

OK'd by W.F. Carr (Yates) 7/17/95

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**HAND-DELIVERY**

Michael E. Stogner  
Oil Conservation Division  
2040 South Pacheco Street  
Santa Fe, New Mexico 87505

**Re: Case No. 11,298, Exxon Application for Statutory Unitization  
of the Avalon-Delaware Pool.**

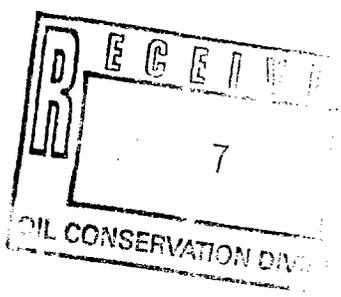
Dear Mr. Stogner:

Enclosed, as you requested at the hearing, are a hard copy and a disk of a proposed Order submitted by Exxon Corporation in Case No. 11,298. Yates Petroleum Corporation has reviewed the proposed Order and joins in this submission.

Very truly yours,

HINKLE, COX, EATON, COFFIELD  
& HENSLEY, P.L.L.C., Ltd., Co.

*James Bruce*  
James Bruce



Enclosures

cc: William Carr, Esq.  
JB/sp

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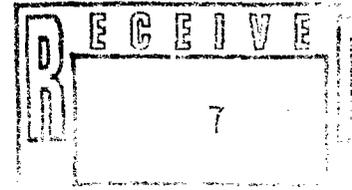
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**DRAFT**

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

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



CASE NO. 11,298  
ORDER NO. R-\_\_\_\_\_

**APPLICATION OF EXXON CORPORATION FOR STATUTORY UNITIZATION, EDDY  
COUNTY, NEW MEXICO.**

**ORDER OF THE DIVISION**  
**(Proposed by Exxon Corporation)**

**BY THE DIVISION:**

This cause came on for hearing at 8:15 a.m. on June 29, 1995 at Hobbs, New Mexico, before Examiner Michael E. Stogner.

NOW, on this \_\_\_ day of July, 1995, 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) At the time of the hearing, this case was consolidated with Division Case No. 11297 for the purposes of testimony.
- (3) The applicant, Exxon Corporation, seeks the statutory unitization, pursuant to the "Statutory Unitization Act," Sections 70-7-1 through 70-7-21 NMSA (1978), for the purpose of establishing a secondary recovery project, of all mineral interests in the designated and undesignated Avalon-Delaware Pool, underlying its proposed Avalon (Delaware) Unit Area, comprising 2118.78 acres, more or less, of State, Federal, and fee lands in Eddy County, New Mexico, said unit to henceforth be known as the Avalon (Delaware) Unit Area; the applicant further seeks approval of the plan of unitization which includes the unit agreement and the unit operating agreement and which were submitted in evidence at the time of the hearing as applicant's Exhibit Nos. 2 and 3.

Case No. 11,298

Order No. R-\_\_\_\_\_

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(4) The applicant proposes that said unit comprise the following described area in Eddy County, New Mexico:

Township 20 South, Range 27 East, NMPM

Section 25: E $\frac{1}{2}$ E $\frac{1}{2}$

Section 36: E $\frac{1}{2}$ E $\frac{1}{2}$

Township 20 South, Range 28 East, NMPM

Section 29: SW $\frac{1}{4}$ SW $\frac{1}{4}$

Section 30: Lots 1-4, E $\frac{1}{2}$ W $\frac{1}{2}$ , SW $\frac{1}{4}$ NE $\frac{1}{4}$ , SE $\frac{1}{4}$

Section 31: Lots 1-4, E $\frac{1}{2}$ W $\frac{1}{2}$ , E $\frac{1}{2}$  (All)

Section 32: SW $\frac{1}{4}$ NE $\frac{1}{4}$ , W $\frac{1}{2}$ , W $\frac{1}{2}$ SE $\frac{1}{4}$

Township 21 South, Range 27 East, NMPM

Section 4: Lot 4

Section 5: Lots 1 and 2

Section 6: Lots 1 and 2

(5) The proposed Unit Area includes portions of the designated and undesignated Avalon-Delaware Pool.

