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DEC 11 1995

Oil Conservation Division

December 11, 1995

Mr. William J. LeMay, Chairman  
Oil Conservation Commission  
2040 South Pacheco  
Santa Fe, New Mexico 897505

**HAND DELIVERED**

Mrs. Jamie Bailey  
Office of the Commissioner of Public Lands  
State Land Office Building  
310 Old Santa Fe Trail  
Santa Fe, New Mexico 87501

**HAND DELIVERED**

Mr. William Weiss  
New Mexico Petroleum Recovery  
Research Center, Kelly Building  
New Mexico Tech Campus  
Socorro, New Mexico 87801

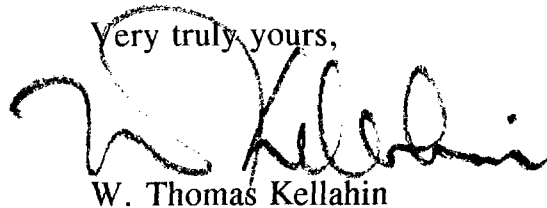
**VIA FACSIMILE**

*Re: NMOCD Cases 11297 and 11298  
Application of Exxon Corporation for Waterflood Project,  
Carbon Dioxide Project and Statutory Unitization  
Avalon-Delaware Unit, Eddy County, New Mexico*

Dear Members of the Commission:

On behalf of Premier Oil & Gas Inc., please find enclosed our  
Pre-hearing Statement for the hearing currently set for Thursday,  
December 14, 1995.

Very truly yours,



W. Thomas Kellahin

cc: Jim Bruce, Esq. (Exxon)

cc: William F. Carr, Esq. (Yates)

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

**RECEIVED**  
DEC 11 1995  
Oil Conservation Division

**APPLICATION OF EXXON CORPORATION      CASE NO. 11297  
FOR A WATERFLOOD PROJECT AND EOR  
QUALIFICATION, EDDY COUNTY, NEW MEXICO**

**APPLICATION OF EXXON CORPORATION      CASE NO. 11298  
FOR STATUTORY UNITIZATION,  
EDDY COUNTY, NEW MEXICO**

**PREMIER OIL & GAS, INC.'S  
PRE-HEARING STATEMENT**

**This pre-hearing statement is submitted by PREMIER OIL & GAS INC. as  
required by the Oil Conservation Division.**

**APPEARANCE OF PARTIES**

**OPPONENT**  
Premier Oil & Gas Inc.  
P. O. Box 1246  
Artesia, New Mexico 88210  
Attn: Ken Jones  
(505) 748-2093

**ATTORNEY**  
W. Thomas Kellahin  
KELLAHIN AND KELLAHIN  
P.O. Box 2265  
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**APPLICANT**  
Exxon Corporation  
Midland, Texas

**ATTORNEY**  
Jim Bruce, Esq.  
P. O. Box 2068  
Santa Fe, New Mexico 87504  
(505) 982-4554

**PROPONENT**  
Yates Petroleum Corporation  
Artesia, NM

**ATTORNEY**  
William F. Carr, Esq.  
P. O. Box 2088  
Santa Fe, New Mexico 87501  
(505) 9884421

## **EXXON PROPOSAL**

Exxon proposes to:

(a) **Statutory Unitization:** Exxon seeks approval of a secondary waterflood project, of a carbon dioxide tertiary recovery project for its Avalon-Delaware Unit and requests the Commission to compel Premier Oil & Gas Inc. ("Premier") to include its property (Tract 6) in both projects by resorting to statutory unitization, pursuant to the "Statutory Unitization Act", Sections 70-7-1 through 70-7-21, N.M.S.A. (1978), **See Attachment #1 and #2**

(a) **waterflood:** institute a Secondary Recovery Project for recovery of oil by waterflooding an interior portion of the unit which will be surrounded by an outer ring of 40-acre tract which will not contain producing wells nor contain or be offset by injection wells. **See attachment #3;** and

(b) **CO2 flood:** possibly at an undetermined time in the future to convert the Secondary Recovery Project to a Tertiary Recovery Project by expanding the original waterflood project area by drilling additional injection wells and producing wells and commencing the injection of carbon dioxide ("CO2") at which point the outer ring tracts will contain producing and adjacent injection wells. **See attachment #4.**

(c) **vertical limits:** Exxon proposes that the vertical limits of said unit area would comprise that interval which includes the "Upper Cherry Canyon Reservoir" ("UCC") and the "Lower Cherry Canyon/Upper Brushy Canyon Reservoir" ("LCC-UBC") and extends from an upper limit between 100 feet above the base of the Goat Seep Reef to the top of the Bone Springs formation to a lower limit of the base of the Brushy Canyon formation

(d) **percentages:** Premier Oil & Gas Inc. ("Premier"), the operator of Tract 6 with 7.6 percent of the unit acreage and 4.16% of the total remaining reserves (by Exxon's calculation--See Exxon Exhibit 10 (G-19) **but credited by Exxon with only 1.0192% of unit production.** Exxon, with approximately 61 percent of the unit acreage and Yates Petroleum Corporation ("Yates") with approximately 13-1/2 percent of the unit acreage appeared and presented evidence in support of approval of the unit.

