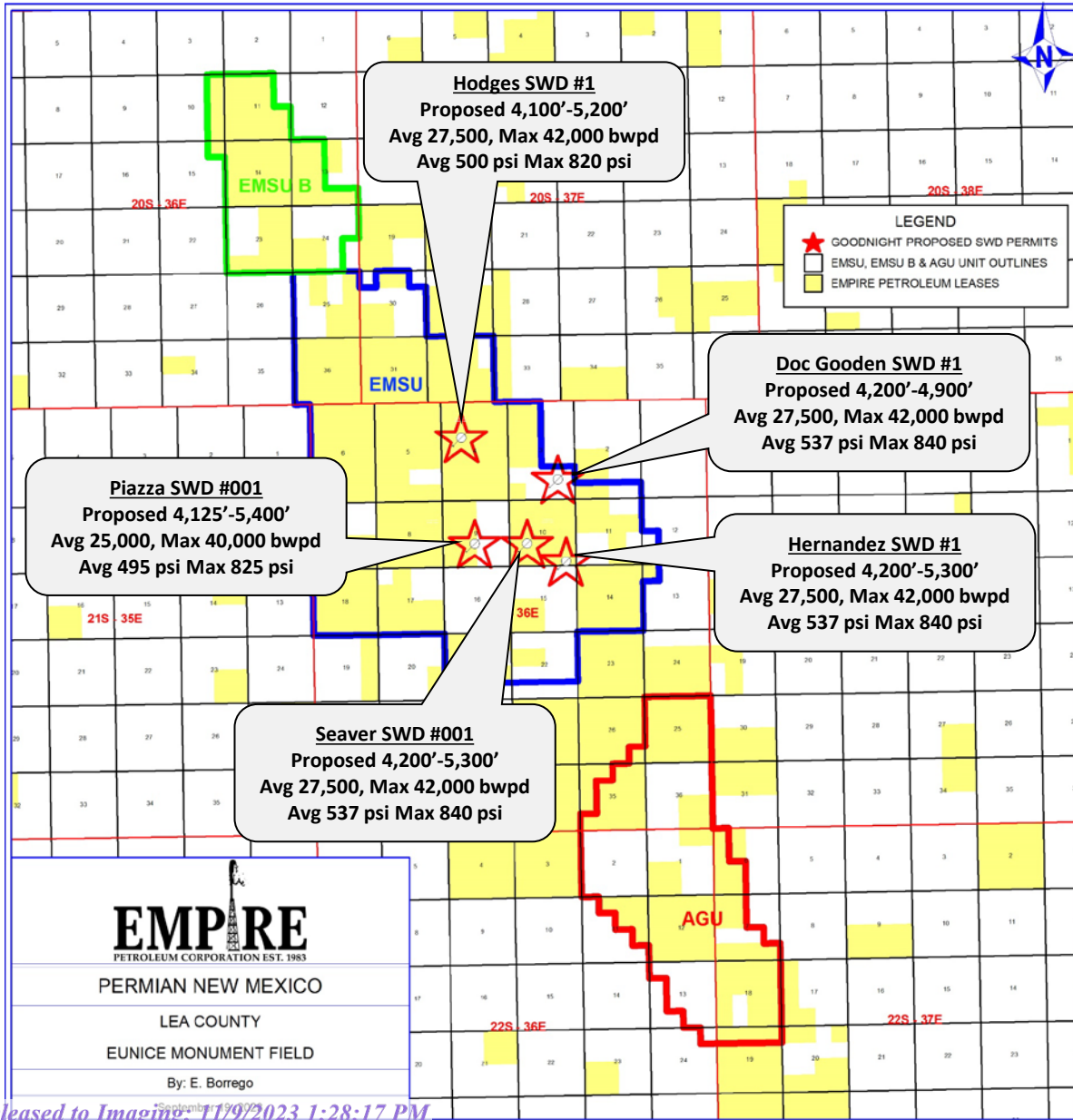
Petroleum Engineering – WY ID #12599

### **MARIETTA COLLEGE**

May 1999

Bachelor of Science, Petroleum Engineering

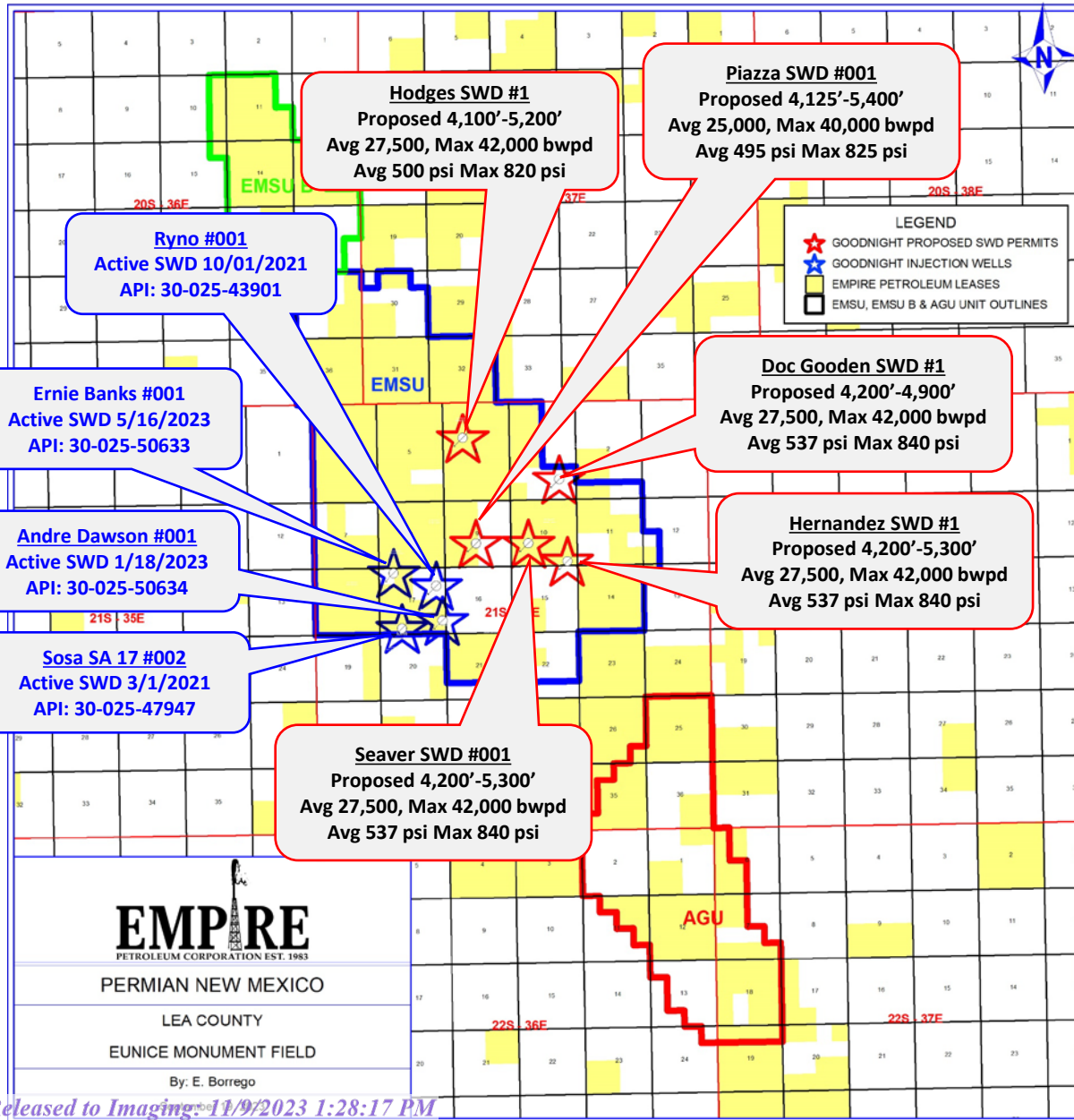
# GOODNIGHT MIDSTREAM PERMIAN, LLC SWD APPLICATIONS



## KEY POINTS

- No third-party injection wells should be allowed inside a unitized oil and gas field
- This damages oil and gas production,
- This also damages future carbon credits
- The Delaware Basin disposal water is not compatible with existing waterflood, damaging oil recovery
- Excess water increases lease operating costs
- Excess water causes direct plugging & abandonment liabilities that must be assumed by those authorizing this destructive activity and the parties injecting the water.

# GOODNIGHT MIDSTREAM PERMIAN, LLC ACTIVE SWD WELLS & APPLICATIONS INSIDE EMSU



## KEY POINTS

- Any and all third-party water disposal oil and gas unit must be immediately stopped:
  - no increases on disposal volumes
  - any new applications must be revoked unless all working interest parties unanimously agree
  - existing well permits should be revoked



