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 THE:

APPLICATION OF CHESAPEAKE OPERATING, INC. FOR STATUTORY UNITIZATION OF THE TRINITY BURRUS UNIT AREA, LEA COUNTY, NEW MEXICO

CASE NO. 13582

APPLICATION OF CHESAPEAKE OPERATING, INC. FOR APPROVAL OF A WATERFLOOD PROJECT AND QUALIFICATION OF THE PROJECT AREA OF THE TRINITY BURRUS UNIT FOR THE RECOVERED OIL TAX RATE PURSUANT TO THE ENHANCED OIL RECOVERY ACT, LEA COUNTY, NEW MEXICO

CASE NO. 13583

ORDER NO. R-12496

ORDER OF THE DIVISION

BY THE DIVISION:

These cases came on for hearing at 8:15 a.m. on October 20, 2005, at Santa Fe, New Mexico, before Examiner William V. Jones.

NOW, on this 24th day of January, 2006, the Division Director, having considered the record and the recommendations of the Examiner,

FINDS THAT:

1. Due public notice has been given, and the Division has jurisdiction of these cases and the subject matter.

2. In Case No. 13582, Chesapeake Operating, Inc. ("Chesapeake" or "applicant") seeks a statutory unitization, pursuant to the Statutory Unitization Act, NMSA 1978 Sections 70-7-1 through 70-7-21, as amended ("the Statutory Unitization Act"), of 1720 acres, more or less, of federal, state and fee lands located in portions of Sections 15, 22, 23, 26 and 27 of Township 12 South, Range 38 East, NMPM, Lea County, New Mexico ("the unit area"), for the purpose of instituting secondary recovery operations which include a waterflood project within the Trinity-Wolfcamp Pool, to be

called the Trinity Burrus Abo Unit, and approval of the unit agreement and the unit operating agreement, which were submitted as applicant's Exhibits No. 2 and 4 in this case.

3. In Case No. 13583, Chesapeake seeks approval of a waterflood project for the injection of water into the Abo formation within the Trinity-Wolfcamp Pool, initially through seven injection wells shown on Exhibit "A" attached to this order. Chesapeake further seeks provisions allowing for the administrative approval of additional injection wells in succeeding phases of operation. Chesapeake also seeks to qualify the proposed project as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5, as amended).

4. Cases No. 13582 and 13583 were consolidated at the hearing for the purpose of testimony. Because the cases involve the same property and subject matter, a single order is being issued for both cases.

5. The proposed unit area consists of 1720 acres, more or less, of federal, state and fee lands located in Lea County, New Mexico, described as follows:

TOWNSHIP 12 SOUTH, RANGE 38 EAST, NMPM
Section 15: SW/4 SE/4
Section 22: E/2, E/2 W/2
Section 23: W/2, W/2 E/2
Section 26: W/2 W/2, NE/4 NW/4, SE/4 SW/4
Section 27: E/2, E/2 W/2

6. The proposed vertical extent of the unit ("unitized formation") is that interval within the proposed unit area, included in the Trinity-Wolfcamp Pool, but geologically known as the Abo Dolomite formation, found at the drilling depth interval of 9,063 feet to 9,131 feet (5,257 feet to 5,325 feet below sea level), as measured on the electric log called the "Compensated Neutron, Photo Density, Micro Log" ran September 24, 2003 on Limark Corporation's State DZ Well No. 2 (API No. 30-025-36373). This well was drilled in September of 2003, and is located in the SW/4 SW/4 of Section 23, Township 12 South, Range 38 West, NMPM, Lea County, New Mexico.

7. The proposed unit area has been approved by the United States Bureau of Land Management (BLM) subject to the Division's approval of the proposed statutory unitization, and the Commissioner of Public Lands has granted preliminary approval to the unit agreement as to form and content.

8. Chesapeake presented the testimony of landman Terry Frohnapfel as follows:

(a) In June 2005, the proposed unit was proposed by Chesapeake to the working interest owners in the unit area and thereafter reviewed with representatives of the Bureau of Land Management and the State Land Office. On June 24, 2005, Chesapeake conducted a working interest meeting to review

the proposed unitization plan and the unit agreement with the other working interest owners in the unit area and on August 31, 2005 proposed the unit agreement and unit operating agreement to all working interest owners and all royalty owners in the unit area. Since that time, and in accordance with the provisions of the unit agreement, Chesapeake has had numerous conversations with the owners in the unit area concerning this proposed unit.

