

**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. 12207
Order No. R-11255*

**APPLICATION OF ST. MARY LAND & EXPLORATION COMPANY FOR
STATUTORY UNITIZATION, EDDY AND LEA COUNTIES, NEW MEXICO**

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on August 5, 1999, at Santa Fe, New Mexico before Examiner David R. Catanach.

NOW, on this 14th day of October, 1999, the Division Director, having considered the testimony, the record and the recommendations of the Examiner,

FINDS THAT:

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

(2) Division Cases No. 12207 and 12208 were consolidated at the time of the hearing for the purpose of testimony.

(3) The applicant, St. Mary Land & Exploration Company, seeks: (i) the statutory unitization, pursuant to the Statutory Unitization Act, Sections 70-7-1 through 70-7-21, NMSA 1978, of 604.12 acres, more or less, being a portion of the East Shugart-Delaware Pool, Eddy and Lea Counties, New Mexico, and to be known as the East Shugart Delaware Unit, hereinafter sometimes referred to as the "Unit Area"; and (ii) approval of the Unit Agreement and the Unit Operating Agreement, which were submitted in evidence as applicant's Exhibits No. 3 and 4, respectively, in this case.

(4) St. Mary Land & Exploration Company proposes to institute an enhanced oil recovery project for the secondary recovery of oil and gas from the Unitized Formation within the Unit Area (the subject of companion Case No. 12208).

(5) Intoil, Inc. ("Intoil"), an interest owner in the proposed East Shugart Delaware Unit, appeared at the hearing in support of the proposed unitization and secondary recovery project, but in opposition to the applicant's proposed allocation formula.

(6) The applicant notified all interest owners in the proposed East Shugart Delaware Unit of its application in this case. No other interest owner appeared at the hearing.

(7) The East Shugart-Delaware Pool has been reasonably defined by development.

(8) The proposed East Shugart Delaware Unit consists of six Federal oil and gas leases located in Eddy and Lea Counties, New Mexico, and comprises 604.12 acres, more or less, described as follows:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM

Section 13: S/2 SE/4

Section 24: NE/4, N/2 SE/4

LEA COUNTY, NEW MEXICO
TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM

Section 18: Lot 4

Section 19: Lots 1 through 3, E/2 NW/4, NE/4 SW/4

(9) The proposed Unitized Formation is that interval underlying the Unit Area, the vertical limits of which extend from an upper limit described as the top of the Brushy Canyon formation of the Delaware Mountain Group to the stratigraphic equivalent of 5600 feet within the Delaware Brushy Canyon formation, the geologic markers having been previously found to occur at 5007 feet and 5600 feet, respectively, in the Geronimo Federal Well No. 3 located 890 feet from the North line and 990 feet from the East line (Unit A) of Section 24, Township 18 South, Range 31 East, NMPM, Eddy County, New Mexico, as recorded on the Compensated Neutron Litho Density Log taken on September 21, 1985.

(10) By letter dated February 16, 1999, the Bureau of Land Management approved the East Shugart Delaware Unit as a logical unit area.

(11) The proposed Unit Area contains 14 separate tracts owned by 46 working interest owners and 103 royalty and overriding royalty interest owners.

(12) The applicant has made a good faith effort to secure voluntary unitization within the Unit Area and as of the date of the hearing has obtained voluntary ratification from 89.098% of the working interest owners and from 93.217% of the royalty and overriding royalty interest owners.

(13) St. Mary Land & Exploration Company is the largest interest owner within the proposed East Shugart Delaware Unit, owning more than 58% of the working interest. Intoil is the third largest owner of interest, owning approximately 4.5% of the working interest.

(14) The applicant presented evidence indicating that the individual tract participation and allocation of production within the proposed East Shugart Delaware Unit was determined in accordance with the following formula:

- Factor A: 5% of Total Tract Participation
Total number of acres attributable to the tract divided by the total number of acres in the Unit Area.
- Factor B: 15% of Total Tract Participation
Total cumulative oil production from the Unitized Formation in each tract as of June 1, 1998 divided by the total cumulative oil production from the Unitized Formation within the Unit Area as of June 1, 1998.
- Factor C: 25% of Total Tract Participation
Rate of oil production from the Unitized Formation in each tract as determined by average barrels of oil produced each month from January through May, 1998 divided by the total rate of oil production from the Unitized Formation within the Unit Area for the same period of time.
- Factor D: 40% of Total Tract Participation
Original oil in place ("OOIP") in the Unitized Formation in each tract as determined by the reservoir simulation study, East Shugart (Delaware) Field, June 8, 1998, Petroleum Consulting & Engineering, Inc., divided by the original oil in place in the Unitized Formation within the Unit Area as determined by said study.
- Factor E: 15% of Total Tract Participation
Remaining primary oil reserves from the Unitized Formation in each tract beginning July 1, 1998, as determined by decline curve analysis, divided by the remaining primary oil reserves from the Unitized Formation within the Unit Area beginning July 1, 1998, as determined by decline curve analysis.