# Pressure Depletion Prior To Water Injection (Original Pressure in 1929 compared to 1986 pressure)

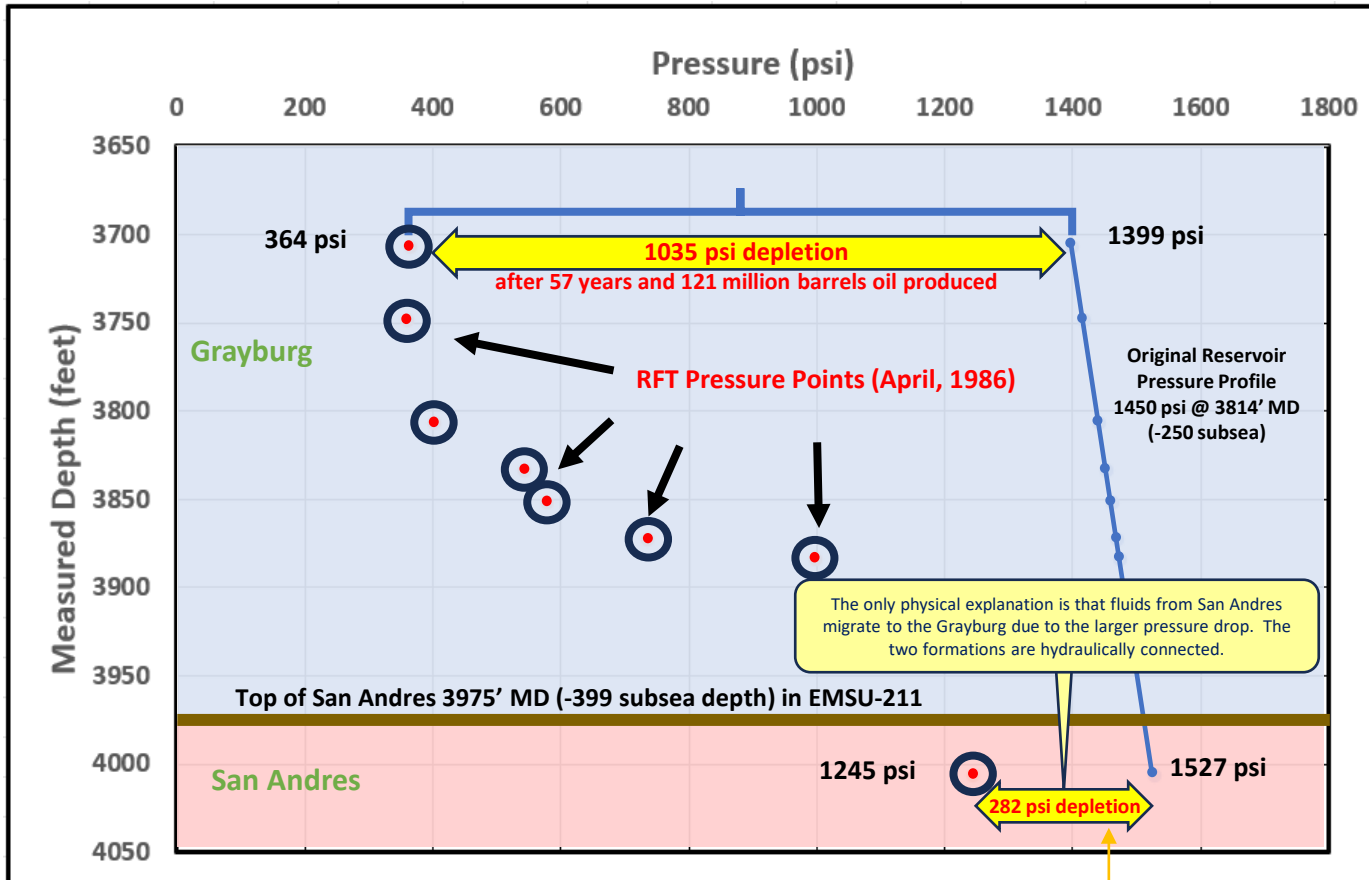
## KEY POINTS

- The 1986 reservoir pressure of the San Andres interval measured by an openhole pressure probe indicates a decline of 18.5% prior to any production from the interval.
- This confirms that the Grayburg and San Andres intervals are in pressure communication, therefore any water injection into San Andres will impact Grayburg oil recovery.

## REPEAT FORMATION TEST (RFT) PRESSURE DATA

		API:	WELL NAME:	DATE TAKEN:	
ELEV = 3576'		30-025-29615	EMSU #211 RFT	4/8/1986	
DEPTH: (FEET)	SUBSEA ELEVATION (FEET)	ORIGINAL RESERVOIR PRESSURE (PSI)	APRIL 8, 1986 SHUT IN PRESSURE (PSI)	PRESSURE DEPLETION (PSI)	PRESSURE DEPLETION (PERCENT)
3707	-131	1399	364	1035	74.0%
3749	-173	1417	360	1057	74.6%
3807	-231	1442	402	1040	72.1%
3834	-258	1453	544	909	62.6%
3852	-276	1461	579	882	60.4%
3873	-297	1470	735	735	50.0%
3884	-308	1475	997	478	32.4%
4006	-430	1527	1245	282	18.5%
Original reservoir pressure was 1450 psi @-250' subsea. Assumes 0.43 psi/foot gradient during original conditions					
Top of San Andres at 3975' MD (-399' subsea)					

# Pressure Depletion Prior To Water Injection (Pressure Measured in EMSU-211 April, 1986)

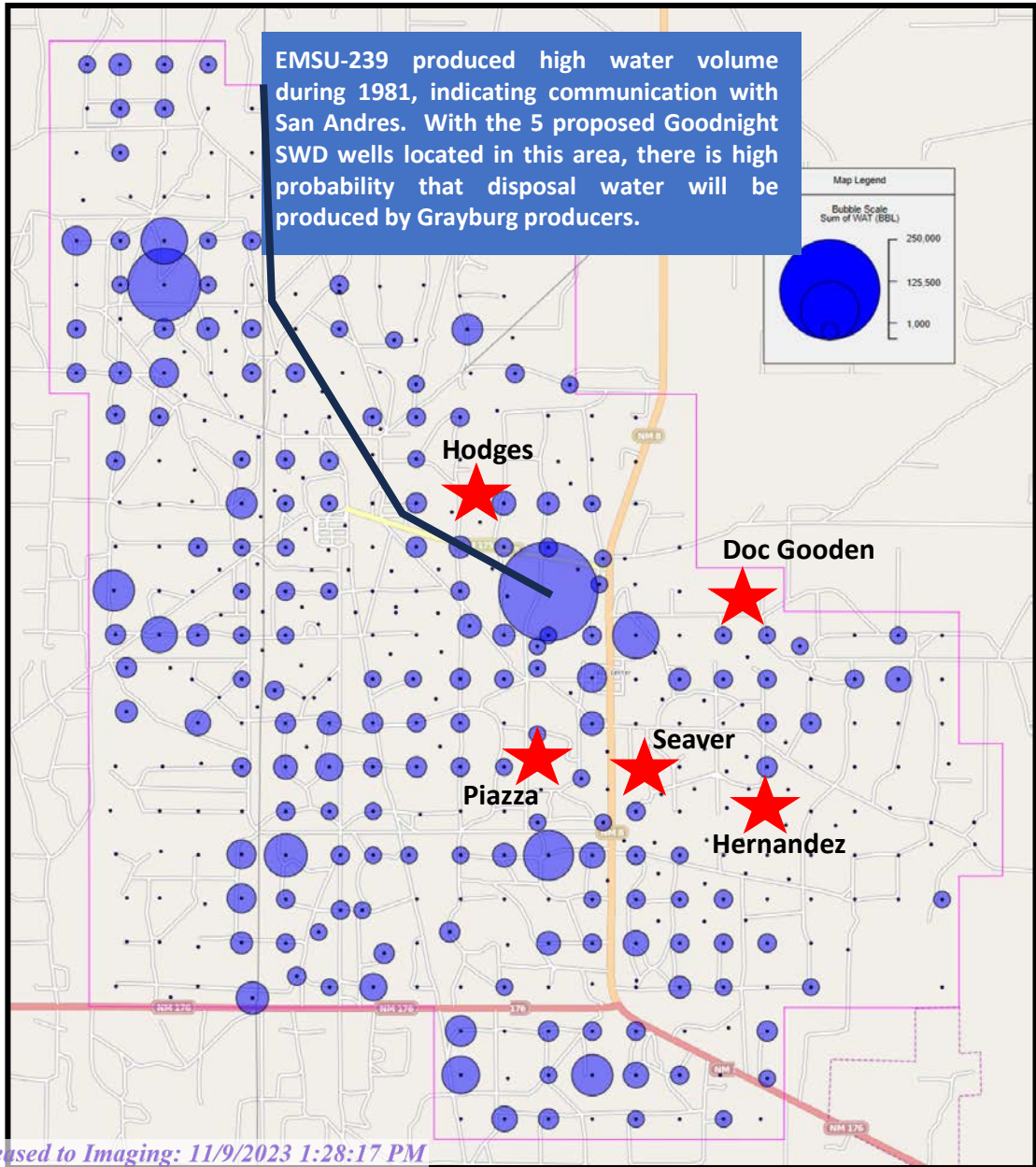


Elevation for EMSU-211 is 3576' above sea level

## KEY POINTS

- This is a graphical presentation of Exhibit F-3 showing pressures measured with depth in the EMSU-211 well during April, 1986.
- Seven pressure points in the Grayburg interval indicated 400 psi to 1035 psi depletion due to production of 121 million barrels oil.
- Although no production was made from the San Andres interval, pressure measurement indicated 282 psi depletion.
- This indicates that the Grayburg and San Andres are in pressure communication.

# Goodnight SWD Applications in relation to high water production areas of field in 1981

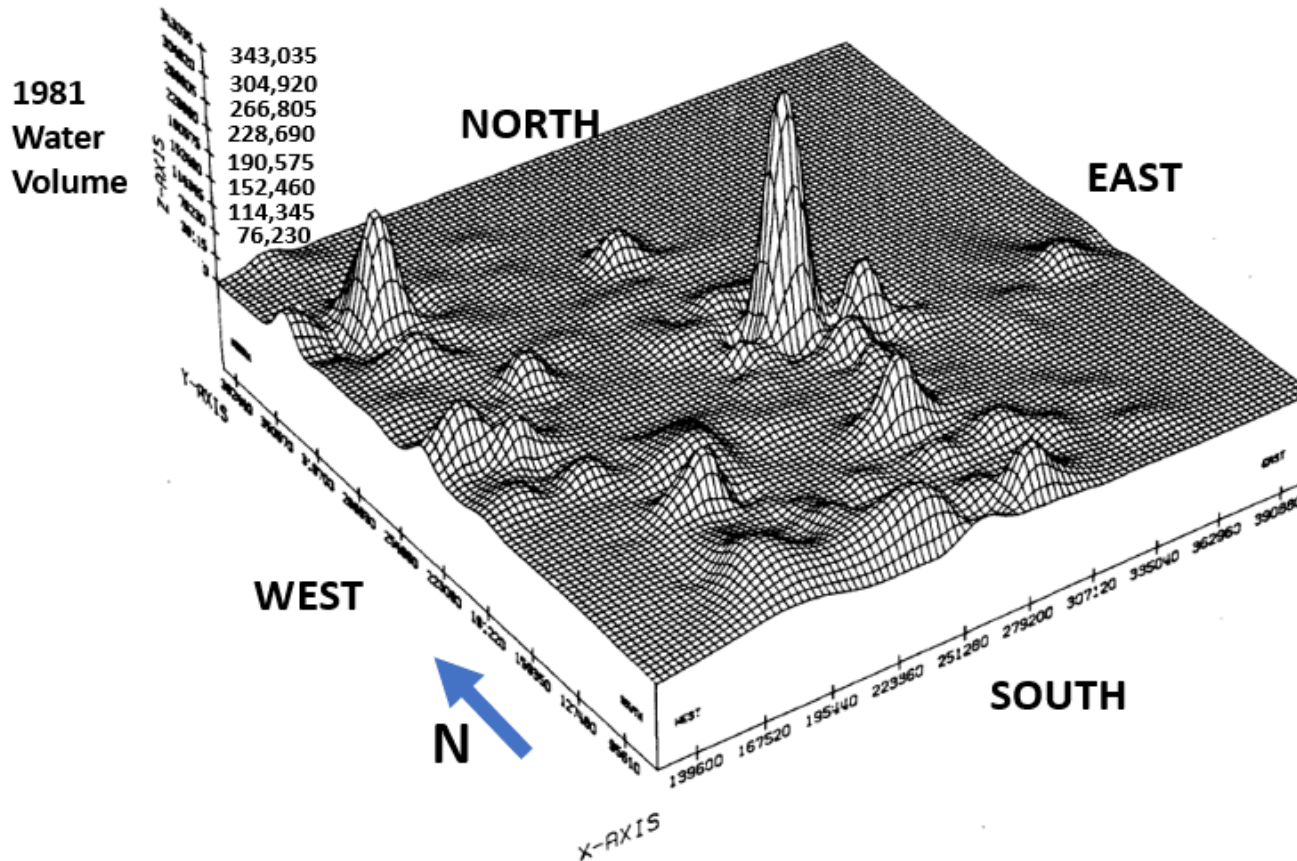


## KEY POINTS

- Water production history prior to the waterflood indicated that the San Andres is communicated with the Grayburg
- Disposing of saltwater into the San Andres damages oil and gas production and is a direct conflict of the NMOCD directives
- The future value of EMSU is reduced for the State and Federal Government by disposal of saltwater
- The Delaware Basin SWD water is not compatible with the existing waterflood, therefore damaging oil recovery
- Excess water production due to SWD disposal increases lease operating costs and results in early plugging & abandonment

**Proposed Eunice Monument  
South Unit  
Technical Committee Report  
April 1983**

1981 water production volumes contained in the Technical Committee Report indicate that natural fractures or breaches in the barrier exist in the central, updip portions of the reservoir and there is communication between the Grayburg & San Andres. EMSU-239 and nearby wells in the central portions of the field demonstrate this by their plumes of water. Further evidence of communication.



