

**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:**

**APPLICATION OF CHESAPEAKE OPERATING, INC. FOR APPROVAL OF A  
PILOT PROJECT IN THE SEVEN RIVERS FORMATION TO STUDY THE  
FEASIBILITY OF IMPLEMENTING ENHANCED RECOVERY OPERATIONS  
IN THIS POOL (TONTO-SEVEN RIVERS POOL), LEA COUNTY, NEW  
MEXICO.**

**CASE NO. 14325  
ORDER NO. R-13143**

**ORDER OF THE DIVISION**

**BY THE DIVISION:**

This case came on for hearing at 8:15 a. m. on June 2, 2009 and June 25, 2009 at Santa Fe, New Mexico, before Examiners William V. Jones, David K. Brooks and Terry Warnell.

NOW, on this 6<sup>th</sup> day of July, 2009, the Division Director, having considered the testimony, the record and the recommendations of the Examiners,

**FINDS THAT:**

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

(2) The applicant, Chesapeake Operating, Inc., ("Chesapeake" or "applicant") seeks authorization to institute a lease waterflood pilot project by the injection of water into the Seven Rivers formation to study the feasibility of implementing enhanced recovery operations by waterflooding in this pool and to determine the proper injection and production patterns to be used to maximize the remaining recovery from this reservoir.

(3) This pilot waterflood project should be designated the "Tonto-Seven Rivers Lease Waterflood Project" and encompasses Chesapeake's Federal Oil and Gas Lease NM 56749 covering 520 acres, more or less, of the following lands within Lea County, New Mexico:

**TOWNSHIP 19 SOUTH, RANGE 33 EAST, NMPM**

Section 14: W/2, W/2 SE/4,  
N/2 NE/4, SW/4 NE/4

(4) Chesapeake proposes to utilize for injection its Federal USA L Well No. 4 located 2100 feet from the South line and 2310 feet from the West line of Section 14, Township 19 South, Range 33 East, NMPM, Lea County, New Mexico. Based on the information obtained from this first injection well, Chesapeake anticipates that it may need additional injection wells and seeks authority to add these wells by administrative application filed pursuant to Division rules.

(5) Chesapeake presented the following geologic and engineering testimony:

- (a) Chesapeake proposes to recomplete its Federal USA L Well No. 4 located 2100 feet from the South line and 2310 feet from the West line of Section 14, Township 19 South, Range 33 East, NMPM, for the purpose of injecting produced water into the Seven Rivers formation to determine if effective enhanced recovery operation can be conducted in this formation.
- (b) Although it appears that substantial oil remains in the Tonto-Seven Rivers Pool, unless enhanced recovery methods can be devised that will enable operators to move this oil, this reservoir is approaching the end of its productive life and reserves will be wasted.
- (c) The Seven Rivers formation is continuous and correlatable across the project area and that this lease is a good candidate for the implementation of a waterflood project.
- (d) Chesapeake proposes to conduct tests to establish the reservoir conductivity under this lease, confirm the natural flow characteristics thereof, and determine if an effective response to waterflood operations can be obtained.
- (e) If this project is successful, enhanced recovery techniques for other portions of this pool can be developed and much, if not all, of the Tonto-Yates-Seven Rivers Pool could be the subject to waterflood operations and oil could be recovered from this formation that otherwise will not be recovered thereby causing waste.
- (f) Chesapeake's pilot project is within a single federal lease and all owners of interest in this lease support this pilot project; therefore correlative rights are not being affected.

(6) Nearburg Producing Company appeared at the hearing through legal counsel but did not oppose the application. No other operator or party appeared in this

case in opposition to the application. Chesapeake presented a letter from the Bureau of Land Management stating that it had reviewed the proposal and had no objection to proceeding with the Pilot project.

(7) Chesapeake's application for injection into the Seven Rivers formation in its Federal USA L Well No. 4 should be approved provided that prior to commencing injection operations into the proposed injection well, Chesapeake should be required to provide the results of compatibility testing on the proposed injection waters to the Hobbs District Office of the Division, and satisfy the District Office that the proposed injection can be conducted with no issues concerning the compatibility of the fluids in the reservoir.

(8) The Texaco Federal Well No. 3 located 660 feet from the South line and 1980 feet from the West line of Section 14, Township 19 South, Range 33 East, NMPM, is the one well within the "area of review" for the proposed injection well on which remedial work is needed to assure that injected fluid does not migrate from the Seven Rivers formation into other formations. This well was initially completed with 5 1/2 inch casing cemented from TD to a cement top of 5,150 feet which leaves the Seven Rivers Formation open and not isolated by cement.

(9) Prior to commencing injection operations, Chesapeake should be required to consult with the Division's Hobbs District Office to devise and execute a plan where needed remedial work will be conducted on the Texaco Federal Well No. 3 to assure that the Seven Rivers formation in this well is effectively isolated from other formations.