(15) Intoil owns a 45.452% interest in Tract No. 6 of the proposed East Shugart Delaware Unit. This tract is currently dedicated to the Jade Federal Well No. 1 (API No. 30-025-29939) located 1650 feet from the North and West lines (Unit F) of Section 19.

(16) The applicant's proposed allocation formula results in a 9.09% unit participation factor for Tract No. 6.

(17) Intoil's objection to the proposed allocation formula is based upon its contention that OOIP (Factor D) is too heavily weighted in the formula and that OOIP is subjective for the following reasons:

- a) the Delaware formation in the Unit Area is highly erratic and comprised of lenticular and often discontinuous sands;
- b) much of the productive reservoir in the Unit Area is still behind pipe and its productive capabilities can only be estimated;
- c) the performance of the wells currently completed in this formation demonstrates uncertain productive capabilities even when the perforated Delaware formation meets assumed porosity and water saturation parameters; and
- d) the unreliability of projecting well performance based on log analysis in the Unit Area makes it difficult to accurately calculate the OOIP in this reservoir on a tract-by-tract basis.

(18) Intoil further contends that St. Mary Land & Exploration Company's reservoir modeling does not accurately determine OOIP for the following reasons:

- a) the reservoir model is based upon the applicant's geologic interpretation of the reservoir, which includes in the productive reservoir all of the Delaware formation with porosity in excess of 17% and with water saturation of 60% or less; and
- b) wells in this reservoir that met the porosity and water saturation requirements for a productive reservoir by log analysis failed to produce or were wet when perforated.

(19) Intoil presented two alternate formulas, which it believes allocate unit production in a more fair, reasonable and equitable basis. Intoil’s recommended participation formulas are described as follows:

Intoil’s Alternate Formula No. 1

<u>Parameter</u>	<u>Percentage</u>
Acreage	5%
Cumulative Oil Production	20%
Remaining Primary	35%
Oil Rate (January-May, 1998)	35%
Original Oil in Place	5%

Intoil’s Alternate Formula No. 2

Remaining Primary	40%
Oil Rate (January-May, 1998)	40%
Primary Ultimate	20%

(20) Intoil’s proposed allocation formulas result in a 10.64% (Formula 1) and 11.31% (Formula 2) unit participation factor for Tract No. 6.

(21) Intoil further testified that when the expected recoveries under the applicant’s proposed allocation formula are compared to the expected recoveries under primary recovery operations, the ratio for Intoil is 3.4 to 1 compared to the ratio for all other working interest owners in the Unit Area of 4.34 to 1. Under Intoil’s proposed allocation formulas, these ratios are compared as follows:

<u>Allocation Formula</u>	<u>Intoil’s Ratio</u>	<u>All Other WI’s Ratio</u>
Intoil Alternate Formula 1	4.1 to 1	4.29 to 1
Intoil Alternate Formula 2	4.236 to 1	4.285 to 1

(22) The applicant contends that its proposed allocation formula treats Intoil fairly for the following reasons:

- a) certain irregularities in production reporting for Tract No. 6 during the period from 1992 through mid-1996 have resulted in the Jade Federal Well No. 1 being credited for more cumulative production than it actually contributed, thereby effectively increasing its share of unit participation under Factor B of the applicant’s proposed participation formula;

- b) in late 1998, after several discussions with Intoil and in an effort to assuage its concerns, the applicant recalculated current rate and remaining primary reserves for Tract No. 6. This adjustment resulted in a 0.5% increase in Intoil's unit participation under the applicant's proposed participation formula; and
 - c) well tests conducted in March and April, 1999 show that the current producing rate of the Jade Well No. 1 is substantially lower than its rate from January to June, 1998, the time period applied to Factor C of the applicant's proposed allocation formula. This affects both the current rate and remaining primary reserves attributable to the Jade Federal Well No. 1, again benefiting Intoil.
- (23) The evidence presented by both parties in this case demonstrates that:
- a) in determining the allocation formula proposed to be utilized within the East Shugart Delaware Unit, the applicant worked independently and without input from any other working interest owner in the Unit Area;
 - b) in January, 1999, the applicant sent Intoil's proposed allocation formulas to all the working interest owners in the Unit Area and solicited their input with regards to Intoil's proposal. The applicant testified that no working interest owner responded, either in support of, or opposition to, the allocation formulas proposed by Intoil;
 - c) the applicant utilized reservoir modeling to determine OOIP for each of the tracts in the Unit Area. Behind-pipe reserves were estimated utilizing log analysis ("i.e.", porosity, net pay and water saturation data). The evidence presented indicates that behind-pipe reserves attributable to wells within the Unit Area may not be producible and may not ultimately contribute to actual unit production;