(6) The proposed "unitized formation" is that interval underlying the Unit Area described as the Delaware Mountain Group, extending from 100 feet above the base of the Goat Seep Reef to the top of the Bone Spring formation and including, but not limited to, the Cherry Canyon and Brushy Canyon Formations, as identified by the Compensated Neutron/Lithodensity/Gamma Ray Log dated September 14, 1990 run in the Exxon Corporation Yates "C" Federal Well No. 36, located 1305 feet from the North and East lines of Section 31, Township 20 South, Range 28 East, NMPM, Eddy County, New Mexico, with the top of the unitized interval being found in said well at a depth of 2,378 feet below the surface (869 feet above sea level) and the base of the unitized interval being found at a depth of 4,880 feet below the surface (1,633 feet below sea level), or stratigraphic equivalents thereof.

(7) The proposed Unit Area contains twelve separate tracts of land, the working interests in which are owned by forty-eight different persons. The applicant, Exxon

Corporation ("Exxon"), operates five of the twelve tracts, five tracts are operated by Yates Petroleum Corporation ("Yates"), one tract is operated by Premier Oil & Gas, Inc. ("Premier"), and one tract is operated by MWJ Producing Company. There are twenty-four royalty and overriding royalty interest owners in the Unit Area.

(8) At the time of the hearing, the owners of approximately 97.5 percent (97.5%) of the working interest, and the owners of over 95.0 percent (95.0%) of the royalty and overriding royalty interest, had voluntarily joined the Unit. The 95% royalty owner approval includes the U.S. Bureau of Land Management, which has indicated its preliminary approval by designating the unit as logical for conducting secondary recovery operations, and the Commissioner of Public Lands, which has preliminarily approved the unit.

(9) The applicant has conducted negotiations with interest owners within the Unit Area for over four years. Therefore, the applicant has made a good faith effort to secure voluntary unitization within the above-described Unit Area.

(10) All interested parties who have not agreed to unitization were notified of the hearing by applicant. At the hearing in this matter, Yates entered its appearance and presented evidence in support of the application. Unit Petroleum Company and MWJ Producing Company made statements in support of the application. One working interest owner, Premier, entered an appearance and opposed the application, and requested that Tract 6 (operated by Premier) be deleted from the Unit Area.

(11) Exxon is the largest working interest owner in the proposed Unit Area with 80 percent (80%) of current production. A substantial majority of working interest owners, excluding Exxon, requested that Exxon prepare a Technical Report of the Avalon-Delaware Pool. Exxon prepared the Technical Report (**Exxon Exhibit 10, Volumes I and II**) at its own expense.

(12) The applicant proposes to institute a waterflood project for the secondary recovery of oil and associated gas, condensate, and all associated liquefiable hydrocarbons within and to be produced from the proposed Unit Area (being the subject of Division Case No. 11,297). The estimated reserves recoverable from the waterflood project are 8.2 million barrels of oil.

(13) The Unit also has potential as a tertiary (CO<sub>2</sub> injection) project. Evidence presented at the hearing shows that:

- (a) Estimated recoverable tertiary reserves are 39.9 million barrels of oil.
- (b) If such a CO<sub>2</sub> flood is instituted in the proposed Unit Area, it will likely be the first CO<sub>2</sub> project in the area and could facilitate other CO<sub>2</sub> floods.
- (c) The waterflood project will provide additional data which may justify additional secondary recovery waterflood projects in other Delaware pools in New Mexico.
- (d) Institution of the CO<sub>2</sub> flood depends upon waterflood performance, results of future CO<sub>2</sub> injectivity tests, and perception of future oil prices. A minimum of 3 years of water injection would be required to repressure the reservoir prior to commencing a CO<sub>2</sub> injection program.

