



November 17, 2005

**VIA HAND DELIVERY AND BY E-MAIL**

Mr. Will Jones  
Oil Conservation Division  
New Mexico Department of Energy,  
Minerals and Natural Resources  
1220 South Saint Francis Drive  
Santa Fe, New Mexico 87505

Re: Oil Conservation Division Case No. 13582: Application of Chesapeake Operating, inc. for statutory unitization of the Trinity Burrus Unit Area, Lea County, New Mexico.

Oil Conservation Division Case No. 13583: 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.

Dear Mr. Jones:

Enclosed for your consideration is Chesapeake Operating, Inc.'s Proposed Order of the Division granting the applications in the above-referenced consolidated cases. I am also sending this order to you by e-mail.

If you need any other information from Chesapeake concerning these applications, please advise.

Very truly yours,

William F. Carr

Enclosure

cc: Terry Frohnappfel  
Chesapeake Operating, Inc.

**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:**

**A IN THE MATTER OF 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-\_\_\_\_\_**

**CHESAPEAKE OPERATING, INC.'S  
PROPOSED ORDER OF THE DIVISION**

**BY THE DIVISION:**

This case came on for hearing at 8:15 a.m. on October 20, 2005, at Santa Fe, New Mexico before Examiner Will Jones.

NOW, on this \_\_\_ day of November, 2005, 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. In Case No. 13582, Chesapeake Operating, Inc. ("Chesapeake") 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 (b) 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 to institute secondary recovery operations including a waterflood project for the injection of water into the Wolfcamp formation, 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 entered disposing of 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 ("Unitized Formation") of the unit is that interval within the proposed Unit Area which is commonly known as the Wolfcamp formation, but geologically known as the Abo Dolomite formation, as found in Limark Corporation State DZ#2 well, located in the Southwest Quarter of the Southwest Quarter (SW/4 SW/4) of Section 23, Township 12 South, Range 38 West, NMPM, Lea County, New Mexico, at the drilling depth interval of 9,063 feet to 9,131 feet (-5,257 feet to -5,325 feet), as measured by Compensated Neutron/Formation-Density/Induction Log.

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 (*Chesapeake Exhibit 7*), and the Commissioner of Public lands has granted preliminary approval to the unit agreement as to form and content. (*Chesapeake Exhibit 8*)

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 provided 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. *Testimony of Frohnappfel.*

(b) The proposed Unit contains approximately 30 separate tracts owned by numerous parties. Tracts comprising 1200 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 90% of the royalty interest were committed to the Unit at the time of the hearing. *Testimony of Frohnappfel, Chesapeake Exhibits 9 and 10.*

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

- (a) The Burrus Pay in the Trinity-Wolfcamp formation is in fact the lowermost unit of dolomitized Abo Carbonate shelf that sits immediately above the Wolfcamp limestone. It 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.
- (b) As shown on the Structure Map (*Chesapeake Exhibit 14*), the field 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.
- (c) Chesapeake Exhibit 14 is a composite map contained a Net Porosity Isopach of the Burrus pay formation (porosity calculated from an average of the neutron and density porosity values using a cutoff value of 6%). The Exhibit illustrates that all lands within the proposed unit contain porous reservoir rock and it is believed that they will contribute additional

secondary recovery reserves. *Chesapeake Exhibits 15, 16, 17, 18 and 19. (Cross Sections and a Seismic Trace inversion Data)* further shows that the target porosity is present over the proposed unit area. 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. *Testimony of Bradley.*

(b) The proposed secondary recovery operation is feasible, and the proposed Unit Area can be efficiently and effectively operated under the proposed unit plan of development. *Testimony of Bradley.*

(c) The secondary recovery operation will be initiated with seven injection wells and be implemented rapidly in one phase until the entire unitized area is swept by injection wells.

(d) The estimated remaining primary gross production from the Unit Area amounts to approximately 487,300 barrels of oil. *Testimony of Bradley, Chesapeake Exhibit 18.*

(e) The estimated total costs of operation of the unit pursuant to the proposed secondary plan are \$7 million in additional capital costs and \$16 million in additional operating costs for a total project cost of approximately \$23 million. *Testimony of Bradley, Chesapeake Exhibit No. 26.*

(f) The estimated future gross production from the Unitized Formation of the Unit Area if the proposed secondary recovery operation is implemented is approximately 1.7 million barrels of oil and no gas, having an estimated total value of approximately \$84 million dollars. *Testimony of Bradley, Chesapeake Exhibit 24.*

(g) Unitized management of this pool is necessary to effectively implement and carry on the proposed secondary recovery operations.

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

(i) Each of the seven proposed injection wells will inject an average of 1000 barrels (which will be the maximum proposed injection rate) of produced water per day. No fresh makeup water will be used. *Testimony of Bradley, Chesapeake Exhibit 25, page 4.*

(j) The wells are initially expected to take water on vacuum but if pressure is needed it will not exceed a maximum of 2000 pounds psig or 0.2 psig per foot of depth to the depth of the uppermost perforation in each injection well, whichever is less. *Testimony of Bradley.*

(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 (1/2 mile) of each proposed initial injection well 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. *Testimony of Bradley, Chesapeake Exhibit 25.*

11. The unitized management, operation and further development of the Trinity-Wolfcamp Pool in the proposed Unit Area is reasonably necessary in order to effectively carry on the proposed secondary recovery project, which will substantially increase the ultimate recovery of oil and gas from this pool, and delays in implementing this project are detrimental to ultimate recovery from this reservoir.