(b) The proposed unit contains approximately 30 separate tracts owned by numerous parties. Tracts comprising 1,200 acres are in private ownership and comprise 66.67% of the unit area. Tracts comprising 480 acres are State of New Mexico land currently under lease and comprise 26.67% of the unit area. Tracts comprising 120 acres are federal lands currently under lease and comprise 6.66% of the unit area. Approximately 94% of the working interest and 91 % of the royalty interest were committed to the unit at the time of the hearing.

(c) Rehoboth, Inc., a working interest owner, objected to the language in one paragraph of the latest unit operating agreement. Chesapeake has agreed to the suggested change and will be amending the unit operating agreement and submitting the amendment to all the working interest owners for ratification. Rehoboth, Inc. has since dropped any further objection to this proceeding.

(d) Chesapeake is proposing a 200% non-participation penalty, to apply to parties unitized by order who do not elect to participate in subsequent operations.

9. Chesapeake presented the testimony of petroleum geologist David Godsey as follows:

(a) The Burrus Pay in the Trinity-Wolfcamp Pool is in fact the lowermost unit of dolomitized Abo Carbonate shelf that sits immediately above the Wolfcamp limestone. The fact that the Abo formation exists within the Trinity-Wolfcamp Pool has been confirmed and supported by the Division's Hobbs District geologist.

(b) The Burrus Pay is a dolomitized carbonate with minor amounts of small anhydrite nodules and occasional siliceous material. There is no fracturing and essentially no vugular porosity fabric evident in the cores or on the openhole wireline log data. Productive porosity typically ranges from 5% to 14% but is as high as 17% in the Unit area.

(c) The pool is located over a small, deep-seated, faulted Siluro-Devonian structure bounded on the east by a downthrown block. At the Burrus pay horizon this results in a low-relief four-way closure centered over the SE/4 of Section 22 plunging steeply on the east flank in the E/2 of Section 23 into a deep closed low.

(d) Chesapeake presented a composite Net Porosity Isopach map of

the Burrus pay interval showing that all lands within the proposed unit contain porous reservoir rock and therefore, all lands within the proposed unit appear capable of contributing additional secondary recovery reserves. This preponderance of porosity can also been seen on cross sections and with seismic trace inversion data. Accordingly, from geologic studies performed over this area, the unit area is well suited for secondary and tertiary recovery operations and the entire proposed unit area should contribute enhanced recovery reserves.

10. Chesapeake presented the testimony of petroleum engineer Everett Bradley as follows:

(a) All tracts within the unit area should contribute to secondary production.

(b) The proposed tract participation formula will be in effect during all future secondary recovery operations and the formula best allocates unitized substances to the owners on a fair, reasonable and equitable basis. The formula is listed in Section 13 of the unit agreement and consists of the following 5 equally weighted parameters - each calculated from the tract's percentage of the whole unitized area:

(i) useable wellbores;

(ii) latest (early 2005) average producing rate;

(iii) remaining primary reserves;

(iv) estimated ultimate primary recovery; and

(v) hydrocarbon pore volume.

(c) The proposed waterflood project is feasible, and the proposed unit area can be efficiently and effectively operated under the proposed plan of development.

(d) The waterflood project will be initiated with seven injection wells and be implemented rapidly in one phase until the entire unitized area is swept by injection wells.

(e) The remaining primary recovery from the unit area is estimated at approximately 487,300 barrels of oil.

(f) The estimated total capital costs associated with initiating the project is 7 million dollars. Total project costs including capital costs and operating expenses are estimated at 50 million dollars.

(g) The projected secondary recovery from the waterflood project is

estimated to be approximately 1.7 million barrels of oil and no gas, with an estimated total value of approximately 84 million dollars.

(h) Unitized management of this pool is necessary to effectively implement and carry on the proposed waterflood operations.

(i) Each of the seven proposed injection wells will inject an average of 1,000 barrels (which will be the maximum proposed injection rate) of produced water per day. No fresh makeup water will be used. Injection waters will consist of produced water from the unit area and of Devonian makeup water. The Devonian and Abo waters are compatible and mixing these will not result in reservoir damage or reduced recovery.

(j) The wells are initially expected to take water on vacuum but if pressure is needed it is not planned to exceed 2,000-psi. In any case, Chesapeake will not exceed a maximum surface injection pressure equivalent to 0.2 psig per foot times the depth to the uppermost perforation in each injection well, unless given permission for a higher pressure by the Division Director.

(k) The fresh water interval in this area consists of the Ogallala formation that produces from intervals above 125 feet in depth. Active and plugged and abandoned wells within the area of review (wells within 1/2 mile of the proposed initial injection wells) have adequate cement to isolate the injection interval and to protect fresh water, and no remedial work is required on these wells to enable Chesapeake to safely operate the project. The proposed injection operation will not pose a threat to any freshwater supplies.