- d) the geologic evidence further indicates that the Delaware sands are fairly continuous and correlatable across the Unit Area, however, porosity variations exist within these sands which may cause erroneous OOIP estimates;
- e) an examination of similar statutory unitization cases presented before the Division during the last decade reveals that OOIP is rarely used as a factor in allocation formulas;
- f) there is ample production history within the Unit Area with which to reasonably determine cumulative oil production, current producing rate and remaining primary reserves, all factors that provide a greater degree of accuracy than OOIP in determining a fair and reasonable allocation formula;
- g) while it is not unreasonable to utilize OOIP as a factor in allocation formulas, the applicant did not present sufficient evidence to demonstrate the necessity to weight this factor at 40% in its proposed allocation formula;
- h) the allocation formula proposed by the applicant in this case does not allocate unitized hydrocarbons to the separately owned tracts within the Unit Area on a fair, reasonable and equitable basis; and
- i) Intoil's Formula No. 1 allocates unitized hydrocarbons to the separately owned tracts within the Unit Area on a more fair, reasonable and equitable basis.

(24) Intoil's Formula No. 1, described in Finding No. (19) above, should be adopted as the allocation formula to be utilized in the statutory unitization of the East Shugart Delaware Unit; provided, however, the applicant should utilize its data to recalculate tract participation within the unit.

(25) The applicant projects that the unitized management, operation and further development of the Unitized Formation within the Unit Area will result in the recovery of an additional 2.9 million barrels of secondary reserves which would otherwise not be recovered, thereby preventing waste.

(26) The statutory unitization of the Unitized Formation within the Unit Area in accordance with the plan embodied in the Unit Agreement and Unit Operating Agreement, subject to the amendment to the allocation formula, will prevent waste and protect correlative rights and is upon terms and conditions that are fair, reasonable, equitable and in accordance with the Statutory Unitization Act, including all of the elements necessary for the entry of an order.

(27) The proposed unitized method of secondary recovery operations within the Unit Area is feasible and will result with reasonable probability in the recovery of substantially more oil and gas from the unitized portion of the pool than would otherwise be recovered.

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

(29) Statutory unitization and adoption of applicant's proposed unitized method of operation will benefit the working interest and royalty interest owners within the proposed secondary recovery project area.

(30) The Unit Agreement and Unit Operating Agreement, applicant's Exhibits No. 3 and 4 in this case, should be incorporated by reference into this order

(31) The East Shugart Delaware Unit Agreement and the East Shugart Delaware Unit Operating Agreement, subject to the amended allocation formula, shall provide for unitization and unit operation upon terms and conditions that are fair, reasonable and equitable, and shall 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 that 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 such costs shall be paid, including a provision specifying when, how and by whom such costs shall be charged to the owners, or the interests of such owners, and how their interests may be sold and the proceeds applied to the payment of their costs;

- (d) a provision for carrying any working interest owner on a limited, carried or net-profits basis, payable out of production, upon terms and conditions that are just and reasonable and that 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 a Unit Operator and providing for supervision and conduct of unit operations, including the selection, removal and substitution of an operator from among the working interest owners to conduct unit operations;
- (f) a voting procedure for matters to be decided by the working interest owners under which each working interest owner shall have a voting interest equal to its 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 provision for the settlement of accounts upon such termination.

(32) Section 70-7-7.F., NMSA 1978, of the Statutory Unitization Act provides that the unit plan of operation shall include a provision for carrying any working interest owner, subject to limitations set forth in the statute, and that any non-consenting working interest owner 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 its share of the costs has been repaid plus an amount not to exceed 200 percent thereof as a non-consent penalty.

(33) The applicant's Exhibit No. 4, Unit Operating Agreement, contains a provision whereby any working interest owner who elects not to pay its share of unit expense shall be liable for its share of such unit expense plus an additional 200 percent thereof as a non-consent penalty, and that such costs and non-consent penalty may be recovered from each non-consenting working interest owner's share of unit production.