(e) **EXXON-YATES' formula:** Exxon/Yates propose a unit participation formula predicated upon the intention to allow each tract to recovery its percentage of remaining primary oil, its percentage of secondary oil and workover oil potential and its percentage of tertiary oil potential by a weighted formula of 25 % primary, 50 % secondary/workover and 25 % tertiary.

### **EXXON'S ANALYSIS OF PREMIER'S EQUITY**

Exxon's interpretation of net thickness for the Premier FV-3 well is integrated into its hydrocarbon pore volume map (Exxon Exhibit 10 map 22) and its volumetric calculations (Exxon Exhibit 10-Vol 1 Exhibit E-4), demonstrates that Premier's FV #3 Well has:

<i>Original oil in place:</i>	<i>1,580,000 BO</i>
<i>Remaining Primary Oil:</i>	<i>-0-</i>
<i>Waterflood Target Oil:</i>	<i>580,000 BO</i>
<i>Workover Target Oil:</i>	<i>-0-</i>
<i>CO2 Target Oil:</i>	<i>1,320,000 BO</i>

See Exxon Exhibit 10 Vol 1 Exhibit E-6

But under its analysis and adjustment factors, Exxon contends as to Premier's tracts 1109, 1309, 1509 and 1709 (Unit Tract 6) that:

- (1) there is no remaining primary recovery potential and therefore gives Premier "0" credit for any remaining recovery of primary oil;
- (2) Exxon proposes not to extend the waterflood pattern so as to recover any of Premier's secondary ("waterflood target") oil and therefore give Premier "0" credit for waterflood target oil.
- (3) Exxon proposes to extend the CO2 injection in such a pattern so as to flood only 25 % of Tract 1109 and 50 % of the balance of Premier's tracts thereby reducing Premier's share of tertiary ("CO2 target") oil recovery by a factor of 25 % to 50 %.

**See Attachment #5**

## **PREMIER'S POSITION**

Premier Oil & Gas Inc. is the working interest owner of oil & gas leases which are located in the E/2E/2 of Section 25, T20S, R27E, NMPM and which are identified as constituting Tracts 1109, 1309, 1509 and 1709 under the proposed Avalon-Delaware Unit.

Premier contends that Exxon's proposed unit shape, determination of the distribution of hydrocarbon pore volume and the primary and secondary production estimates fail to provide "relative value" to Tracts 1109, 1309, 1509 and 1709 as required by Section 70-7-4(J) NMSA (1978), as amended and, unless corrected by the Division, the correlative rights of Premier Oil & Gas Inc. will be violated.

Premier Oil & Gas Inc. will present geologic and petroleum engineer evidence to demonstrate the appropriate distribution of reservoir pore volume with corresponding adjustments and the proper relative value to be attributed to Tracts 1109, 1309, 1509, 1709 and others to allow the owners of these tracts the opportunity to recover their proportionate share of the total recoverable hydrocarbons from the unit.

Premier Oil & Gas Inc. requests the Commission to:

(1) **waterflood unit:** approve the waterflood unit

(a) **but exclude** the Premier tract from the waterflood project because under Exxon's proposal the Premier tract will not be affected by waterflooding and will contribute no value to that project; or in the alternative,

(b) **but adopt** Premier's geologic evidence as the appropriate reservoir pore volume for Premier's Tract 6 and require Exxon to make the appropriate adjustments in participation.

(2) **participation formula:** approve the waterflood unit but **adopt** the Premier proposed participation formula of 50 % original oil in place, 25 % estimated ultimate recovery and 25 % oil production as of January 1, 1993.

(3) **CO2 project:** to deny the CO2 tertiary project because it is premature.