The Examiner Concludes That:

1. The unitized management, operation and further development of the Trinity-Wolfcamp Pool in the proposed Trinity Burrus Abo Unit is reasonably necessary in order to effectively carry on the proposed waterflood project, which will substantially increase the ultimate recovery of oil and gas from this pool. Delays in implementing this project will further deplete reservoir pressure and reduce ultimate waterflood efficiency.

2. The proposed unit agreement and unit operating agreement contain satisfactory provisions with respect to all of the matters required by NMSA 1978 Section 70-7-7, as amended which states: *"The order providing for unitization and unit operation of a pool or part of a pool shall be upon terms and conditions that are fair, reasonable and equitable and shall approve or prescribe a plan or unit agreement for unit operation... "*

3. The provisions of the proposed unit agreement and unit operating agreement are fair and reasonable and the statutory unitization of the unitized formation within the unit area in accordance with the plan embodied in the unit agreement and the unit operating agreement will prevent waste and protect correlative rights.

4. Chesapeake has made a good faith effort to secure voluntary unitization of the unitized formation within the unit area. As of the hearing date, owners of more than 94% of the working interest and owners of approximately 90% of the non-cost bearing interest, including the interest of the State of New Mexico and the federal government, had voluntarily committed to the unit.

5. No party opposes the implementation of enhanced recovery operations or the unitization of the unit area.

6. Exhibit G, Paragraph 3 of the unit operating agreement for the Trinity Burrus Abo Unit contains an error and incorrectly states the intention of the working interest owners in the unit. The unit operating agreement should be amended and the amended unit operating agreement submitted to the unit working interest owners for re-ratification. Within the unit operating agreement, Exhibit G, Paragraph 3 should read as follows:

> *"3) After the date of unitization, unit production and costs shall be allocated to each tract which contains a well with a non-consent balance based on such tract's tract participation factor. Unit costs attributable to any interest which is not a non-consenting interest with respect to unit operations shall be subject to the non-consent penalties in accordance with the terms of the applicable original agreements. Unit costs attributable to any interest which is a non-consenting interest with respect to unit operations pursuant to an election made after the date of the unitization order shall be capped at the maximum 200% penalty allowed under New Mexico law for penalties pertaining to unit costs. "*

7. The participation formula contained in the proposed unit agreement, as corrected by this order, allocates the produced and saved, unitized hydrocarbons to the separately owned tracts in the unit area on a fair, reasonable, and equitable basis.

8. 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.

9. The estimated additional costs of the proposed operations will not exceed the estimated value of the additional oil and gas recovered plus a reasonable profit.

10. Statutory unitization and adoption of applicant's proposed unitized method of operation will benefit the working interest and royalty interest owners within the proposed unit area, and will prevent waste and protect correlative rights of all parties.

11. The area affected by the proposed project has been depleted by primary operations and it is prudent to apply secondary recovery techniques to extend the life of the reservoir and to maximize the ultimate recovery of crude oil from the Trinity-Wolfcamp Pool.

12. The applicant proposes to institute a "waterflood project" within the Trinity Burrus Abo Unit area. The certified "project area" should initially comprise the area approved for statutory unitization as described in Finding 5 of this order.

13. The proposed waterflood project should be approved, and the project governed by Division Rules No. 701 through 708.

14. The seven listed wells in the attached Exhibit "A", should be initially approved for use as injection wells. Provisions should be made for the operator of the Trinity Burrus Abo Unit to apply administratively for additional injection wells as needed.

15. Injection should be confined to the unitized formation through specific injection intervals as shown in the attached Exhibit "B". The casing-tubing annulus should be installed to within 100 feet of the top of the injection interval, loaded with inert fluid, and constantly monitored to ensure leakage does not occur. For the Burrus 2A deviated well, the casing-tubing annulus should be installed to within 100 feet of top of the uncemented 4-1/2 inch liner. Surface injection pressure should be constantly monitored and restricted to a maximum gradient of 0.2 psi per foot above the top permitted true vertical depth (Exhibit "B"). This maximum pressure should be increased only upon proof that additional pressure will not result in fluid movement out of zone.

16. The evidence establishes that the proposed waterflood project meets all the criteria for certification by the Division as a qualified "Enhanced Oil Recovery (EOR) Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5).

17. To be eligible for the EOR credit, the operator should advise the Division when water injection commences in the project area and at such time, request the Division certify the project to the New Mexico Taxation and Revenue Department.