(14) The primary issue in dispute between Premier and other working interest owners is the geologic pick of the base of the Upper Cherry Canyon reservoir in Premier's FV3 Well, located in the SE $\frac{1}{4}$ SE $\frac{1}{4}$  of Section 25, Township 20 South, Range 27 East, NMPM, and the effect of that pick on recoverable reserves in Tract 6. Exxon's pick, supported by other interest owners, is 2768 feet subsurface, while Premier's pick is 2852 feet subsurface.

(15) **Exxon presented evidence that:**

- (a) Exxon examined 71 well logs, 4 cores, 13 dipmeters, 35 mud logs, all production data from the Pool, and tied-in to the regional stratigraphic framework in order to determine its geologic picks.
- (b) Exxon's geologic model was calibrated by actual production and verified by a reservoir simulation program.
- (c) Exxon's pick of the base of the Upper Cherry reservoir is consistent with geologic markers found throughout the Avalon-Delaware Pool (**Exxon Exhibits 16, 41, and 42**).

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- (d) Premier presented its geologic interpretation to other Avalon Unit Area working interest owners in 1994, but those working interest owners agreed with Exxon's interpretation.
- ✓ (e) The waterflood project area includes approximately 1100 acres in the center of the Unit Area. The outer or "fringe" tracts were included in the Unit Area based upon their CO<sub>2</sub> flood potential. The "fringe" tracts will participate in production from inception of the Unit.
- (f) The main productive area in the Pool is in Unit Tracts 2, 3, 5, and 10. Adjoining, or "fringe" tracts (Unit Tracts 1, 4, 6, 7, 8, 9, 11, and 12) have little or no primary or secondary production potential. (See Exxon Exhibit 22).
- (g) Premier's FV3 Well produced 5100 barrels of oil prior to ceasing production. The nearest analogous well to the FV3 Well, the Yates Citadel ZG1 Well, located in the NE $\frac{1}{4}$ NE $\frac{1}{4}$  of Section 36, Township 20 South, Range 27 East, immediately to the South of the FV3 Well (Unit Tract 7), is expected to produce 6000 barrels of primary oil.
- (h) The Technical Report and the Unit Agreement attribute no remaining primary or waterflood reserves to Tract 6, operated by Premier. ~~Primary production data and geologic markers in the Yates Citadel ZG1 Well, and other offset wells, support the Technical Report's estimate of primary and waterflood reserves in Unit Tract 6.~~
- (i) Premier will own 1% of the Avalon (Delaware) Unit despite the fact that Premier's Tract 6 has produced only 0.1% of the cumulative oil to date. In addition, Premier is likely to receive positive cash flow from the first day of unit operations because of investment adjustments.
- ✓ (j) It would be difficult, if Tract 6 were deleted from the Unit, to waterflood or CO<sub>2</sub> flood Tract 6 separately from the Unit. Furthermore, if Tract 6 is not part of the Unit, production of CO<sub>2</sub>-laden gas from Tract 6 would present operational difficulties.

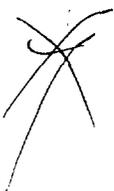
(16) Yates presented evidence that:

- (a) Deleting Tract 6 from the Unit would substantially reduce recoverable tertiary reserves under Tracts 3, 5, and 7, which are operated by Yates and adjacent to Tract 6.
- (b) Negotiations over the equity formula in the Unit Agreement lasted approximately one year. Deleting Tract 6 from the Unit Area would require additional negotiations among working interest owners, revision of Unit documents, and other delays. *Indicia* Yates' witness testified that if Tract 6 is deleted, unitization may never occur.
- (c) Yates' geologist had done independent work which confirmed Exxon's geologic interpretation in the area contested by Premier.