### **PROPOSED EVIDENCE**

WITNESSES	EST. TIME	EXHIBITS
Stewart Hanson (geologist)	60-90 Min.	est. 4 exhibits
Terry Payne (petroleum engineer)	60 -90 Min.	est. 9 exhibits
Ken Jones (operator)	45 Min.	est. 8 exhibits

### **PREMIER'S OBJECTIONS**

Premier contends that its Tract 6 should be **excluded** because:

- (a) Exxon proposes to include a column of 40-acre tracts including four 40-acre tracts (Tract 6) operated by Premier within the western boundary the Avalon Unit but does not intend to attempt to recover from those tracts any remaining primary oil or any secondary oil by waterflooding;
- (b) Exxon basis its plan upon a Technical Report dated August, 1992 (Exxon Exhibit 10) which was prepared exclusively by Exxon personnel and submitted to Yates and the other working interest owners on November 25, 1992;
- (c) the Secondary Recovery Project ("waterflooding") is the reason for the Unit, while the Tertiary Recovery Project ("CO2") has only some probability of happening/not happening (See Exxon Exhibit 7--letter dated 10/10/94);
- (d) on June 17, 1994, the working interests owners met to discuss the Exxon Technical Report and unanimously agreed to **exclude** Premier's Tract 6 from both the Secondary Recovery and Tertiary Recovery project in the Avalon Unit and Exxon has made no change in its Technical Report to now justify including the Premier Tract in the Unit;

(e) under the Exxon analysis the inclusion of the Premier Tract 6 is **not necessary** in order to effectively carry on the Secondary Recovery Project and that it is **premature** to include this Tract 6 for a Tertiary Recovery Project

(f) under the Exxon analysis there is **no increase** in ultimate recovery of secondary oil from the unit by including the Premier Tract 6;

(g) the Exxon analysis of the CO2 potential is speculative and has not been the subject of any scientific study to determine its feasibility and therefore any forecasted increase in ultimate recovery of tertiary oil from the unit by including the Premier Tract 6 is speculative;

(h) Exxon operates or owns working interests in all tracts except Tracts 6, 7, and 8, seeks to include the Premier Tract 6 only as a "protection buffer" and assigns no "contributing value" for secondary oil recovery; See Section 70-7-4(J) NMSA 1978;

(i) Because Premier, as owner of all of Section 25, T20S, R27E, is not receiving any "contributing value" for primary or secondary oil, it does not want to divide its property for Exxon's satisfaction.

(j) that Premier's Tract 6 can be excluded in accordance with the New Mexico Statutory Unitization Act.

In the alternative, Premier contends that if Tract 6 is to be included in the unit, then and in that event, the application for unitization must be **denied** because:

(a) the horizontal and vertical limits of said unit have **not** been reasonably defined by development;

(b) Exxon's Technical Report is flawed because it incorrectly correlates the top of the Upper Cherry Canyon-Downlap Unit and the base of the Upper Cherry Canyon Reservoir in Premier's FV #3 Well located as (Unit Well 1709) within Premier's Tract 6. This results in Exxon mistakenly only attributing 55 feet of net thickness to the UCC reservoir which in turn affects the contouring of the various geologic maps, including the "TOTAL NET RESERVOIR HYDROCARBON THICKNESS AT RESV COND

MAP" from which Exxon concludes that Premier's Tract 6 acreage has no remaining primary oil potential;

(c) Premier's FV #3 Well when correctly correlated indicates a net porosity thickness in the Upper Cherry Canyon Reservoir of 137 feet which is some 82 feet more than attributed by Exxon;

(d) Exxon has determined that 131 feet of net pay thickness is the average for wells in the UCC reservoir but only credits Premier's FV #3 Well with 55 feet;

(e) Premier's hydrocarbon pore volume map shows that there is substantial recoverable oil remaining under Premier's Tract 6.

(f) Exxon's Technical Report in assigning "relative value" to each tract, determined that based upon logged derived water saturations ( $S_w=0.46$ ) there are 2,320,00 barrels of waterflood target oil to be recovered from the Premier Tract 6 **but** then arbitrarily eliminated all of that incremental oil by increasing the water saturation ( $S_w=0.60$ ) based upon water production volumes reported by Gulf when it operated the Premier FV-3 Well;

(g) Premier has determined that  $S_w$  should be derived from log analysis and not actual water production because the actual water production from the FV-3 Well is attributed to water encroachment from above the Upper Cherry Canyon Reservoir;

(h) Exxon over credits Yates' EP #6 Well (1113) with net pay thickness;

(i) Exxon gives workover reserves in the UCC reservoir to Yates' Tracts 1111, 1311, 1313, 1511 but excludes workover reserves for Premier's Tract 6 which has the same reservoir parameters with identical  $S_w$  values;

(j) Exxon is biased in distributing waterflood reserves;

(k) Exxon has incorrectly mapped the UCC reservoir's gross thickness on Premier's acreage.



