

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. 11195  
Order No. R-10449

APPLICATION OF GILLESPIE-CROW  
INC. FOR STATUTORY UNITIZATION,  
LEA COUNTY, NEW MEXICO.

ORDER OF THE DIVISION

BY THE DIVISION:

This cause came on for hearing at 8:15 a.m. on June 15, 1995, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 29th day of August, 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) Division Case Nos. 11194 and 11195 were consolidated at the time of the hearing for the purpose of testimony.

(3) The applicant, Gillespie-Crow, Inc., seeks the statutory unitization, pursuant to the "Statutory Unitization Act", Sections 70-7-1 through 70-7-21, NMSA, (1978), of all mineral interests underlying 1,458.95 acres, more or less, of State, Federal and Fee lands comprising the following described area in Lea County, New Mexico, and embracing a portion of the West Lovington-Strawn Pool, said unit to be known as the West Lovington Strawn Unit Area; the applicant further seeks the approval of the Unit Agreement which was submitted in evidence as applicant's Exhibit No. 19 in this case.

TOWNSHIP 15 SOUTH RANGE 35 EAST NMPM

RECORDER'S MEMORANDUM

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Section 33: All  
Section 34: W/2

EXHIBIT

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TOWNSHIP 16 SOUTH RANGE 35 EAST NMPM

Section 1: Lots 1 through 8

TOWNSHIP 16 SOUTH RANGE 36 EAST NMPM

Section 6: Lots 3 through 5

(4) The vertical limits of the West Lovington Strawn Unit Area (hereinafter referred to as the "Unit Area") are proposed to comprise that interval which extends from an upper limit at the top of the Strawn formation to a lower limit at the base of the Strawn formation in the West Lovington-Strawn Pool. The top of the Strawn formation for unitization purposes is defined as all points underlying the Unit Area correlative to a depth of 11,420 feet and the base of the Strawn formation is defined as all points underlying the Unit Area correlative to a depth of 11,681 feet, both depths as identified on the Compensated Neutron/Litho Density Log for the Speight Fee Well No. 1 located in Unit C (Lot 3) of Section 1, Township 16 South, Range 35 East, NMPM, Lea County, New Mexico, (being applicant's Exhibit No. 2 in this case).

(5) The Strawn formation underlying the proposed Unit Area has been reasonably defined by development.

(6) The proposed Unit Area has been approved by the United States Bureau of Land Management (USBLM) and the Commissioner of Public Lands for the State of New Mexico, subject to the Division's approval of the proposed statutory unitization.

(7) The proposed Unit Area contains eleven separate tracts owned by eight (8) working interest owners, sixty-seven (67) royalty interest owners and eight (8) overriding royalty interest owners. At the time of the hearing, applicant's witness testified that 100 percent of the working interest owners and over 85 percent of the royalty and overriding royalty interest owners underlying the proposed Unit Area have voluntarily agreed to join the unit.

(8) Gillespie-Crow Inc., Phillips Petroleum Company (Phillips) and Dalen Resources Oil & Gas Company (Dalen) are among the largest working interest owners within the Unit Area.

(9) Phillips Petroleum Company appeared at the hearing and presented evidence and testimony in support of Gillespie-Crow, Inc.'s application.

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(10) Snyder Ranches, Inc. and Mr. Larry Squires, collectively (Snyder), royalty interest owners underlying Tract No. 6 of the proposed Unit Area, appeared at the hearing and presented evidence and testimony in support of the formation of the unit, but in opposition to the formula for the allocation of production from the Unit Area.

(11) The applicant proposes to institute a pressure maintenance project for the secondary recovery of oil, gas and associated liquefiable hydrocarbons within and to be produced from the proposed Unit Area (being the subject of companion Case No. 11194). ✓

(12) The proposed Unit Area should be designated the West Lovington Strawn Unit Area and should comprise the horizontal and vertical limits described in Finding Nos. (3) and (4) above.

(13) Engineering evidence presented by the applicant indicates that the individual tract participation and allocation within the Unit Area was determined in accordance with the following formula:

$$\text{Tract Participation Percentage} = (A-B)/(C-D)$$

Where:

A = Tract volumetric original oil in place calculated from hydrocarbon pore volume;

B = Tract cumulative oil recovery from the Strawn formation as of May 1, 1995;

C = Unit Area volumetric original oil in place calculated from hydrocarbon pore volume;

D = Unit Area cumulative oil recovery from the Strawn formation as of May 1, 1995.