18. The area within the waterflood project and/or the producing wells within such area eligible for the recovered oil tax rate may be contracted and reduced dependent upon the evidence presented by the applicant in its demonstration of the occurrence of a positive production response.

IT IS THEREFORE ORDERED THAT:

1. The application of Chesapeake Operating Inc. for the statutory unitization of 1,720 acres, more or less, in Lea County, New Mexico, to be known as the Trinity Burrus Abo Unit, is hereby approved pursuant to the Statutory Unitization Act, Sections 70-7-1 through 70-7-21, NMSA 1978.

2. The "unit area" for the Trinity Burrus Abo Unit shall comprise the following described 1,720 acres, more or less, of federal, state and fee lands located in Lea County, New Mexico:

TOWNSHIP 12 SOUTH. RANGE 38 EAST. NMPM

Section 15: SW/4 SE/4
Section 22: E/2, E/2 W/2
Section 23: W/2, W/2 E/2
Section 26: W/2 W/2, NE/4 NW/4, SE/4 SW/4
Section 27: E/2, E/2 W/2

3. The unitized formation shall be that interval underlying the unit area, included in the Trinity-Wolfcamp Pool, and geologically known as the Abo Dolomite formation, found at the drilling depth interval of 9,063 feet to 9,131 feet (5,257 feet to 5,325 feet below sea level), as measured on the electric log called the "Compensated Neutron, Photo Density, Micro Log" ran September 24, 2003 on Limark Corporation's State DZ Well No. 2 (API No. 30-025-36373). This well was drilled in September of 2003, and is located in the SW/4 SW/4 of Section 23, Township 12 South, Range 38 West, NMPM, Lea County, New Mexico.

4. Exhibit G, Paragraph 3 of the unit operating agreement is hereby amended to read in its entirety as follows:

"B) After the date of unitization, unit production and costs shall be allocated to each tract which contains a well with a non-consent balance based on such tract's tract participation factor. Unit costs attributable to any interest which is not a non-consenting interest with respect to unit operations shall be subject to the non-consent penalties in accordance with the terms of the applicable original agreements. Unit costs attributable to any interest which is a non-consenting interest with respect to unit operations pursuant to an election made after the date of the unitization order shall be capped at the maximum 200% penalty allowed under New Mexico law for penalties pertaining to unit costs. "

5. The unit agreement and the unit operating agreement, as hereby amended, which were admitted in evidence at the hearing as Exhibits 2 and 4, respectively, are hereby incorporated by reference into this order.

6. This order shall not become effective unless and until the unit operating agreement, as amended herein, has been re-ratified by the owners of at least seventy-five percent of the working interest in the Trinity Burrus Abo Unit area as required by NMSA 1978, §70-7-8 (1975).

7. Chesapeake shall notify the Division Director in writing of any removal of Chesapeake as unit operator or substitution as unit operator of any other working interest owner within the unit area. In the event an entity other than Chesapeake assumes operation of the unit established hereby, such entity shall comply with all the terms and provisions of this order.

8. The unit established hereby shall terminate upon the plugging and abandonment of the last well in the unit area completed in the unitized formation.

9. Chesapeake is hereby authorized to institute waterflood operations within the unit area initially by the injection of produced water into the unitized formation of the Trinity-Wolfcamp Pool through the seven wells shown on Exhibit "A" attached to this order located in Sections 22, 23 and 27 of Township 12 South, Range 38 East, NMPM, Eddy County, New Mexico.

10. Each well is specifically permitted for injection only within the depth intervals ("permitted injection intervals") specified on Exhibit "B" attached to this order.

11. Chesapeake shall take all steps necessary to ensure that the injected water enters only the permitted injection intervals and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

12. Injection into each of the wells shown on Exhibit "A" with the exception of the Burrus Well No. 2A shall be accomplished through lined tubing installed in a packer located within 100 feet of the uppermost injection perforation. Injection into the Burrus Well No. 2A shall be accomplished through lined tubing installed in a packer located within 100 feet of the top of the uncemented 4-1/2 inch liner. The casing-tubing annulus shall be filled with an inert fluid, and a gauge or approved leak-detection device shall be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

13. The injection wells or pressurization system shall be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to those pressures shown on Exhibit "B" attached to this order.

14. The Division Director may administratively authorize a pressure limitation in excess of the above upon a showing by the operator that such higher pressure will not result in the fracturing of the injection formation or confining strata.

15. The Division Director may administratively authorize additional injection wells within the unit area as provided in Division Rule 701.F(3).