The granting of the application with the deletion of Tract 6 as proposed by Premier in this case will have no adverse effect upon the Delaware formation.

The deletion of Premier's Tract 6 from the Avalon Unit Agreement and the Avalon Unit Operating Agreement provide for unitization and unit operation of the Avalon Unit Area upon terms and conditions that are fair, reasonable and equitable.

The Exxon's request for approval of a tertiary recovery ("CO2") project is premature and should be **denied**.

#### **APPLICABLE STATUTORY PROVISIONS:**

(a) Section 70-2-33(H) NMSA of the Oil and Gas Act defines Correlative Rights as "...the opportunity afforded, as far as it is practicable to do so, to the owners of each property in a pool to produce without waste his just and equitable share of the oil or gas or both in the pool, being an amount so far as can be practicably determined and so far as can be practicably obtained without waste, substantially in the proportion that the quantity of recoverable oil or gas or both under the property bears to the total recoverable oil or gas or both in the pool and for such purpose, to use his just and equitable share of the reservoir energy;"

(b) Section 70-7-6(B) NMSA of the Statutory Unitization Act states "If the Division determines that the participation formula contained in the unitization agreement does not allocate unitized hydrocarbons on a fair, reasonable and equitable basis, the Division shall determine relative value, from the evidence introduced at the hearing taking into account the separately owned tracts in the unit area, exclusive of physical equipment for development of oil and gas by unit operations, and the production allocated to each tract shall be the proportion that the relative value of each tract so determined bears to the relative value of all tracts in the unit area."

(c) Section 70-7-4 (J) NMSA of the Statutory Unitization Act says "relative value" means the value of each separately owned tract for oil and gas and its contributing value to the unit in relation to like values of other tracts in the unit, taking into account acreage, the quantity of oil and gas recoverable therefrom, location on structure, its probable productivity of oil and gas in

the absence of unit operations, the burden of operation to which the tract will or is likely to be subjected, or so many of said factors, or such other pertinent engineering, geological, operating or pricing facts, as may be reasonably susceptible of determination.

(d) Section 70-7-7 NMSA of the Statutory Unitization Act provides that the Division has the authority and obligation to approve or prescribe a plan or unit agreement for unit operation which **shall include:**

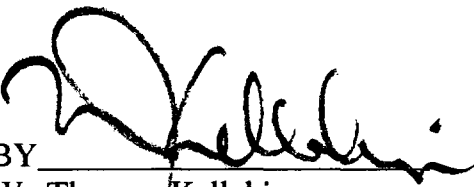
"A. ....area of the pool or part of the pool to be operated as a unit and the vertical limits to be included,..."

"C. an allocation to the separately owned tracts in the unit area of all the oil and gas that is produced from the unit area..."

### **PROCEDURAL MATTERS**

Premier proposes that the Commission incorporate the transcript exhibits and testimony presented to the Division at the hearing held on June 29, 1995.