**KEY POINTS**

- High water production seen on some interior wells during 1981 indicated that San Andres is communicating with Grayburg.
- NMOCD recognized Grayburg & San Andres as one oil producing zone
- The state must prevent false or misleading applications ever being proposed inside a unit.
- No wells within 2 miles of unit boundary should be allowed.
- No disposal 1,000 feet above or below any productive zone should be allowed.
- Depending on the volumes, disposal volumes within 2-5 miles must be approved by all unit holders.



## Indication of Communication Between San Andres & Grayburg

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- **1996 Chevron paper “Utilization of Geological Mapping Techniques to Track Scaling Tendencies in the Eunice Monument South Unit Waterflood, Lea County, New Mexico”**

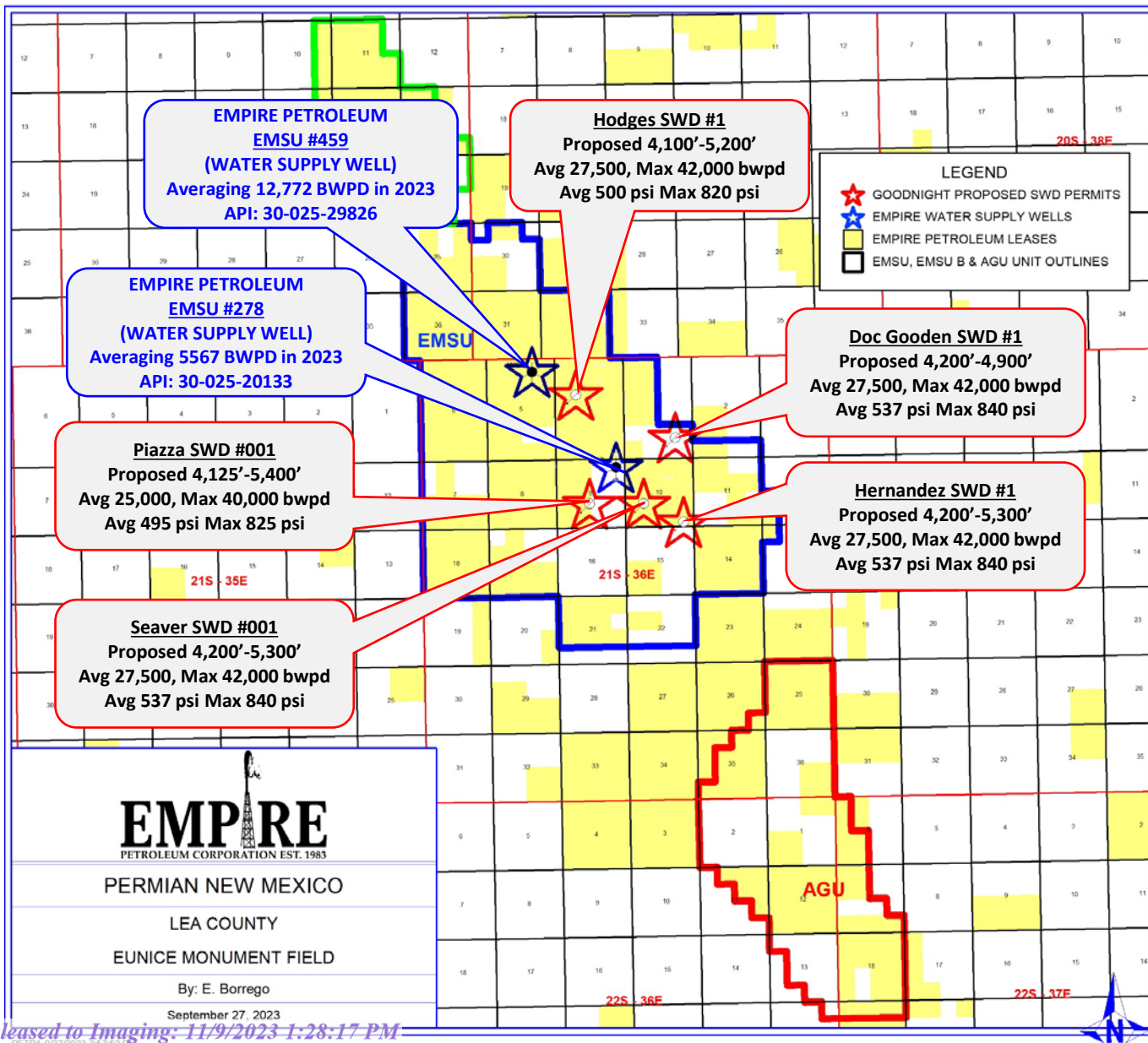
During the time of primary production prior to unitization and initiating the waterflood in the Eunice Monument field, barium sulfate scale deposition was experienced in a number of producing wells. Although the drilling was confined to the Penrose and Grayburg formations, apparently some San Andres water was finding its way into the wellbore of these wells and resulted in a barium sulfate scale, barite, deposition problem.

### KEY POINTS

- Further proves that Chevron as the operator of the Unit recognized the Grayburg & San Andres are one oil and gas productive interval
- NMOCD has recognized Grayburg & San Andres as one oil producing zone for over 3 decades.



# GOODNIGHT MIDSTREAM PERMIAN, LLC - SWD DISPOSAL WILL CONTAMINATE EMPIRE'S SAN ANDRES WATER SUPPLY WELLS

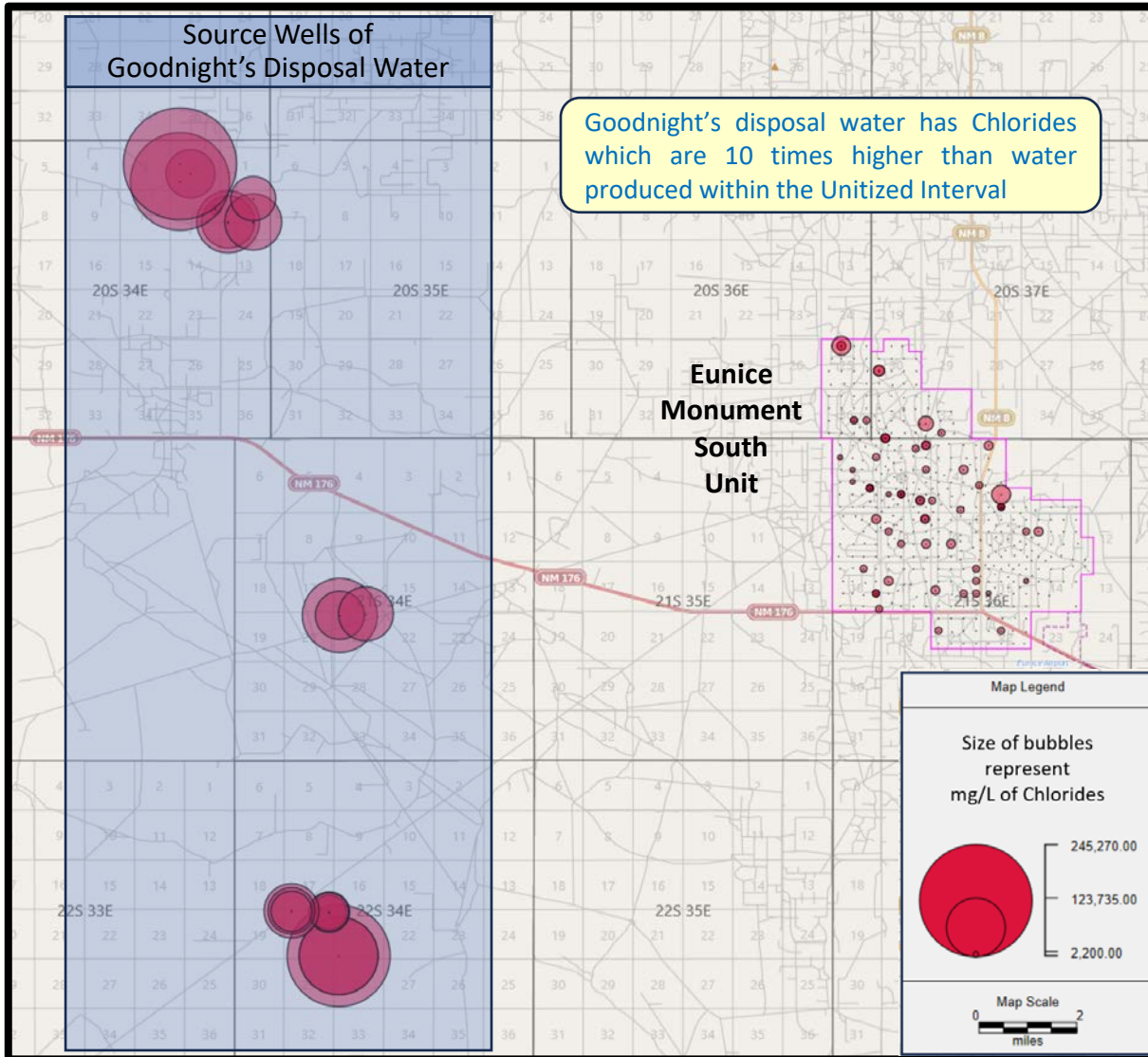


## KEY POINTS

- Empire currently operates two San Andres water supply wells near the proposed SWD wells.
- The high salinity disposal water will be produced by the water supply wells and contaminate the Grayburg interval.
- The chemistry and salinity of Goodnight's disposal water is not compatible with the original EMSU water composition.