(14) Evidence and testimony presented indicates that in November, 1994, Charles B. Gillespie, Jr. (Gillespie) initiated formal discussions with various working interest owners with regards to the unitization of the West Lovington-Strawn Pool for the purpose of conducting secondary recovery operations. During this time period, various isopach, structure and hydrocarbon pore volume maps were constructed and utilized for unitization discussions.

(15) Gillespie's geologic interpretation of the Strawn reservoir at the time the initial unitization maps were generated was based upon existing well control and 2-D and 3-D seismic data. Gillespie's pore volume map was based upon its geologic interpretation of the reservoir and porosity and thickness data obtained from well logs.

(16) During February and March, 1995, the Klein Fee Well No. 1 and the Snyder "S" Com Well No. 2, hereinafter referred to as the "new wells", located respectively in Unit B of Section 33 and Unit M of Section 34, both in Township 15 South, Range 35 East, NMPM, were drilled and completed in the West Lovington-Strawn Pool.

(17) According to evidence and testimony presented, subsequent to the drilling of the new wells, and subsequent to additional meetings between various working interest owners within the Unit Area, the hydrocarbon pore volume map was altered from its original configuration to reflect a revised interpretation of 3-D seismic data as a result of additional well data obtained from the drilling of the aforesaid wells.

(18) The revision of the hydrocarbon pore volume map resulted in a change in the tract participation percentages among various tracts within the Unit Area. With specific regards to Tract No. 6, the revision of the hydrocarbon pore volume map resulted in a 26.8% decrease in this tract's participation in the unit.

(19) Utilizing the initial and revised hydrocarbon pore volume maps and the applicant's tract participation formula results in the following tract participation percentages:

<u>TRACT NUMBER</u>	<u>TRACT PARTICIPATION % (INITIAL HPV MAP)</u>	<u>TRACT PARTICIPATION % (REVISED HPV MAP)</u>
1	17.551	28.014
2	21.848	17.723
3	6.601	5.542
4	6.747	7.467
5	25.136	21.259
6	8.643	6.329
7	6.671	6.306
8	3.574	3.561
9	2.498	1.938
10	0.552	1.470
11	0.179	0.387

(20) Snyder presented geologic and engineering evidence and testimony to support its contentions that:

a) in April-May, 1995, Phillips, who owns a substantial working interest share in Tract No. 1, met with Gillespie/Dalen and persuaded them to:

- 1) add reservoir thickness to Tract No. 1 by "re-interpreting" the existing 3-D seismic data; and,
- 2) extend a plunging structural nose further into Tract No. 6 and to alter the oil-water contact such that hydrocarbon pore volume was reduced under Tract No. 6 and increased under Tract Nos. 1, 10 and 11.

b) the additional well data obtained from the drilling of the new wells is insufficient to cause such a dramatic change in the applicant's interpretation of structure, isopach and hydrocarbon pore volume within this reservoir; \*

c) the integration of the log data from the new wells with all other available log data establishes that Tract No. 6 should be assigned a hydrocarbon pore volume of 8.65% of the Unit Area's total hydrocarbon pore volume as opposed to the 5.34% assigned to Tract No. 6 by the applicant.

(21) Snyder further contends that the reservoir parameters and participation formula proposed by Gillespie fail to provide "relative value" to Tract No. 6 as required by Section 70-7-4(J) NMSA (1978), as amended, and unless corrected by the Division, the correlative rights of Snyder will be violated.

(22) Snyder presented geologic evidence and testimony including structure, isopach and hydrocarbon pore volume maps to support its position in this case.

(23) Snyder's geologic interpretation of the Strawn reservoir underlying the Unit Area differs from applicant's primarily with respect to the distribution of hydrocarbon pore volume and structure within the Unit Area.

(24) Snyder proposed that a two-phase participation formula be utilized to allocate production to the various tracts within the proposed pressure maintenance project. The basic premise utilized by Snyder in determining its allocation formula is that the percentage recovery from each tract within the Unit Area should be equal at the end of the project life. In numerical terms, if the ultimate recovery from the proposed project is 30% of the original oil in place within the Unit Area, each tract, at the end of the project life, should have been credited with recovering 30% of its original oil in place.