KELLAHIN AND KELLAHIN



BY  
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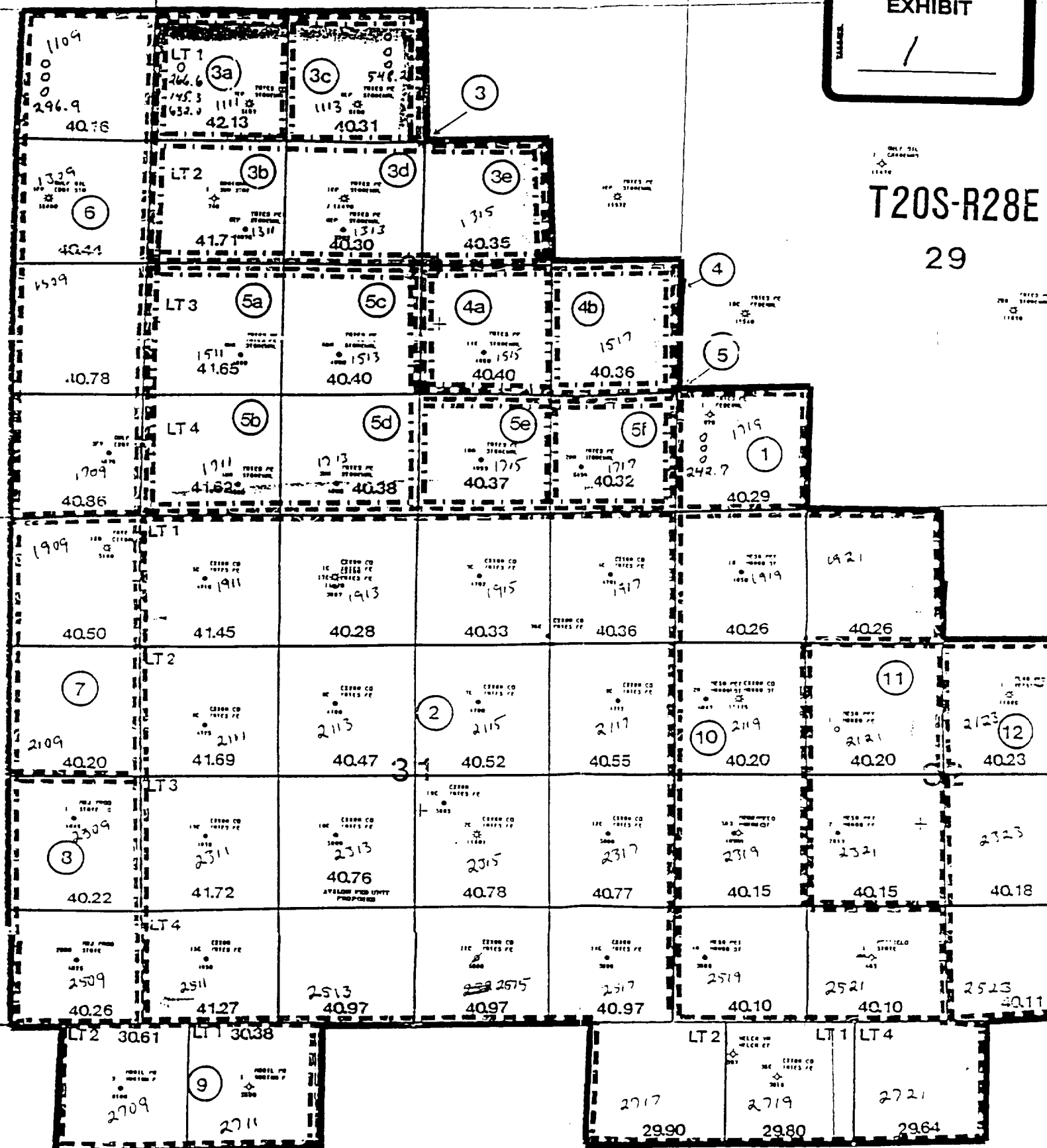
## EXHIBIT