### Contrast of Chlorides content for Goodnight’s SWD versus native water within the Unitized Interval.

Data for Goodnight’s disposal water was supplied by Goodnight as part of Case No. 22626. (Piazza SWD #1 application) see **Exhibit 10**



### KEY POINTS

- The chlorides of the disposal water is much higher than the produced water at EMSU.
- Proves a non-compatible saltwater disposal well should not be allowed.
- A 3<sup>rd</sup> party operated SWD well should not be allowed to dispose of water in a unitized interval.
- Disposal of off-site water damages the CO2 oil recovery by increasing operating costs and occupying space where CO2 will be injected.
- Damages the existing waterflood oil recovery

**Water Analysis Data for Goodnight's disposal water.  
It was supplied by Goodnight as part of Case No. 22626.  
(Piazza SWD #1 application)**

API	Well Name	Formation	Total Dissolved Solids (TDS), mg/L	Chloride (Cl), mg/L	Sulfate (SO4), mg/L	Bicarbonate (HCO3), mg/L
3002540626	GAUCHO 21 FEDERAL-002H	DELAWARE-BRUSHY CANYON		169,000	341	37
3002540626	GAUCHO 21 FEDERAL-002H	DELAWARE-BRUSHY CANYON		224,384	210	366
3002540626	GAUCHO 21 FEDERAL-002H	DELAWARE-BRUSHY CANYON	266,468	167,562		366
3002541564	GAUCHO UNIT-012H	BONE SPRING 2ND SAND		68,000	97	427
3002541564	GAUCHO UNIT-012H	BONE SPRING 2ND SAND	109,808	66,985	1,030	281
3002541565	GAUCHO UNIT-013H	BONE SPRING 2ND SAND		77,000	1,600	305
3002541565	GAUCHO UNIT-013H	BONE SPRING 2ND SAND	139,905	85,081	740	293
3002541571	GAUCHO UNIT-014H	BONE SPRING 2ND SAND		82,000	624	220
3002541566	GAUCHO UNIT-015H	BONE SPRING 2ND SAND	158,147	96,378	710	232
3002541566	GAUCHO UNIT-015H	BONE SPRING 2ND SAND	184,420	115,274	765	268
3002503587	H L VINSON-1	WOLFCAMP	67,277	66,400	690	187
3002503123	LEA 401 STATE-2	WOLFCAMP	60,950	33,568	3,049	1,087
3002502424	LEA UNIT-004H	BONE SPRING	29,436	16,720	1,142	634
3002502429	LEA UNIT-005	BONE SPRING	121,800			
3002502429	LEA UNIT-005	BONE SPRING	202,606	118,100	992	5,196
3002502427	LEA UNIT-1	BONE SPRING	15,429			
3002502427	LEA UNIT-1	BONE SPRING	180,701	108,300	670	1,016
3002502427	LEA UNIT-1	DELAWARE	214,787	132,700	1,816	208
3002502431	LEA UNIT-8	BONE SPRING	147,229	89,640	1,038	108
3002531696	MOBIL LEA STATE-001	DELAWARE	152,064	102,148	691	404
3002532105	MOBIL LEA STATE-003	DELAWARE	296,822	215,237	294	143
3002532466	MOBIL LEA STATE-005	DELAWARE	340,838	245,270	147	229
3002540986	MONK 21 STATE COM-001H	BONE SPRING 2ND SAND		103,000	439	207
3002540986	MONK 21 STATE COM-001H	BONE SPRING 2ND SAND	261,089	160,264	425	122
3002542193	MONK 21 STATE-004H	BONE SPRING 2ND SAND	184,233	112,775	425	488
3002503659	PHILLIPS STATE-1	WOLFCAMP	78,885	47,400	875	354
3002503743	STATE CA-1	WOLFCAMP	167,968	102,800	623	61

This table shows the water chemistry of the waters which Goodnight collects and disposes into EMSU.

### KEY POINTS

- Delaware Basin water chemistry is much different than EMSU produced water, with high chlorides increasing corrosion rates and sulfate/bicarbonates increasing scaling tendencies
- This table provided by Goodnight shows chlorides as high as 245,270 mg/L

## Historical Water Analysis Data for Eunice Monument South Unit Unitized Interval (Page 1 of 2)

API	Well Name	Formation	Total Dissolved Solids (TDS), mg/L	Chloride (Cl), mg/L	Sulfate (SO4), mg/L	Bicarbonate (HCO3), mg/L
3002508706	EMSU-221	GRAYBURG/SAN ANDRES	5,482	2,200		1,494
3002504657	EMSU-218	GRAYBURG/SAN ANDRES	6,069	2,320		1,800
3002504456	EMSU-263	GRAYBURG/SAN ANDRES	7,637	3,018	108	1,918
3002504522	EMSU-192	GRAYBURG/SAN ANDRES	7,842	3,144	132	1,937
3002504456	EMSU-263	GRAYBURG/SAN ANDRES	7,866	3,365	54	1,739
3002506321	EMSU-175	GRAYBURG/SAN ANDRES	8,220	4,080	24	1,151
3002504498	EMSU-245	GRAYBURG/SAN ANDRES	8,259	3,020	142	1,296
3002504456	EMSU-263	GRAYBURG/SAN ANDRES	8,317	3,121	34	2,384
3002504504	EMSU-212	GRAYBURG/SAN ANDRES	8,418	3,867	51	1,260
3002504641	EMSU-388	GRAYBURG/SAN ANDRES	8,809	3,632	1,342	677
3002504456	EMSU-263	GRAYBURG/SAN ANDRES	8,816	3,261	109	2,493
3002504653	EMSU-400	GRAYBURG/SAN ANDRES	8,822	2,980	610	2,197
3002504513	EMSU-184	GRAYBURG/SAN ANDRES	9,090	4,000	192	1,828
3002504678	EMSU-409	GRAYBURG/SAN ANDRES	9,161	4,249	416	1,361
3002504670	EMSU-416	GRAYBURG/SAN ANDRES	9,303	5,218	382	264
3002504753	EMSU-446	GRAYBURG/SAN ANDRES	10,200	4,754	456	1,709
3002504456	EMSU-263	GRAYBURG/SAN ANDRES	10,291	4,800	175	1,728
3002504420	EMSU-163	GRAYBURG/SAN ANDRES	10,800	5,200	179	1,810
3002504497	EMSU-244	GRAYBURG/SAN ANDRES	10,815	5,199	529	1,290
3002504678	EMSU-409	GRAYBURG/SAN ANDRES	10,944	4,990	554	1,586
3002504665	EMSU-402	GRAYBURG/SAN ANDRES	10,996	5,856	150	1,184
3002530511	EMSU-620	GRAYBURG/SAN ANDRES	11,100	5,174	599	1,460
3002504497	EMSU-244	GRAYBURG/SAN ANDRES	11,165	5,067	624	1,590
3002504532	EMSU-195	GRAYBURG/SAN ANDRES	11,208	5,412		1,791
3002504684	EMSU-370	GRAYBURG/SAN ANDRES	11,598	6,380	18	1,380
3002504420	EMSU-163	GRAYBURG/SAN ANDRES	11,700	5,900	134	1,730
3002504597	EMSU-305	GRAYBURG/SAN ANDRES	11,739	4,975	181	2,412
3002530511	EMSU-620	GRAYBURG/SAN ANDRES	12,124	5,482	608	1,856
3002504456	EMSU-263	GRAYBURG/SAN ANDRES	12,160	4,814	135	3,095
3002504497	EMSU-244	GRAYBURG/SAN ANDRES	12,315	5,695	640	1,686
3002521902	EMSU-282	GRAYBURG/SAN ANDRES	13,209	6,316	1,070	1,173
3002504463	EMSU-260	GRAYBURG/SAN ANDRES	13,534	6,520	1,174	1,097
3002530511	EMSU-620	GRAYBURG/SAN ANDRES	13,745	6,544	1,058	1,313
3002504497	EMSU-244	GRAYBURG/SAN ANDRES	13,862	5,971	902	1,856
3002504419	EMSU-162	GRAYBURG/SAN ANDRES	13,871	6,780	417	1,751

This table shows the water chemistry of the waters which Empire produces at EMSU.

### KEY POINTS

- The water chemistry of produced water at EMSU indicates low chlorides which allows Empire to treat the water at lower costs than would occur if Delaware Basin water enters the production stream.

## Historical Water Analysis Data for Eunice Monument South Unit Unitized Interval (Page 2 of 2)

API	Well Name	Formation	Total Dissolved Solids (TDS), mg/L	Chloride (Cl), mg/L	Sulfate (SO4), mg/L	Bicarbonate (HCO3), mg/L
3002504656	EMSU-384	GRAYBURG/SAN ANDRES	14,072	6,220	42	2,107
3002504678	EMSU-409	GRAYBURG/SAN ANDRES	14,156	6,186	983	1,721
3002504456	EMSU-263	GRAYBURG/SAN ANDRES	14,492	8,037	38	1,734
3002531409	EMSU-639	GRAYBURG/SAN ANDRES	14,661	7,176	1,250	1,056
3002530511	EMSU-620	GRAYBURG/SAN ANDRES	15,151	6,306	1,051	2,105
3002531409	EMSU-639	GRAYBURG/SAN ANDRES	15,677	8,807	305	884
3002504464	EMSU-231	GRAYBURG/SAN ANDRES	15,797	6,393	2,020	1,889
3002534824	EMSU-575	GRAYBURG/SAN ANDRES	15,797	8,338	1,137	880
3002504667	EMSU-401	GRAYBURG/SAN ANDRES	15,882	7,519	367	1,976
3002531426	EMSU-638	GRAYBURG/SAN ANDRES	15,965	7,860	1,452	1,001
3002504562	EMSU-294	GRAYBURG/SAN ANDRES	16,408	8,357	1,410	847
3002504556	EMSU-325	GRAYBURG/SAN ANDRES	17,262	8,018	590	2,306
3002504737	EMSU-441	GRAYBURG/SAN ANDRES	17,562	8,748	106	1,952
3002521902	EMSU-282	GRAYBURG/SAN ANDRES	17,899	9,016	1,192	1,378
3002534824	EMSU-575	GRAYBURG/SAN ANDRES	17,934	9,432	1,389	934
3002529826	EMSU-459	GRAYBURG/SAN ANDRES	18,031	8,711	2,463	525
3002504321	EMSU-104	GRAYBURG/SAN ANDRES	18,200	10,000	558	1,070
3002534824	EMSU-575	GRAYBURG/SAN ANDRES	18,385	9,523	1,462	931
3002504540	EMSU-286	GRAYBURG/SAN ANDRES	18,408	10,604	290	898
3002504555	EMSU-323	GRAYBURG/SAN ANDRES	18,542	9,402	650	1,513
3002504321	EMSU-104	GRAYBURG/SAN ANDRES	18,800	10,100	512	1,410
3002504570	EMSU-321	GRAYBURG/SAN ANDRES	19,590	10,162	677	1,342
3002504688	EMSU-404	GRAYBURG/SAN ANDRES	20,286	10,900	231	1,818
3002504473	EMSU-209	GRAYBURG/SAN ANDRES	20,770	10,623	917	1,415
3002504447	EMSU-179	GRAYBURG/SAN ANDRES	22,277	12,064	169	1,279
3002504513	EMSU-184	GRAYBURG/SAN ANDRES	22,897	11,905	1,130	1,171
3002504655	EMSU-361	GRAYBURG/SAN ANDRES	23,547	8,304	512	2,050
3002504604	EMSU-306	GRAYBURG/SAN ANDRES	24,581	12,363	354	835
3002529396	EMSU-117	GRAYBURG/SAN ANDRES	24,857	13,881	1,522	743
3002529396	EMSU-117	GRAYBURG/SAN ANDRES	25,848	14,249	1,579	865
3002504689	EMSU-377	GRAYBURG/SAN ANDRES	26,813	11,901	529	1,781
3002506207	EMSU-157	GRAYBURG/SAN ANDRES	42,129	24,973	475	806
3002504320	EMSU-107	GRAYBURG/SAN ANDRES	46,200	27,000	401	1,920
3002504458	EMSU-236	GRAYBURG/SAN ANDRES	59,126	32,804	4,357	18

This table shows the water chemistry of the waters which Empire produces at EMSU.