(25) The evidence and testimony presented by all parties in this case indicates that:

- a) the reservoir structure and related position of the oil-water contact relative to Tract No. 6 is a major point of contention between the parties and the primary reason that Snyder's participation decreased from 8.643% to 6.329%; ✓
- b) applicant's original structure map, generated prior to the drilling of the new wells (Snyder Exhibit No. 1), is very similar to the structure map generated by Snyder in this case. Both maps show that only a very small portion of Tract No. 6 is located structurally below the oil-water contact within the reservoir;
- c) applicant testified that both the new wells encountered the Strawn reservoir at approximately the same structural position that was predicted by the original structure map;
- d) the alteration of the original structure map and related position of the oil-water contact relative to Tract No. 6 due to data obtained from the drilling of the new wells does not appear to be warranted;
- e) the data obtained from the drilling of the new wells does not appear to be sufficient to significantly alter the isopach maps and hydrocarbon pore volume maps from their original configuration;
- f) the applicant did not present any 3-D seismic data as evidence in this case and did not sufficiently demonstrate through its evidence and testimony that the data obtained from the drilling of the new wells together with a re-evaluation of the 3-D seismic data justifies a significant alteration of the structure, isopach and hydrocarbon pore volume maps from their original configurations; ✱

**RECORDER'S MEMORANDUM**

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- g) so as to eliminate any potential bias, testimony by Snyder's geologist indicates that he constructed his structure, isopach and hydrocarbon pore volume maps independently of any knowledge of tract configuration or ownership within the proposed Unit Area;
- h) the hydrocarbon pore volume map generated by Snyder was validated by material balance calculations. The applicant presented no such material balance calculations to validate it's hydrocarbon pore volume map. ✓

(26) The structure, isopach and hydrocarbon pore volume maps generated by Snyder appear to more accurately honor the sub-surface well data and consequently more accurately depict the configuration of the Strawn reservoir underlying the Unit Area.

(27) The hydrocarbon pore volume map generated by Snyder should be utilized to determine the original oil in place underlying each respective tract within the Unit Area.

(28) The tract participation formula proposed by Snyder in this case is not fair and reasonable for the following reasons:

- a) imposing a single recovery factor in the participation formula would not be fair to the tracts containing better reservoir porosity and higher quality reservoir rock. Typically, these tracts would have higher recovery factors than tracts with lesser quality reservoir rock; ✓
- b) the formula penalizes tract owners who invested capital dollars and took exploration and development risks in the primary development phase of the reservoir; and,
- c) the formula attempts to "retroactively" equalize all tracts from the date of first production.

(29) The participation formula proposed by the applicant is fair and reasonable, has been agreed to by the vast majority of interest owners within the Unit Area, and should therefore be adopted.

(30) The tract participation should be calculated utilizing the applicant's formula, original oil in place numbers generated from Snyder's hydrocarbon pore volume map, and cumulative production numbers presented by the applicant.

(31) The tract participation for the West Lovington Strawn Unit Area should be established as follows:

<u>TRACT NUMBER</u>	<u>TRACT PARTICIPATION</u>
1	19.8573886
2	16.8776208
3	12.6504860
4	4.8793213
5	21.2989623
6	9.5103287
7	5.0822238
8	3.8706062
9	2.6918395
10	1.7662177
11	1.5150051

(32) The unitized management, operation and further development of the West Lovington Strawn Unit Area, as proposed, is feasible and reasonably necessary to effectively and efficiently carry on enhanced recovery operations and should substantially increase the ultimate recovery of oil and gas from the West Lovington-Strawn Pool.

(33) 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.

(34) The estimated additional cost of the proposed unitized operations within the Unit Area will not exceed the estimated value of the additional oil and gas plus a reasonable profit.

(35) The applicant, designated operator of the Unit Area pursuant to the Unit Agreement, has made a good faith effort to secure voluntary unitization within the Unit Area.

(36) The participation formula contained in the Unit Agreement allocates the produced and saved unitized substances to the separately owned tracts in the Unit Area, on a fair, reasonable and equitable basis.

(37) Unitization and the adoption of the proposed unitized methods of operation will benefit the working, royalty and overriding royalty interest owners of the oil and gas rights within the West Lovington Strawn Unit Area.

(38) Applicant's Exhibit No. 19 in this case, being the Unit Agreement, should be incorporated by reference into this order.