BALANCE

ONLY 316  
CANNONWAY  
11518

T20S-R28E

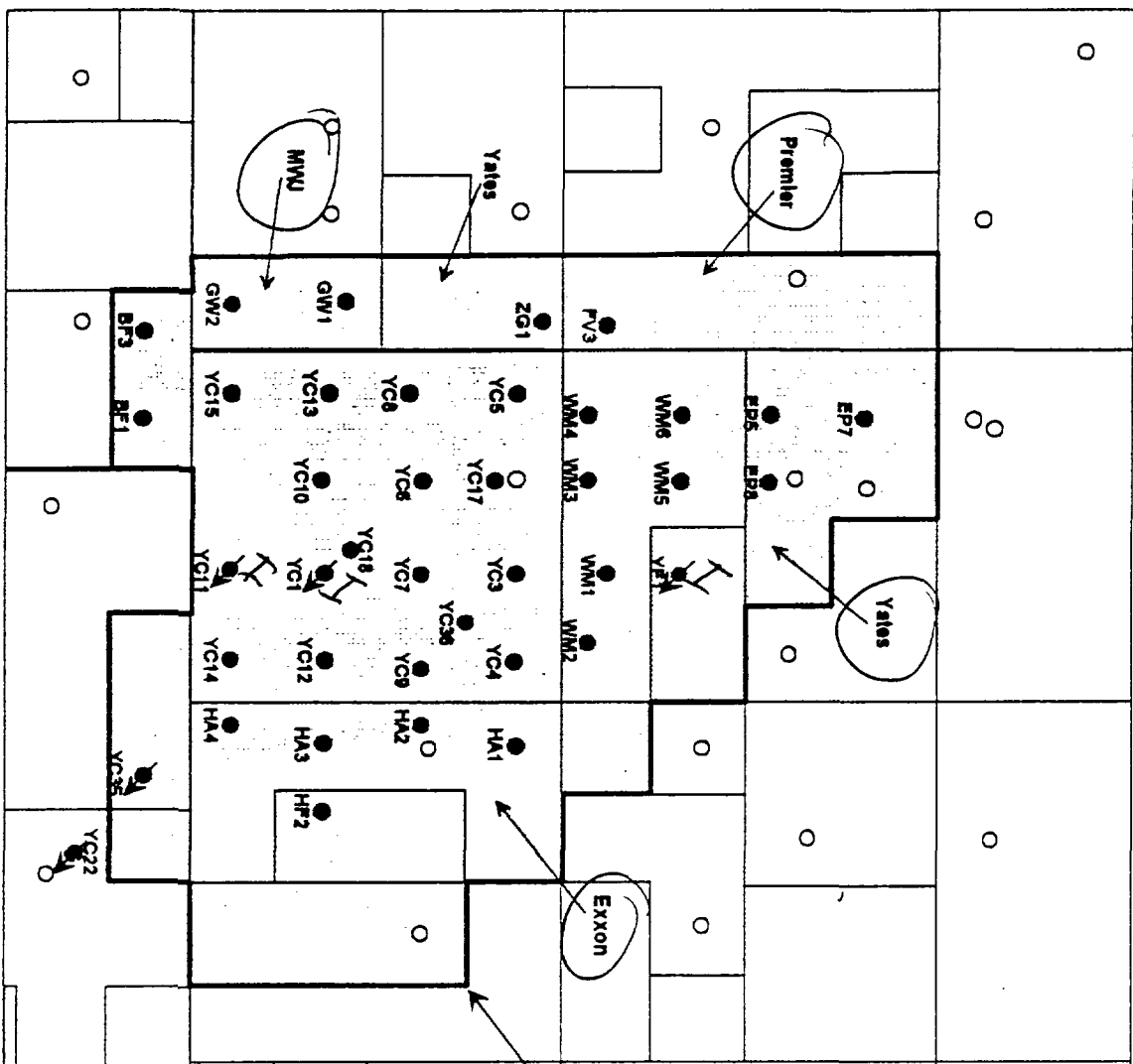
29



○ = TRACT #

# AVALON (DELAWARE) UNIT

## BASE MAP



Proposed Unit Area

- Wells Owned by Unit
- Wells Owned by Unit (Injector)