### KEY POINTS

- The water chemistry of produced water at EMSU indicates low chlorides which allows Empire to treat the water at lower costs than would occur if Delaware Basin water enters the production stream.



## EUNICE MONUMENT SO. UNIT #660 WELLBORE DIAGRAM

**EMSU 660**  
LEA CO, NM  
SEC 3, T21S R36E  
10' FSL, 1250' FEL  
API # 30-025-37319

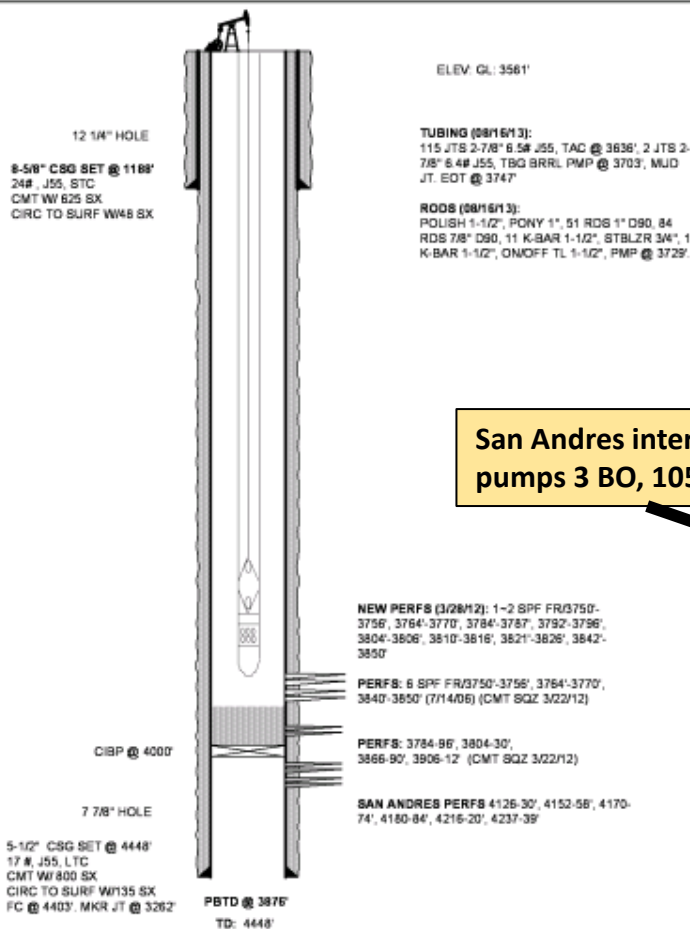


### DATA

**LOCATION:** 10' FSL & 1250' FEL, SEC 3, T21S & R36E  
**COUNTY/STATE:** LEA, NM  
**FIELD:** EUNICE MONUMENT  
**FORMATION:** SAN ANDRES  
**SPUD DATE:** 10/19/05 **COMPLETION DATE:** 3/10/06  
**API #:** 30-025-37319  
**STATUS:** ESP  
**IIP:** 11 BPD, 5 MCFD, 158 BW

### KEY POINTS

- Further proof of oil in the San Andres
- Oil saturation seen on core and logs justified San Andres tests on at least 6 wells in EMSU



San Andres interval pumps 3 BO, 1057 BW

### WELL HISTORY

#### COMPLETION DATA:

**12/06/05:** PERF THE FOLLOWING INTERVALS: 4237' - 4239', 4216' - 4220', 4180' - 4184', 4170' - 4174', 4152' - 4158' & 4126' - 4130'. PPI ACID RESULTS: 4237' - 4239'. SPOTTED 2 BBLS OF ACID TO END OF TBG. PERFS BROKE AT 800#. 4,216' - 4,220', PMPD IN 3-1/2 BBLS OF ACID W/5 BW. PRESS UP ON PERFS TO 800#. PERFS COMMUNICATED W/LOWER SET. 4,180' - 4,184', PMPD 7 BBLS OF ACID. PERFS BROKE AT 800#. 4,170' - 4,174', PMPD IN 7 BBLS OF ACID. PERFS BROKE AT 800#. 4,152' - 4,158', PMPD IN 1.5 BBLS OF ACID IN 2 HRS. PRESS UP ON PERFS TO 1,500 PSIG. PERFS NEVER DID BREAK. 4,126' - 4,130', PMPD IN 7 BBLS OF ACID. PERFS BROKE @ 800#. FLUSHED ACID TO BTM W/25 BW. SWBD 545 BBLS WTR IN 2 DAYS. BFL 1300 FFS, EFL 1100 FFS. SWBD PERFS FR 4216 TO 4239'. BFL @ 1300' FFS. MADE 6 SWB RUNS. REC 25 BW. SWB RUN #3 SHOWED SOME GAS. EFL 1,300' FFS. SWB PERFS FR 4180' TO 4184'. BFL @ 1000' FFS. MADE 5 SWAB RUNS. REC 41 BW. SHOWED SOME GAS. EFL 1,600 FFS. SWB PERFS FR 4170' TO 4174'. BFL @ 1,100 FFS. MADE 5 RUNS. REC 39 BW. SHOWED SOME GAS. EFL @ 1600 FFS. SWB PERFS FR 4152' TO 4158'. BFL @ 900 FFS. MADE 5 RUNS. REC 20 BW. SHOWED NO GAS & SWBD DRY ON LAST RUN. SWAB PERFS FR 4126' TO 4130'. BFL @ 1,200 FFS. MADE 4 RUNS. REC 19 BW. EFL 1,300 FFS. SHOWED SOME GAS.

**01/10/06:** IN 24 HRS, WELL PMPD 3 BO, 1057 BW & 190 MCF. RUNNING 75 HZ. FAP 60'.

**02/28/06:** PERF THE FOLLOWING INTERVALS : 3906' - 3912', 3866' -3890', 3804' - 3830', & 3784' - 3796'. PMPD 250 GALS ACID INTO EACH SET OF PERFS. ISIP VAC. SWBD PERFS: 3,784' TO 3912'. SWBD DRY. REC 61 BW & 1 BO. RUN 2" INSERT PUMP. PI @3934'

**03/01/06:** A. PERFS: 3,866' - 3,912'. SPOTTED 500 GALS OF 15% NEFE HCL ACID. A. 3784' - 3830' @ 1 BPM @ 722 PSIG W/ 500 GALS OF 15% NEFE HCL ACID.

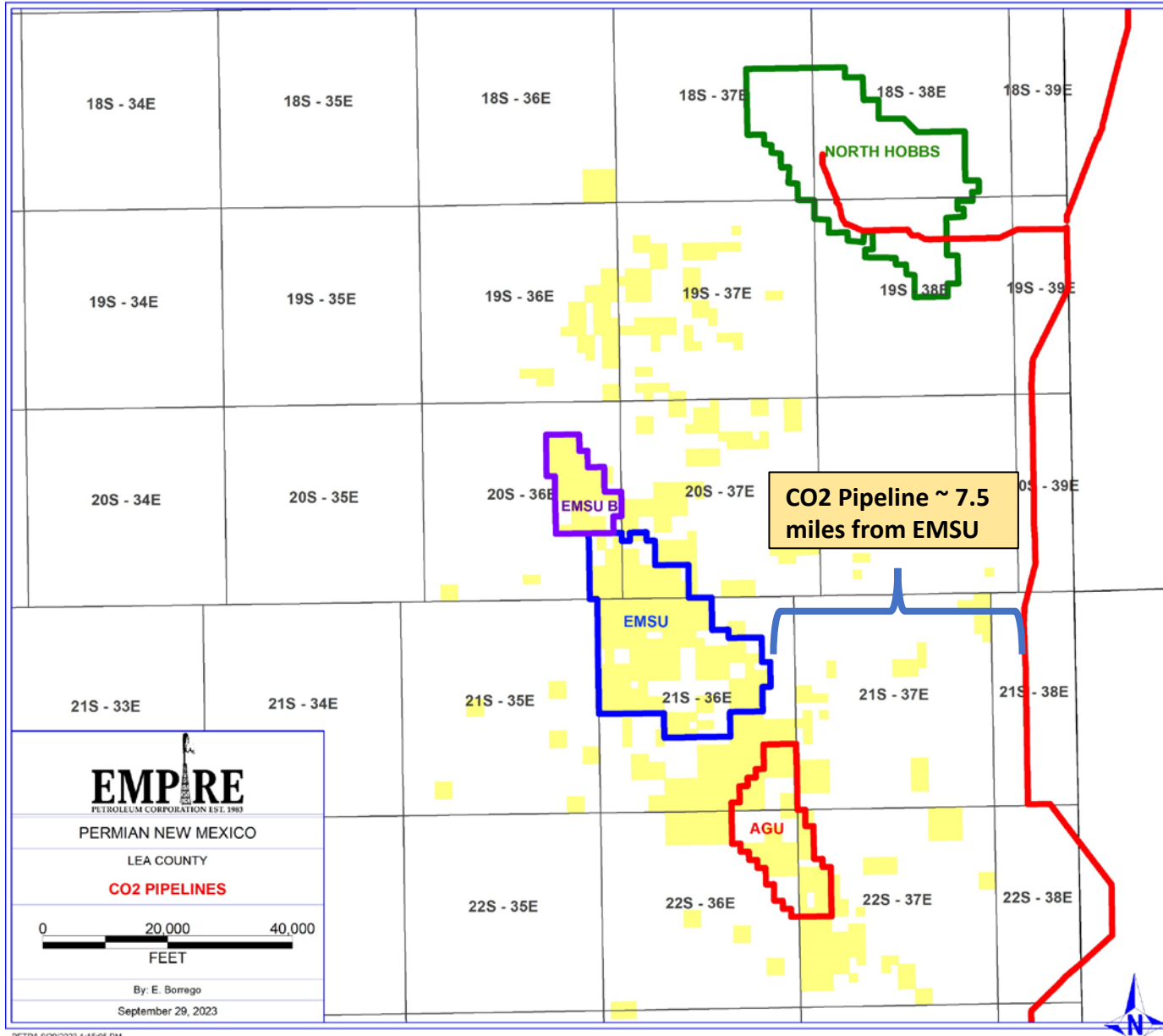
**03/02/06:** RIH W/7K COMPOSITE PLUG. SET PLUG @ 4,000'. RIH W/2 7/8" TBG, PMP & RODS.