(17) Premier presented evidence that:

- (a) Tract 6 has substantial primary and waterflood reserves, but presented no evidence on the amount thereof, and Premier has never developed or produced such reserves. The only Delaware completion on its tract, the FV3 Well, produced only 5100 barrels of oil. (The analogous offset well, the Yates Citadel ZG1 Well, will produce only an estimated 6000 barrels of oil.)
- (b) Premier was advised in 1993 by its engineering consultant to develop its acreage in order to substantiate its claims.
- (c) Premier has never calculated primary reserves under Tract 6 or made any payout calculations for a well thereon.
- (d) Exxon used incorrect well locations for the Yates EP2 and EP3 Wells in the S $\frac{1}{2}$ SW $\frac{1}{4}$  of Section 19, Township 20 South, Range 28 East, and thus its geologic maps were wrong. (However, an aerial photo submitted by Exxon shows that Exxon's locations were correct and that the locations used by Premier were wrong. (**Exxon Exhibit 40.**))

- (e) Premier's FV3 Well was drilled and completed by Gulf in 1984, and purchased by Premier in 1990. The interval below the base of the Upper Cherry Canyon reservoir, claimed by Premier to be productive in the FV3 Well, was never perforated by either Gulf or Premier.
- (f) Premier has never drilled or recompleted a Delaware well on its FV lease, which covers 480 acres of land in Section 25, Township 20 South, Range 27 East, although Premier asserted in 1990 (Division Case No. 10145) that it would recomplete a well or wells in 1991.
- (g) Premier's engineering consultant stated that Tract 6 was given credit for waterflood "target" reserves (**Technical Report Exhibit E-6**), which "disappear" in the reserves for equity purposes (**Exhibit D of the Unit Agreement, and Technical Report Exhibit G-24 submitted as Yates Exhibit 6, at Tab 2G**). However, Premier's engineering consultant admitted he did not realize that "target" oil-in-place was a volumetric value used as a starting point in calculating recoverable reserves, on which equity is based. In order to obtain recoverable reserves, the "target oil-in-place" must be reduced by factors such as history matching, well-to-well continuity, sweep efficiency, floodable oil, pattern effects, and development costs. This was done on all tracts, including Premier's Tract 6.



(18) Premier did not present any new tract participation numbers.

(19) **Based upon the foregoing, the Division concludes that:**

- (a) Based on the information and data available, Exxon's Technical Report and reserve estimates are fair and reasonable. Premier's claims are speculative and unsubstantiated; and
- (b) Tract 6 is State of New Mexico land. Deleting Tract 6 from the Unit will adversely affect State interests in Tract 6 and in offsetting State land (Tracts 3 and 5). Deleting Tract 6 from the Unit will result in the waste of tertiary reserves under Tracts 3, 5, and 6.

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(20) The proposed unitized method of operation as applied to the Avalon (Delaware) Unit is feasible and will result with reasonable probability in the increased

recovery of substantially more oil and gas from the unitized portion of the Avalon-Delaware Pool than would otherwise be recovered without unitization.

(21) Such unitization and adoption of applicant's proposed unitized method of operation will benefit the working interest owners and royalty owners of the oil and gas rights within the Avalon (Delaware) Unit Area.

(22) The granting of the application in this case will have no adverse effect upon the Avalon-Delaware Pool.

(23) The estimated additional costs of such operations will not exceed the estimated value of the additional oil so recovered plus a reasonable profit.

(24) The applicant's Exhibit Nos. 2 and 3 in this case, being the Unit Agreement and the Unit Operating Agreement, should be incorporated by reference into this order.

(25) The unitized management, operation and further development of the Avalon (Delaware) Unit Area, as proposed, is reasonably necessary to effectively increase the ultimate recovery of oil and gas from the unitized portion of the Avalon-Delaware Pool.

(26) The Avalon (Delaware) Unit Agreement and the Avalon (Delaware) Unit Operating Agreement provide for unitization and unit operation of the Avalon (Delaware) Unit Area upon terms and conditions that are fair, reasonable and equitable, and include:

- (a) a participation formula which will result in fair, reasonable and equitable allocation to the separately owned tracts of the Unit Area of all oil and gas that is produced from the Unit Area and which is saved, being the production that is (i) not used in the conduct of unit operations, or (ii) 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 operators;
- (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 such costs shall be charged to each owner, or the interest of such owner, 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 or carried basis payable out of production, upon terms and conditions which are just and reasonable, and which allow an appropriate charge for interest for such service payable out of production, upon such terms and conditions determined by the Division to be just and reasonable;
- (e) a provision designating the Unit Operator and providing for supervision and conduct of the unit operations, including the selection, removal and substitution of an operator from among the working interest owners to conduct the unit operations;
- (f) a provision for a voting procedure for decisions on 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) a provision specifying 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.