- Other Wells

Note: See Map 1, Technical Report for lease/well designations

NMOCD Hearing

June, 1995

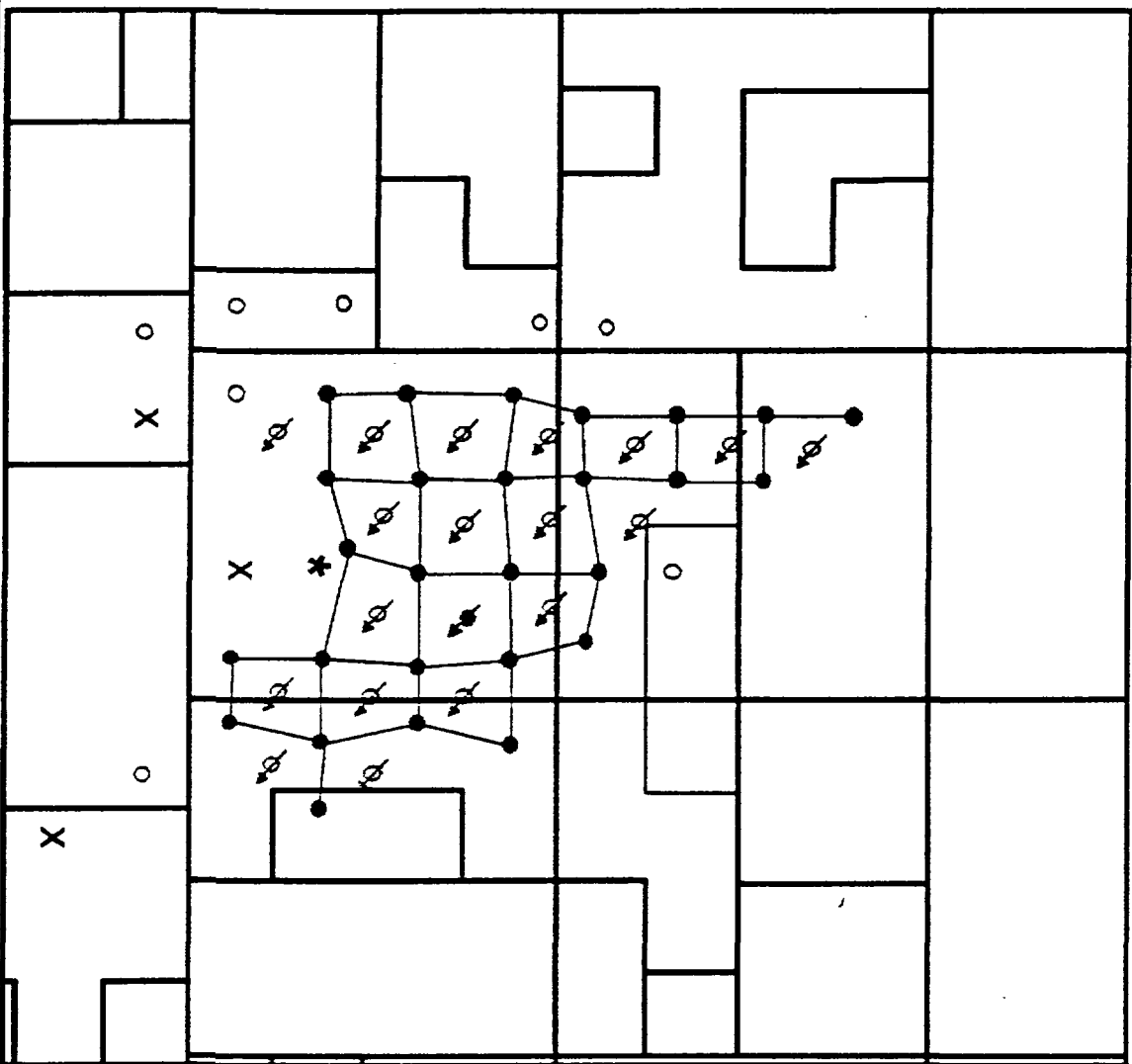
Exhibit No. 20  
Exxon Corporation  
NMOCD Cases 11297 & 11298  
Hearing Date: June 29, 1995