**03/07/06:** LUFKIN SET AN AMERICAN 912-365-168 PMPG UNIT. RUNNING @ 7.5 SPM

**03/09/06:** IN 24 HRS, WELL PMPD 11 BO, 158 BW & 5 MCF. RUNNING 50% ON TIMER. FAP 0'.

**07/11/06:** SONIC HAMMER WASHED PERFS FR/3784'-3912' W/180 BBLS 8.6# BRINE WHILE CIRC TO REV PIT. CIRC. SONIC HAMMERED PERFS W/3000 GALS 20% NEFE HCL (APPROX 20 BBLS PER STD). FLUSHED ACID TO BTM W/9 BW. DROPPED BALL TO SHIFT SLEEVE IN TOOL. AVG BPM 4.6. AVG IN PRESS 1630 PSIG. SITP 5" 0 PSIG (VAC). SWBD. BFL @ 2600' FS. MADE 62 RUNS, REC 222 BW W/TRACE OIL & SOME GAS & 3.5 BO. EFL @ 3100' FS. PERF W/6 SPF @ 60 DEG PHASING FR/3840'-3850', 3764'-3700', 3750'-3756'. TREATED EACH SET OF PERFS W/500 GALS 20% HCL. PERFS COMMUNICATED INSTALY W/LWR SET OF PERFS BELOW. SIPT 5" 0 PSIG (VAC). AIR 0.4 BPM, MAX PRESS 1500 PSIG, MIN PRESS 0 PSIG, AVG PRESS 700 PSIG. SWBD. BFL @ 1800' FS. MADE 53 RUNS IN 307 HRS. SHOWED SME GAS W/EACH RUN. EFL @ 2100' FS. RIH W/5-1/2" RBP & PKR ON EOT. LOADED W/6 DRUMS T-249 & 5 GALS DP-61 MIXZED W/72 BBLS FW. PMPD 26 BBLS OF PILL MIXTURE INTO PERFS FR/3866'-3912'. MIXED W/5 GALS RN-

REV BY: LEC DATE: 08/19/13



### KEY POINTS

- CO<sub>2</sub> is proven in the region
- CO<sub>2</sub> infrastructure is in close proximity
- Disposal of saltwater into San Andres impacts Empires ability to do a successful CO<sub>2</sub> flood.
- This damage by saltwater disposal could impact the recovery of 250 – 600+ million barrels of oil for the owners, the state and the federal government

# Goodnight San Andres SWD Wells Impacted Areas

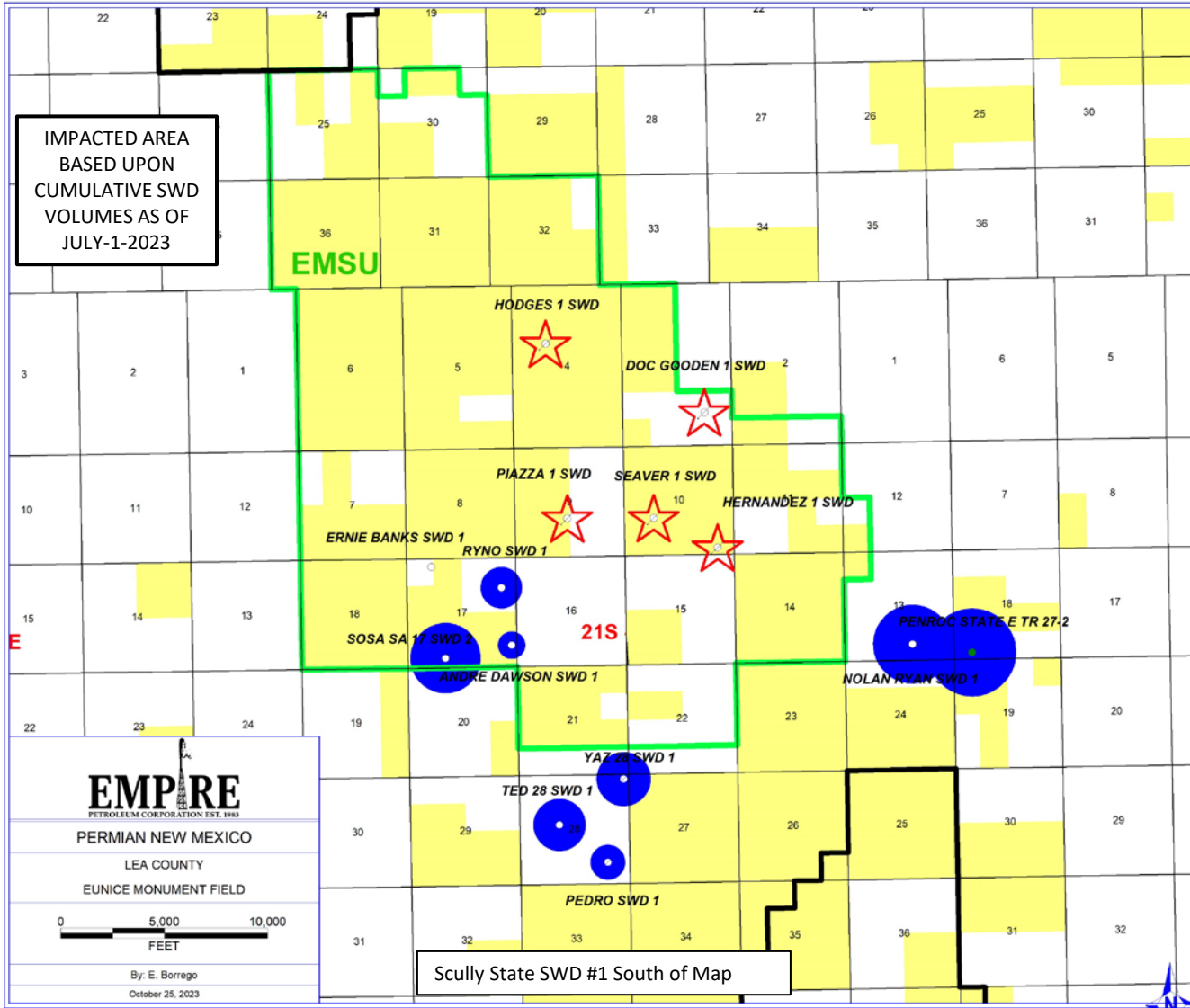
## Current (July-1-2023) Impact and Impact after 1, 5, 10, and 20 years

		Reservoir Property	Value						
		San Andres Net-to-Gross	50%						
		Porosity	10%						
		Swi	30%						
		Sorw	30%	Current Cum Volume + Added Volume (ACRES Affected)					
			Total Perfs	Assumed SWD Rate	Current Impacted Area	1 year in future Impacted Area	5 years in future Impacted Area	10 years in future Impacted Area	20 years in future Impacted Area
API #	Well	Reservoir	Feet	BWPD	Acres	Acres	Acres	Acres	Acres
	Hodges	San Andres	1,100	40,000	-	171	855	1,711	3,422
	Doc Gooden	San Andres	700	40,000	-	269	1,344	2,688	5,377
	Piazza	San Andres	1,275	40,000	-	148	738	1,476	2,952
	Seaver	San Andres	1,100	40,000	-	171	855	1,711	3,422
	Hernandez	San Andres	1,100	40,000	-	171	855	1,711	3,422
3002550634	Andre Dawson	San Andres	1,303	40,000	30	174	752	1,474	2,918
3002550633	Ernie Banks	San Andres	1,303	40,000	-	144	722	1,444	2,889
3002545349	Nolan Ryan	San Andres	600	8,190	255	319	576	897	1,540
3002550079	Pedro	San Andres & Glorietta	2,020	28,234	49	115	378	706	1,364
3002526491	Penroc State E 27	San Andres	1,035	28,234	321	449	963	1,604	2,888
3002543901	Ryno	San Andres	1,180	5,703	69	92	183	297	524
3002546398	Scully State	San Andres	1,300	12,014	71	114	288	506	941
3002547947	Sosa SA 17	San Andres	850	10,835	203	263	503	803	1,403
3002544386	Ted 28	San Andres & Glorietta	1,244	17,871	111	178	449	787	1,462
3002546382	Yaz 28	San Andres & Glorietta	1,470	9,023	120	149	264	408	697
	<b>Total</b>			<b>400,104</b>	<b>1,228</b>	<b>2,928</b>	<b>9,726</b>	<b>18,224</b>	<b>35,219</b>
				<b>Inside EMSU</b>	<b>302</b>	<b>1,604</b>	<b>6,809</b>	<b>13,315</b>	<b>26,328</b>

### KEY POINTS

- Goodnight has disposed of approximately 99,502,995 barrels of water into wells inside and near EMSU as of July 1, 2023. Since this disposal volume displaces an equivalent volume of water in the San Andres interval while being injected, the impacted area is based upon 199,005,990 barrels (2 times), indicating 1228 acres has been impacted.
- Impacted areas after 1, 5, 10, and 20 years are calculated and it is seen that after 10 years water disposal, 13,315 acres inside the EMSU is impacted and 18,224 acres total.
- With EMSU composed of 14,189.84 acres, 94% of the Unit will be impacted after 10 years disposal.