(27) The statutory unitization of the Avalon (Delaware) Unit Area is in conformity with the above findings, and will prevent waste and protect correlative rights of all interest owners within the proposed Unit Area, and should be approved.

**IT IS THEREFORE ORDERED THAT:**

(1) The application of Exxon Corporation for the Avalon (Delaware) Unit, covering 2118.78 acres, more or less, of State, Federal and fee lands in the Avalon-Delaware Pool, Eddy County, New Mexico, is hereby approved for statutory unitization pursuant to the "Statutory Unitization Act," Sections 70-7-1 through 70-7-21 NMSA (1978).

(2) The Avalon (Delaware) Unit Agreement, as amended, and the Avalon (Delaware) Unit Operating Agreement, which were submitted to the Division at the time of the hearing as Exhibits 2 and 3, are hereby incorporated by reference into this order.

(3) The lands herein designated the Avalon (Delaware) Unit Area shall comprise the following described acreage in Eddy County, New Mexico:

Township 20 South, Range 27 East, NMPM

Section 25:  $E\frac{1}{2}E\frac{1}{2}$

Section 36:  $E\frac{1}{2}E\frac{1}{2}$

Township 20 South, Range 28 East, NMPM

Section 29:  $SW\frac{1}{4}SW\frac{1}{4}$

Section 30: Lots 1-4,  $E\frac{1}{2}W\frac{1}{2}$ ,  $SW\frac{1}{4}NE\frac{1}{4}$ ,  $SE\frac{1}{4}$

Section 31: Lots 1-4,  $E\frac{1}{2}W\frac{1}{2}$ ,  $E\frac{1}{2}$  (All)

Section 32:  $SW\frac{1}{4}NE\frac{1}{4}$ ,  $W\frac{1}{2}$ ,  $W\frac{1}{2}SE\frac{1}{4}$

Township 21 South, Range 27 East, NMPM

Section 4: Lot 4

Section 5: Lots 1 and 2

Section 6: Lots 1 and 2

(4) The vertical limits of the unitized area is that interval underlying the Unit Area described as the Delaware Mountain Group, extending from 100 feet above the base of the Goat Seep Reef to the top of the Bone Spring formation and including, but not limited to, the Cherry Canyon and Brushy Canyon Formations, as identified on the Compensated Neutron/Lithodensity/Gamma Ray Log dated September 14, 1990 run in the Exxon Corporation Yates "C" Federal Well No. 36, located 1305 feet from the North and East lines of Section 31, Township 20 South, Range 28 East, NMPM, Eddy County, New Mexico, with the top of the unitized interval being found in said well at a depth of 2,378 feet below the surface (869 feet above sea level) and the base of the unitized interval being found at a depth of 4,880 feet below the surface (1,633 feet below sea level), or stratigraphic equivalents thereof.

(5) The applicant shall have the right to institute a waterflood project for the secondary recovery of oil and associated gas, condensate and all associated liquefiable hydrocarbons within and produced from the Unit Area and said waterflood project which is the subject of Division Case No. 11,297.

(6) Since the persons owning the required statutory minimum percentage of interest in the Unit Area have approved, ratified, or indicated their preliminary approval of the Unit Agreement and the Unit Operating Agreement, the interests of all persons within the Unit Area are hereby unitized whether or not such persons have approved the Unit Agreement or the Unit Operating Agreement in writing.

(7) The applicant, hereby designated as Unit Operator, shall notify in writing the Division Director of any removal or substitution of said Unit Operator by any other working interest owner within the Unit Area.

(8) 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