(39) The West Lovington Strawn Unit Agreement, as applied to the Unit Area, provides for unitization of the West Lovington Strawn Unit Area upon terms and conditions that are fair, reasonable, equitable, and which include:

- (a) an allocation, herein amended, 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 and 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 credited to such 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 owner on a limited, carried or net-profits 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, and providing that any non-consenting working interest owner being so carried shall be deemed to have relinquished to the unit operator all of his 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;
- (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 operations shall commence and the manner in which, and the circumstances under which, the unit operations shall terminate and for the settlement of accounts upon such termination.

(40) The applicant requested that a 200 percent penalty be assessed against those working interest owners who do not voluntarily agree to join the proposed unit.

(41). Section 70-7-7.F. NMSA of said "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 any non-consenting working interest owner so carried shall be deemed to have relinquished to the unit operator all of his operating rights and working interest in and to the unit until his share of the costs has been repaid plus an amount not to exceed 200 percent thereof as a non-consent penalty.

(42) Applicant's Exhibit No. 11, Unit Operating Agreement, contains a provision whereby any working interest owner who elects not to pay his share of unit expense shall be liable for his 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.

(43) 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.

(44) The statutory unitization of the West Lovington Strawn Unit Area is in conformity with the above findings, and will prevent waste and will 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 West Lovington Strawn Unit Area comprising 1,458.95 acres, more or less, of State, Federal and Fee lands in the West Lovington-Strawn Pool, Lea 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 lands included within the West Lovington Strawn Unit Area shall comprise:

TOWNSHIP 15 SOUTH RANGE 35 EAST NMPM

Section 33: All

Section 34: W/2

TOWNSHIP 16 SOUTH RANGE 35 EAST NMPM

Section 1: Lots 1 through 8

TOWNSHIP 16 SOUTH RANGE 36 EAST NMPM

Section 6: Lots 3 through 5

(3) The vertical limits of the West Lovington Strawn Unit Area shall comprise that interval which extends from an upper limit at the top of the Strawn formation to a lower limit at the base of the Strawn formation in the West Lovington-Strawn Pool. The top of the Strawn formation for unitization purposes is defined as all points underlying the Unit Area correlative to a depth of 11,420 feet and the base of the Strawn formation is defined as all points underlying the Unit Area correlative to a depth of 11,681 feet, both depths as identified on the Compensated Neutron/Litho Density Log for the Speight Fee Well No. 1 located in Unit C (Lot 3) of Section 1, Township 16 South, Range 35 East, NMPM, Lea County, New Mexico.

(4) The applicant shall institute a secondary recovery project for the secondary recovery of oil, gas and all associated liquefiable hydrocarbons within and produced from the Unit Area, (said secondary recovery project being the subject of Case No. 11194).

(5) The West Lovington Strawn Unit Agreement and the West Lovington Strawn Unit Operating Agreement, being applicant's Exhibit Nos. 19 and 11, respectively, are hereby incorporated by reference into this order.

(6) The tract participation for the West Lovington Strawn Unit Area is hereby established as follows:

TRACT NUMBER

TRACT PARTICIPATION

1	19.8573886
2	16.8776208
3	12.6504860
4	4.8793213
5	21.2989623
6	9.5103287
7	5.0822238
8	3.8706062
9	2.6918395
10	1.7662177
11	1.5150051

(7) The Unit Agreement, as amended by this order, and the Unit Operating Agreement for the West Lovington Strawn Unit provide for unitization and unit operation of the Unit Area upon terms and conditions that are fair, reasonable and equitable and which include those provisions described in Finding No. (39) above.

(8) This order shall not become effective unless and until the owners of seventy-five (75) percent of the working interest and seventy-five (75) percent of the royalty interest in the West Lovington Strawn Unit Area have approved the plan for unit operations as required by Section 70-7-8 NMSA, (1978) Comp.

(9) If the persons owning the required percentage of interest in the West Lovington Strawn Unit Area as set out in Section 70-7-8 NMSA, (1978) Comp., do not approve the plan for unit operations within a period of six (6) 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 Division, unless the Division shall extend the time for ratification for good cause shown.

(10) When the persons owning the required percentage of interest in the West Lovington Strawn Unit Area 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 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.

(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.

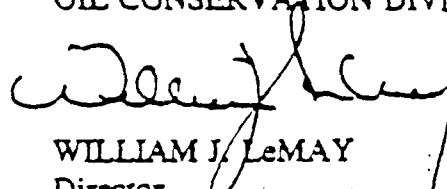
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(13) Jurisdiction of this cause is retained for the entry of such further orders as the Division may deem necessary.

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

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

  
WILLIAM J. LeMAY  
Director

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