# GOODNIGHT MIDSTREAM PERMIAN, LLC CURRENT ESTIMATED SWD EXPOSURE AREAS BASED UPON DISPOSAL VOLUME (JULY 1, 2023)

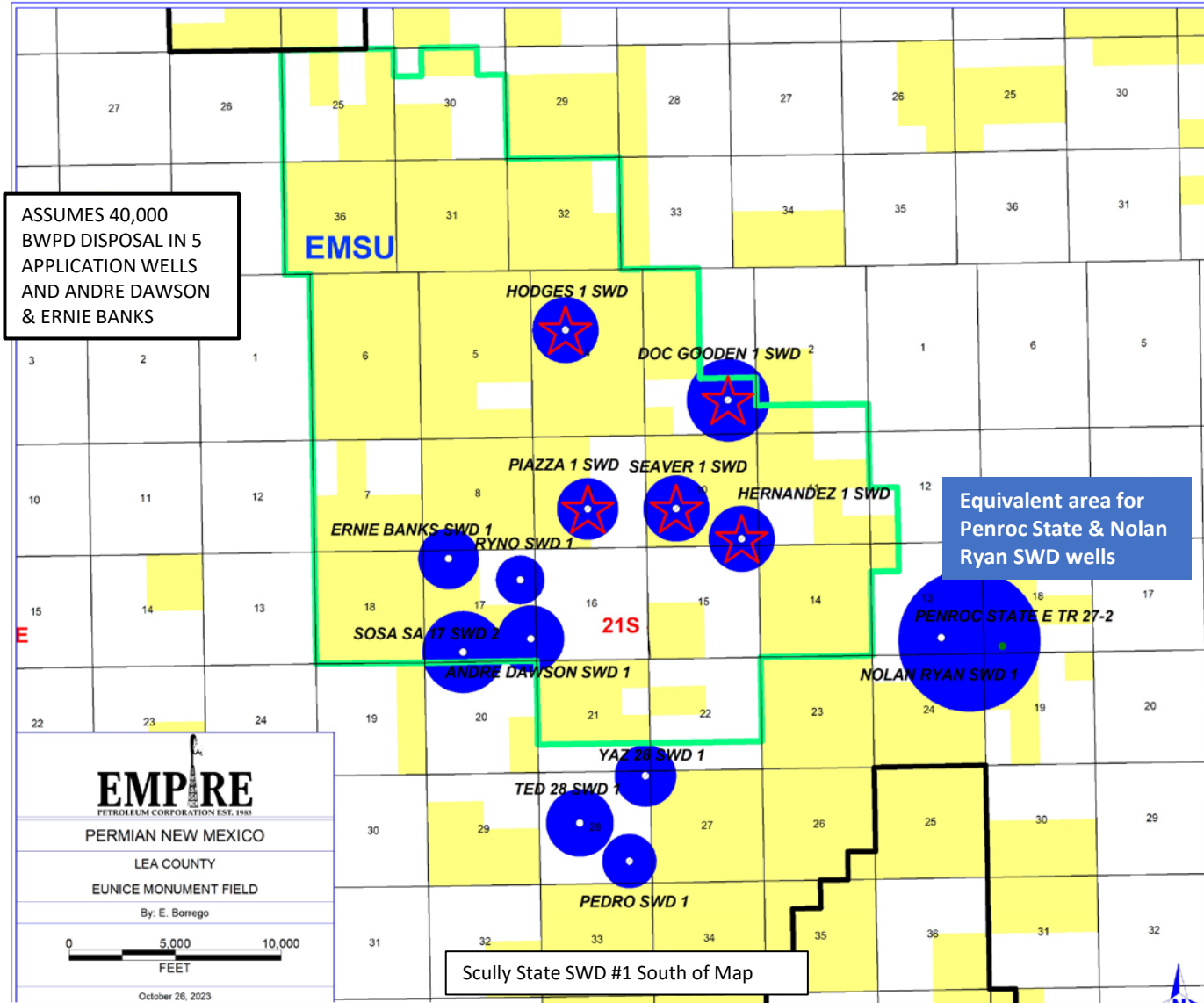


## KEY POINTS

- To determine the damage already caused by Goodnight saltwater disposal, we look at impacted areas around the SWD wells.
- SWD disposal as of July 1, 2023 indicates that the Sosa SA 17 SWD #2 located inside EMSU has impacted ~102 acres.
- The Ryno SWD #1 located inside EMSU has impacted ~35 acres and is negatively impacting Grayburg oil production.
- SWD disposal volumes from Andre Dawson SWD #1 and Ernie Banks SWD #1 inside the unitized interval have not been reported to the State. Their disposal is negatively impacting Grayburg oil production.



# GOODNIGHT MIDSTREAM PERMIAN, LLC ESTIMATED SWD EXPOSURE AREA AFTER 1 ADDITIONAL YEAR OF DISPOSAL (JULY 1, 2024)

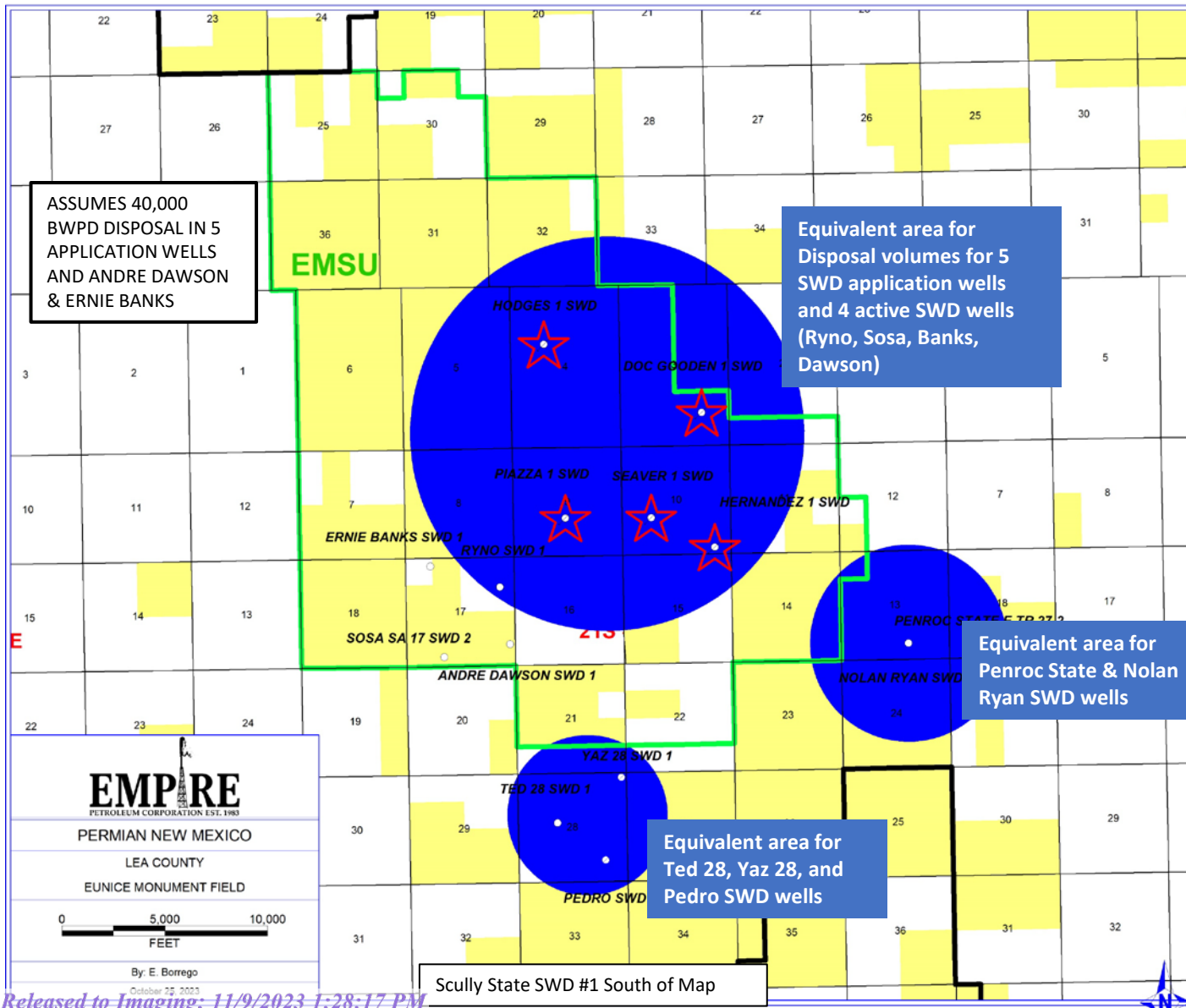


## KEY POINTS

- To understand the impact if Goodnight is allowed to drill the SWD wells, we calculate the area impacted after one year of disposal and continued disposal into the existing wells.
- Based on 40,000 BWPD disposal for the new wells and their proposed perforated intervals, they will impact 148 to 269 acres (Exhibit F-15) after only one year of disposal.
- Each well is assigned only 5 acres surface lease so the injection will begin pushing water outside the lease in 13 days.



# GOODNIGHT MIDSTREAM PERMIAN, LLC ESTIMATED SWD EXPOSURE AREA AFTER 5 ADDITIONAL YEARS OF DISPOSAL (JULY 1, 2028)



## KEY POINTS

- After 5 years of disposal the new wells swept areas begin to overlap, therefore 3 large circles are shown to represent impacted area.
- Impacted areas of 738 to 1344 acres per new SWD well depending upon perforated interval.
- The wells disposing of 40,000 BWPD will have disposed of 73,000,000 barrels at the end of year five.
- Approximately 9726 acres is impacted by Goodnight SWD after 5 years of additional disposal.

**EMPRE**  
PETROLEUM CORPORATION EST. 1983

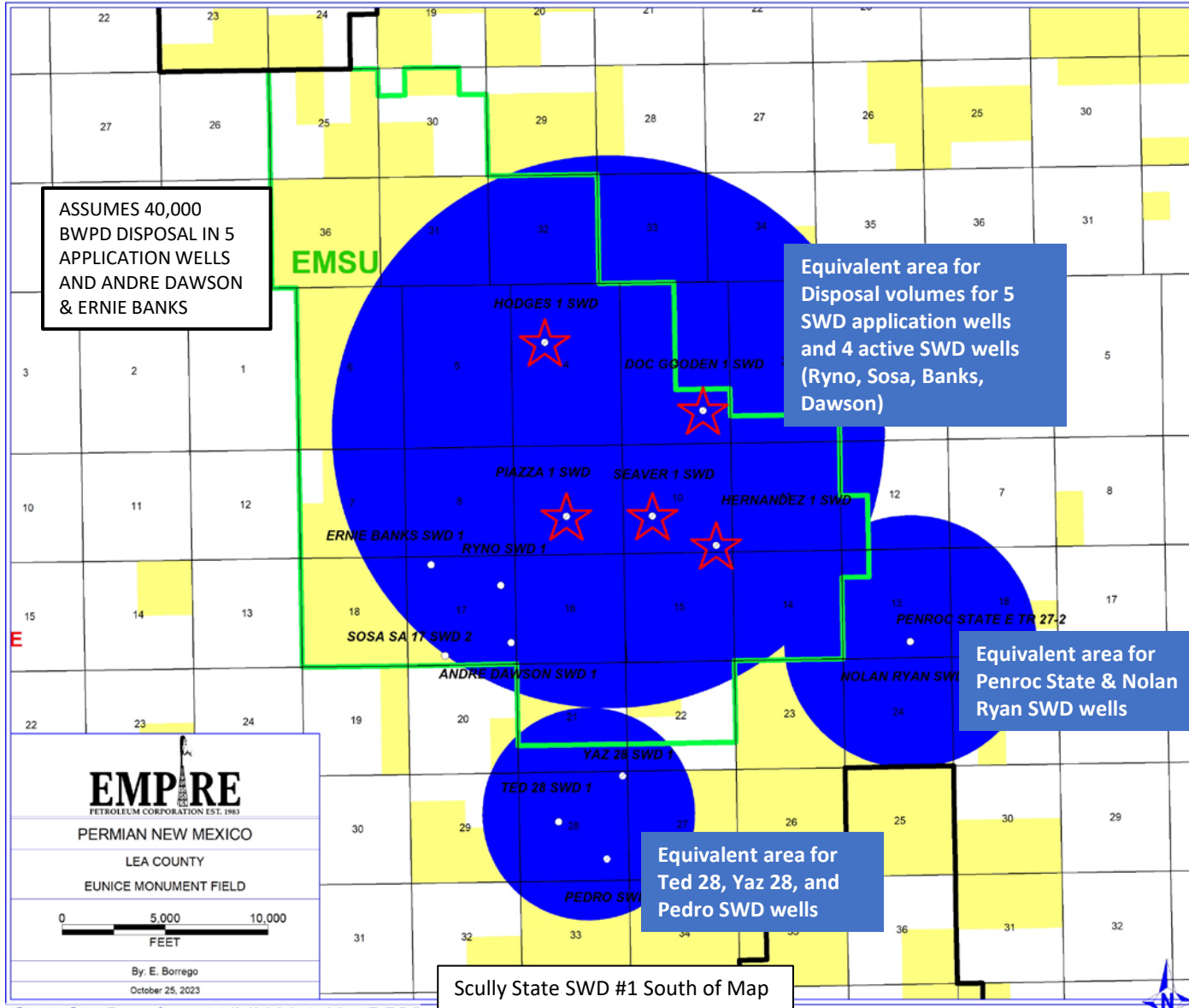
PERMIAN NEW MEXICO  
LEA COUNTY  
EUNICE MONUMENT FIELD