(34) A non-consent penalty of 200 percent should be adopted in this case. The applicant should be authorized to recover from unit production each non-consenting working interest owner's share of unit expense plus 200 percent thereof.

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

IT IS THEREFORE ORDERED:

(1) The application of St. Mary Land & Exploration Company for the statutory unitization of 604.12 acres, more or less, being a portion of the East Shugart-Delaware Pool, Eddy and Lea Counties, New Mexico, to be known as the East Shugart Delaware Unit, is hereby approved pursuant to the Statutory Unitization Act, Sections 70-7-1 through 70-7-21, NMSA 1978.

(2) The East Shugart Delaware Unit shall comprise the following described 604.12 acres, more or less, of Federal lands in Eddy and Lea Counties, New Mexico:

EDDY COUNTY, NEW MEXICO
TOWNSHIP 18 SOUTH, RANGE 31 EAST, NMPM

Section 13: S/2 SE/4
Section 24: NE/4, N/2 SE/4

LEA COUNTY, NEW MEXICO
TOWNSHIP 18 SOUTH, RANGE 32 EAST, NMPM

Section 18: Lot 4
Section 19: Lots 1 through 3, E/2 NW/4, NE/4 SW/4

(3) The "Unitized Formation" shall comprise that interval underlying the Unit Area the vertical limits of which extend from an upper limit described as the top of the Brushy Canyon formation of the Delaware Mountain Group to the stratigraphic equivalent of 5600 feet within the Delaware Brushy Canyon formation, the geologic markers having been previously found to occur at 5007 feet and 5600 feet, respectively, in the Geronimo Federal Well No. 3 located 890 feet from the North line and 990 feet from the East line (Unit A) of Section 24, Township 18 South, Range 31 East, NMP M, Eddy County, New Mexico, as recorded on the Compensated Neutron Litho Denity Log taken on September 21, 1985.

(4) The East Shugart Delaware Unit Agreement and East Shugart Delaware Unit Operating Agreement, which were submitted to the Division at the time of the hearing as Exhibits No. 3 and 4, respectively, are hereby incorporated by reference into this order.

(5) The applicant shall institute a water injection program for the secondary recovery of oil and associated gas, condensate and all associated liquefiable hydrocarbons within the Unit Area, such operations being the subject of companion Case No. 12208.

(6) The applicant shall utilize the following described formula to allocate production to each of the tracts within the Unit Area, provided however the applicant shall utilize its data to recalculate tract participation in accordance with this formula:

<u>Parameter</u>	<u>Percentage</u>
Acreage	5%
Cumulative Oil Production	20%
Remaining Primary	35%
Oil Rate (January-May, 1998)	35%
Original Oil in Place	5%

(7) The Unit Agreement and the Unit Operating Agreement for the East Shugart Delaware Unit, subject to the revised tract participation formula, shall provide for unitization and unit operation of the Unit Area upon terms and conditions that are fair, reasonable and equitable.

(8) This order shall not become effective unless and until the owners of 75 percent of the working interest and 75 percent of the royalty interest in the East Shugart Delaware Unit have approved the plan for unit operations as required by Section 70-7-8, NMSA 1978.

(9) If the persons owning the required percentage of interest in the East Shugart Delaware Unit, as set forth in Section 70-7-8, NMSA 1978, 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 effective unless the Division shall extend the time for ratification for good cause.

(10) When the persons owning the required percentage of interest in the East Shugart Delaware Unit have approved the plan for unit operations, the interests of all persons in the Unit Area are unitized whether or not such persons have approved the plan of unitization in writing.

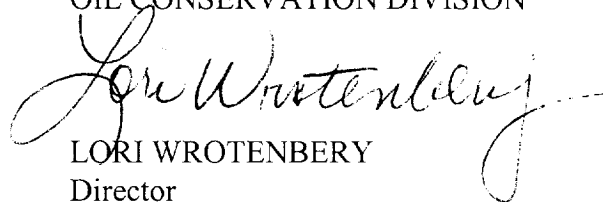
(11) The applicant shall notify the Division Director in writing of any removal or substitution of the applicant as unit operator by any other working interest owner within the Unit Area.

(12) A non-consent penalty of 200 percent is hereby adopted in this case. The applicant shall be authorized to recover from unit production each non-consenting working interest owner's share of unit expense plus 200 percent thereof.

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

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

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


LORI WROTENBERY
Director



S E A L