EXHIBIT

2

# AVALON (DELAWARE) UNIT

## DEVELOPMENT PLAN: WATERFLOOD



### • Scope

- 19 water injection patterns, 1100 acres in developed area
- 18 injector drillwells/1 conversion
- Water treating and injection facilities
- Estimated start 2 months after unit approval

#### WELL SYMBOL LEGEND

- Oil Well
- ↗ Injector (Conversion)
- ↘ Injector (Proposed)
- X Water Source Well
- Well for Future Use
- \* Disposal Well

NMOCD Hearing

June, 1995

Exhibit No.

25

Exxon Corporation

NMOCD Cases 11297 & 11298

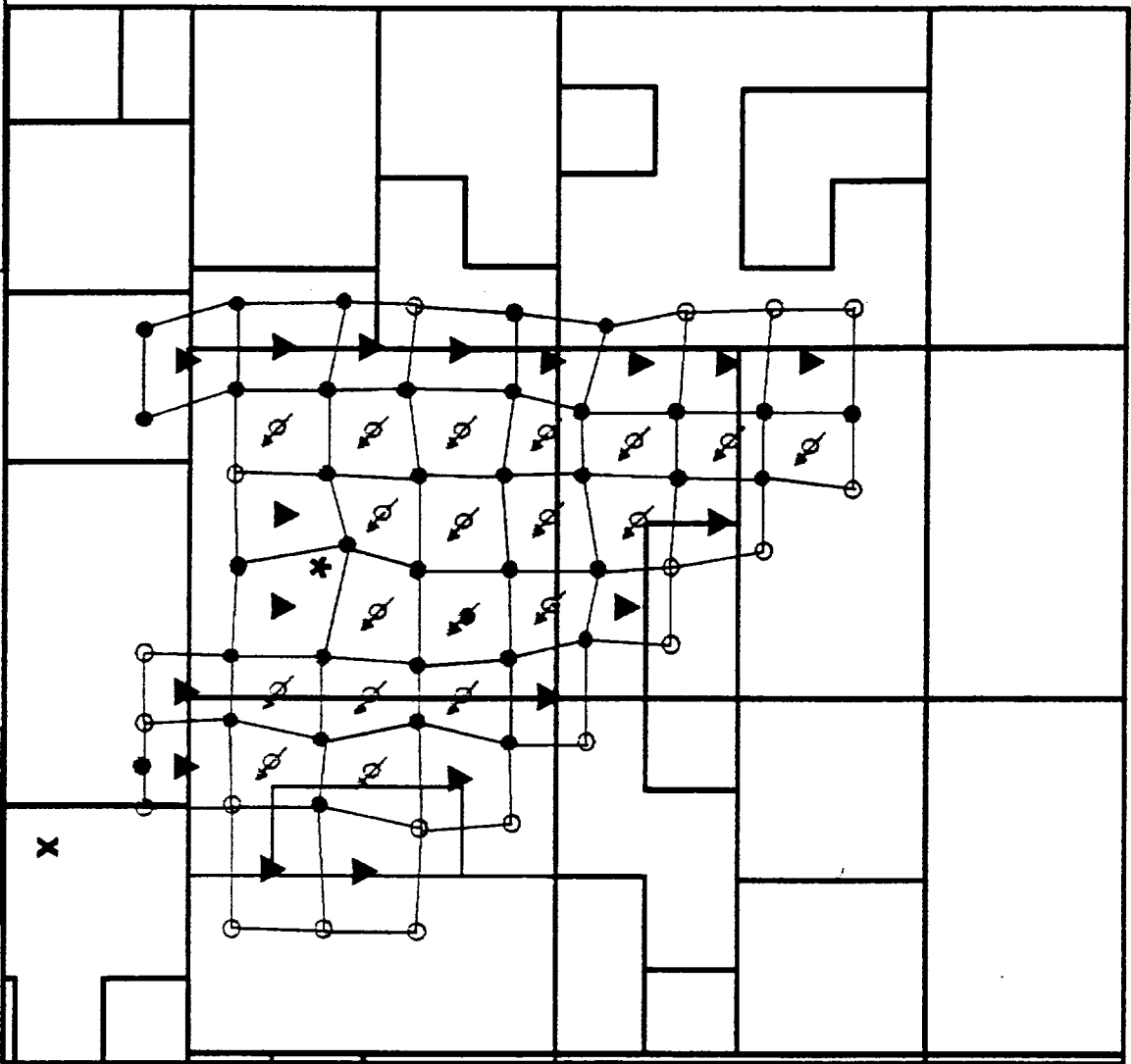
Hearing Date: June 29, 1995

EXHIBIT

3

# AVALON (DELAWARE) UNIT

## POTENTIAL DEVELOPMENT PLAN: CO<sub>2</sub> FLOOD



### Scope

- 37 patterns, 2100 acres expanding into outer ring
- Earliest start 1999

### Issues

- Attain miscibility pressure and reduce gas saturation: 3+ years
- CO<sub>2</sub> injectivity test
- Oil price

#### WELL SYMBOL LEGEND

- Oil Well
- Oil Well (Proposed for CO<sub>2</sub> Flood)
- ◐ Water Phase Injector (Conversion)
- ◑ Water Phase Injector (Proposed)
- ▲ CO<sub>2</sub> Phase Injector (Proposed for CO<sub>2</sub> Flood)
- ✕ Water Source Well
- \* Disposal Well

NMOCD Hearing

June, 1995

Exhibit No. 28

Exxon Corporation  
NMOCD Cases 11297 & 11298

Hearing Date: June 29, 1995

EXHIBIT

4

In its Technical Report dated August, 1992, Exxon proposed that the "reserves" for the tracts in the Unit should be allocated as follows (reserve data units is in thousands of barrels of oil):

TRACT	OPERATOR	REMAINING PRIMARY RESERVES*	WORKOVER RESERVES*	SECONDARY WATERFL'D RESERVES*	TERTIARY CO2 RESERVES*
1	YATES	0.00	0.00	0.00	242.70
2	EXXON	722.80	260.90	3945.30	18311.70
3-A	YATES	0.00	266.60	145.30	632.00
3-B	YATES	27.20	213.60	248.60	1942.30
3-C	YATES	0.00	0.00	0.00	548.20
3-D	YATES	18.10	141.60	292.30	1307.60
3-E	YATES	0.00	0.00	0.00	498.60
4-A	YATES	0.00	0.00	0.00	880.50
4-B	YATES	0.00	0.00	0.00	294.60
5-A	YATES	53.40	166.40	268.80	1218.00
5-B	YATES	19.30	0.00	163.70	1076.40
5-C	YATES	33.80	216.40	550.50	2000.00
5-D	YATES	40.30	0.00	482.30	1691.50
5-E	YATES	20.20	52.60	106.20	814.20
5-F	YATES	0.00	68.80	16.10	494.00
6	PREMIER	0.00	0.00	0.00	2055.30
7	OXY-YATES	0.00	0.00	0.00	430.00
8	MWJ PROD.	0.00	0.00	0.00	173.70
9	MERIT	0.00	0.00	0.00	449.50
10	EXXON	202.80	27.40	494.50	3418.30
11	EXXON	3.10	52.90	51.60	1177.50
12	EXXON	0.00	0.00	0.00	226.90
TOTAL		1,141.00	1,467.60	6,765.20	39,882.50

EXHIBIT

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