0 5,000 10,000  
FEET

By: E. Borrego  
October 25, 2023

Scully State SWD #1 South of Map

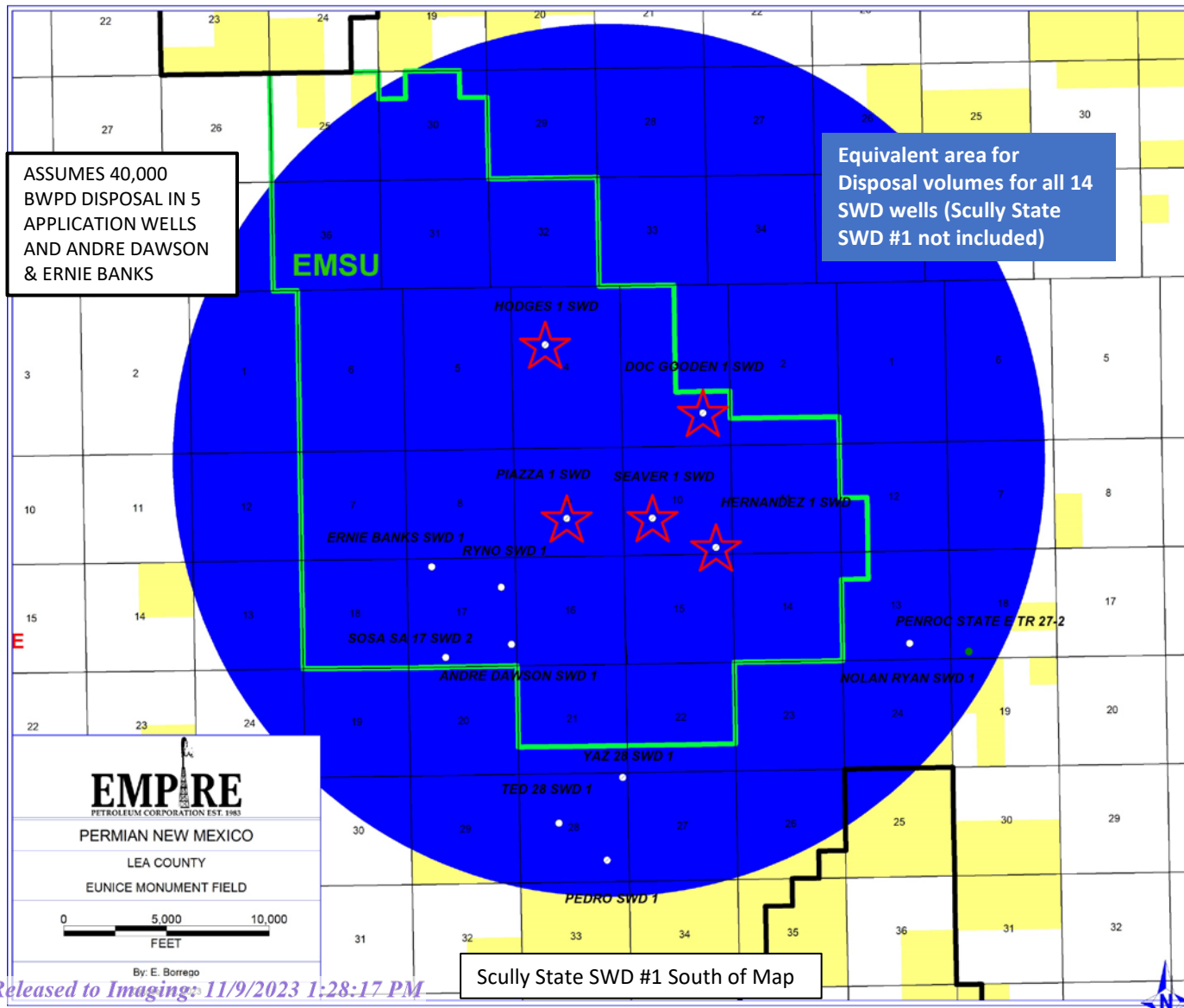
# GOODNIGHT MIDSTREAM PERMIAN, LLC ESTIMATED SWD EXPOSURE AREA AFTER 10 ADDITIONAL YEARS OF DISPOSAL (JULY 1, 2033)



### KEY POINTS

- After 10 years of disposal the area impacted by the five new wells is 9297 acres and the other wells impact 8927 acres.
- A total of 1.08 billion barrels of saltwater will have been disposed of inside the EMSU
- Does not include other 3<sup>rd</sup> party disposal companies which accelerates the damage further

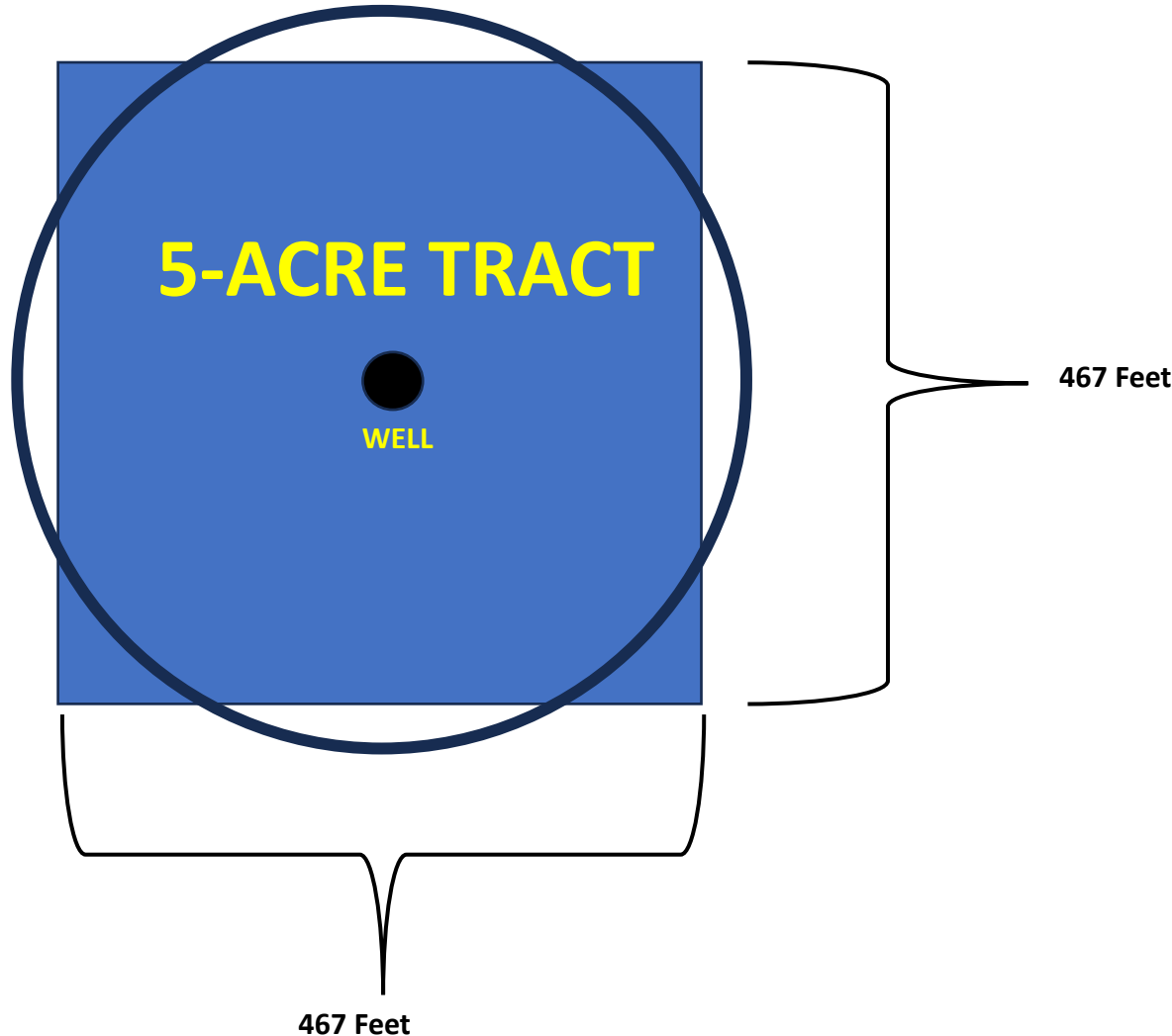
# GOODNIGHT MIDSTREAM PERMIAN, LLC ESTIMATED SWD EXPOSURE AREA AFTER 20 ADDITIONAL YEARS OF DISPOSAL (JULY 1, 2043)



## KEY POINTS

- After 20 years of disposal the area impacted by the five new wells is 18,594 acres and the other wells impact 16,625 acres.
- A total of 2.16 billion barrels of saltwater will have been disposed of inside the EMSU.
- All primary, secondary and tertiary recovery has been overwhelming damaged.

# WATER DISPOSAL OF 40,000 BWPD WILL IMPACT THE 5-ACRE TRACT ASSIGNED TO EACH WELL IN 13 DAYS



## KEY POINTS

- Storage capacity of 5-acre tract is 1,008,540 barrels.
- From the start of water disposal, water in the San Andres will be pushed off the 5-acre tract, therefore the entire 5-acre tract is exceeded after 13 days.
- Water will be pushed off the lease and begin impacting the San Andres porous hydrocarbon interval of other land and mineral owners, rights which should be protected.
- The pressure exerted downhole will impact a much larger area and will force San Andres water into the Grayburg interval where Empire must handle the water production volumes.
- Bottomline, water disposal cannot be allowed in a hydrocarbon bearing reservoir.