16. Prior to commencing injection operations, the casing in each well shall be pressure tested throughout the interval from the surface down to the proposed packer setting depth to assure the integrity of such casing.

17. The unit operator shall give advance notice to the supervisor of the Division's Hobbs District Office of the date and time (i) injection equipment will be installed, and (ii) the mechanical integrity pressure test will be conducted on the proposed injection wells, so that these operations may be witnessed.

18. The unit operator shall immediately notify the supervisor of the Division's Hobbs District office of any failure of the tubing, casing or packer in any of the injection wells or the leakage of water, oil or gas from or around any producing or plugged and abandoned well within the project area, and shall promptly take all steps necessary to

correct such failure or leakage.

19. The unit operator shall conduct injection operations in accordance with Division Rules No. 701 through 708, and shall submit monthly progress reports in accordance with Division Rules No. 706 and 1115.

20. The injection authority granted herein for each well shown on Exhibit "A" shall terminate one year after the date of this order if the unit operator has not commenced injection operations into that well; provided, however, the Division, upon written request for that well, may grant an extension for good cause.

21. The waterflood project authorized by this order shall be known as the Trinity Burrus Abo Unit Waterflood Project.

22. The Trinity Burrus Abo Unit Waterflood Project is hereby certified as an "Enhanced Oil Recovery Project" pursuant to the "Enhanced Oil Recovery Act" (NMSA 1978 Sections 7-29A-1 through 7-29A-5). The project area shall comprise the entire Trinity Burrus Unit, described in Ordering Paragraph No. 2; provided the area and/or the producing wells eligible for the enhanced oil recovery (EOR) tax rate may be contracted and reduced based upon the evidence presented by the unit operator in its demonstration of a positive production response.

23. To be eligible for the EOR tax rate, the unit operator shall advise the Division of the date and time water injection commences into the project area and at such time, request the Division certify the project to the New Mexico Taxation and Revenue Department.

24. At such time as a positive production response occurs, and within five years from the date the project was certified to the New Mexico Taxation and Revenue Department, the unit operator must apply to the Division for certification of a positive production response. This application shall identify the area benefiting from enhanced oil recovery operations and the specific wells eligible for the EOR tax rate. The Division may review the application administratively or set it for hearing. Based upon the evidence presented, the Division will certify to the New Mexico Taxation and Revenue Department those wells that are eligible for the EOR tax rate.

25. Jurisdiction is hereby 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

MARK E. FESMIRE P.E.
Director

SEAL

CASE NO. 13583

EXHIBIT "A"
INITIALLY APPROVED INJECTION WELLS
TRINITY BURRUS ABO UNIT
WELL NAMES AND LOCATIONS

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

Well	API 30-025-			Unit	Sec	Tsp	Rge
Burrus Well No. 2A	35188	900 FSL*	600 FEL*	P	22	12S	38E
Burrus Well No. 11	36038	1650 FSL	2310 FWL	K	22	12S	38E
Concho Burrus 23 Well No. 5	36451	2310 FNL	1650 FWL	F	23	12S	38E
State 22 Well No. 1	36018	2310 FNL	990 FEL	H	22	12S	38E
Burrus Well No. 7	36187	330 FNL	2310 FWL	C	27	12S	38E
Concho Burrus 23 Well No. 3	36450	1650 FSL	2200 FEL	J	23	12S	38E
State DZ Well No. 1	30106	330 FSL	1650 FWL	N	23	12S	38E

* This well is deviated. The bottom hole location for the Burrus Well No. 2A = 343 FSL, 338 FEL, Unit P

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EXHIBIT "B"
INITIALLY APPROVED INJECTION WELLS
PERMITTED INJECTION DEPTHS AND PRESSURES

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

Well	API 30-025-	Top Permitted Measured Depth, Feet	Bottom Permitted Measured Depth, Feet	Maximum Surface Injection Pressure, Psi
Burrus Well No. 2A	35188	9,098*	9,506*	1,806
Burrus Well No. 11	36038	9,030	9,080	1,806
Concho Burrus 23 Well No. 5	36451	9,056	9,091	1,811
State 22 Well No. 1	36018	9,052	9,086	1,810
Burrus Well No. 7	36187	9,048	9,092	1,810
Concho Burrus 23 Well No. 3	36450	9,222	9,265	1,844
State DZ Well No. 1	30106	9,110	9,136	1,822

* This well is deviated. The True-Vertical-Depth of the Wolfcamp is approximately 9,030 feet to 9,060 feet. 9,030 feet @ 0.2psi/ft = 1,806 psi.