12. Section 13. ("TRACT PARTICIPATION") of the Unit Agreement contains the formula by which the participation of each tract in the Unit Area will be determined. Pursuant to this formula, individual tract allocation is based on five equal factors; (1) useable wellbores, (2) average producing rate per tract from January through April 2005, (3) remaining primary reserves as of May 1, 2005, (4) estimated ultimate recovery, and (5) hydrocarbon pore volume. This participation formula was presented at the meeting with the unit owners and the individual participations of all tracts in the Unit Area have been determined based on this formula. *Testimony of Frohnappfel, Chesapeake Exhibit 2, page 8.* Chesapeake's engineering witness testified that this formula best allocates unitized substances to the owners thereof on a fair, reasonable and equitable basis. *Testimony of Bradley.*

13. The Division concludes that 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.

14. No party opposes the implementation of enhanced recovery operations or the unitization of the Unit Area.

15. 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.

16. To correct this error and thereby avoid further confusion the Exhibit G, Paragraph 3 of the Unit Operating Agreement should be amended to read in its entirety 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. *Chesapeake Exhibit 5.*

17. Since this amendment to the Unit Operating Agreement affects only working interest owners, the Unit Operating Agreement should be submitted to the unit working interest owners for re-ratification. *Testimony of Frohnappfel.*

18. The provisions of the proposed Unit Agreement and Unit Operating Agreement, are fair and reasonable.

19. 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.

20. 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.

21. 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.

22. 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.

23. Chesapeake has made a good faith effort to secure voluntary unitization of the Unitized Formation within the Unit Area.

24. 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.

27. 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.

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

29. The evidence presented demonstrates that:

(a) the application for approval of the proposed secondary recovery project has not been prematurely filed either for economic or technical reasons;

(b) the area affected by the proposed project has been so depleted by primary operations that it is prudent to apply secondary recovery techniques to maximize the ultimate recovery of crude oil from the Trinity-Wolfcamp Pool; and

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

31. The applicant proposes to institute a waterflood project within the Trinity Burrus Abo Unit Area. *Testimony of Bradley.*

32. The certified "project area" should initially comprise the area approved for statutory unitization as described in Finding 5 of this order.

33. 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 Department of Taxation and Revenue.

34. 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 1720 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 Trinity Burrus Abo Unit shall comprise the following described 1720 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 comprise that interval underlying the Unit Area which is commonly known as the Wolfcamp formation, but geologically known as the Abo Dolomite formation, The vertical limits of which are found in Limark Corporation State DZ#2 well, located in the Southwest Quarter of the Southwest Quarter (SW/4 SW/4) of Section 23, Township 12 South, Range 38 West, NMPM, Lea County, New Mexico, at the drilling depth interval of 9,063 feet to 9,131 feet (-5,257 feet to -5,325 feet), as measured by Compensated Neutron/Formation-Density/Induction Log.

4. Exhibit G, Paragraph 3 of the Unit Operating Agreement is hereby amended to read in its entirety 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. *Chesapeake Exhibit 5.*

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. Since the persons owning the required statutory minimum percentage of the working interest and the non-cost bearing interest in the Unit Area have approved or

ratified the Unit Agreement, no additional ratification of the Unit Agreement shall be required. The amendment of the Unit Operating Agreement approved herein in Order Paragraph No. 4 only affects working interest owners and, therefore, 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. The applicant shall notify the Division Director in writing of any removal of the applicant as unit operator or substitution as unit operator of any other working interest owner within the Unit Area. In the event a person other than Chesapeake assumes operation of the unit established hereby, such person shall comply with all the terms and provision 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 enhanced recovery 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. No fresh water shall be used as make-up water or otherwise injected.

11. Chesapeake shall take all steps necessary to ensure that the injected water enters only the proposed injection interval 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" shall be accomplished through 2 3/8 inch pvc lined or fiberglass lined tubing installed in a packer located within 100 feet of the uppermost injection perforations or casing shoe. 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 no more than 0.2 psig per foot of depth to the depth of the uppermost perforation in the injection well, whichever is less.

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 the well; provided, however, the Division, upon written request, 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**

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**MARK E. FESMIRE, DIRECTOR**

**S E A L**

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

**CASE NOS. 13582 AND 13583**

**EXHIBIT A  
APPROVED INJECTION WELLS**

Burrus Well No. 2A	900' FSL & 600' FEL	Unit P	22-12S-38E
Burrus Well No. 11	1650' FSL & 2310' FWL	Unit K	22-12S-38E
Burrus 23 Well No. 5	2310' FNL & 1650' FEL	Unit F	23-12S-38E
State 22 Well No. 1	2310' FNL & 990' FEL	Unit H	22-12S-38E
Burrus Well No. 7	330' FNL & 2310' FWL	Unit H	27-12S-38E
Burrus 23 Well No. 3	1650' FSL & 2200' FEL	Unit J	23-12S-38E
State DZ Well No. 1	330' FSL & 1650' FWL	Unit N	23-12S-38E