(10) The operator should 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.

(11) Injection should be accomplished through 2 3/8-inch internally plastic-lined tubing installed in a packer set within 100 feet of the uppermost injection perforation in each well. The casing-tubing annulus should be filled with an inert fluid and a gauge or approved leak-detection device should be attached to the annulus in order to determine leakage in the casing, tubing, or packer.

(12) The injection wells or pressurization system should be equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to no more than 0.2 pounds per foot of depth to top of the injection interval.

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

(14) The operator should give advance notice to the supervisor of the Division's Hobbs District Office of the date and time (i) injection equipment will be installed, (ii) the mechanical integrity pressure tests will be conducted on the proposed

injection wells, and (iii) remedial work as required will be conducted on the well identified in Finding No. 8, so these operations may be witnessed.

(15) The operator should immediately notify the supervisor of the Division's Hobbs District Office of the 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 should take all steps as may be timely and necessary to correct such failure or leakage.

(16) The proposed lease waterflood project should be approved and be governed by Division Rules 19.15.26.8.C NMAC et seq.

(17) The injection authority granted herein for the wells identified in Finding No. 4 should terminate one year after the date of this order if the operator has not commenced injection operations into the wells; provided, however, the Division, upon written request by the operator, may grant an extension for good cause.

**IT IS THEREFORE ORDERED THAT:**

(1) Chesapeake Operating, Inc., ("Chesapeake") is hereby authorized to institute a lease waterflood project within its "Tonto-Seven Rivers Lease Waterflood Project", described as follows, by the injection of water into the Seven Rivers Formation, Tonto-Seven Rivers Pool in its Federal USA L Well No. 4 located 2100 feet from the South line and 2310 feet from the West line of Section 14, Township 19 South, Range 33 East, NMPM, Lea County, New Mexico, for the purpose of injecting produced water into the Seven Rivers formation to determine if effective enhanced recovery operation can be conducted in this formation :

**TOWNSHIP 19 SOUTH, RANGE 33 EAST, NMPM**

Section 14: W/2, W/2 SE/4,  
N/2 NE/4, SW/4 NE/4

(2) The operator 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.

(3) Injection shall be accomplished through 2 3/8-inch internally plastic-lined tubing installed in a packer set within 100 feet of the uppermost injection perforation in each well. 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.

(4) 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 pounds per foot of depth to the top of the injection interval.

(5) 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.

(6) 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.

(7) Prior to commencing injection operations, Chesapeake shall provide the results of compatibility testing on the proposed injection waters to the Division's Hobbs District Office and satisfy the District Office that the proposed injection can be conducted with no issues concerning the compatibility of the fluids in the reservoir.

(8) Prior to commencing injection operations, Chesapeake should consult with the Division's Hobbs District Office to devise and execute a plan where needed remedial work will be conducted on the Texaco Federal Well No. 3, described in Finding No. 8, to assure that the Seven Rivers formation in this well is effectively isolated from other formations. This well has a current top of cement at 5,150 feet behind the production string. The production tubing and rods have to be pulled, perforate below the Seven Rivers and circulate cement either to the surface or sufficiently high enough to get cement over and above the Seven Rivers Formation such that it is isolated.

(9) The operator should 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 tests will be conducted on the proposed injection well, so these operations may be witnessed.

(10) The operator shall immediately notify the supervisor of the Division's Hobbs District Office of the failure of the tubing, casing or packer in this injection well, or the leakage of water, oil or gas from or around any producing or plugged and abandoned well within the project area, and shall take all steps as may be timely and necessary to correct such failure or leakage.

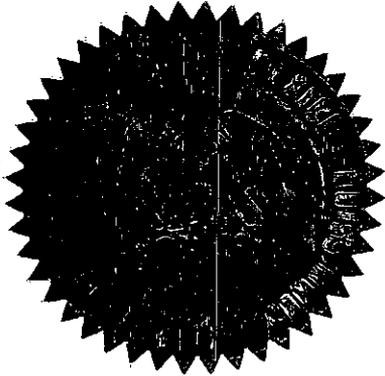
(11) The waterflood project is hereby designated the "Tonto-Seven Rivers Lease Waterflood Project", and the applicant shall conduct injection operations in accordance with Division Rules *No. 701 through 708*, and shall submit monthly progress reports in accordance with Division Rules *No. 706 and 1115*.

(12) The injection authority granted herein shall terminate one year after the date of this order if the operator has not commenced injection operations into the well; provided, however, the Division, upon written request by the operator, may grant an extension for good cause.

(13) This order does not relieve the operator of responsibility should its operations cause any damage or threat of damage to protectable fresh waters, human health or environment, nor does it relieve the operator of the responsibility for complying with applicable Division rules or other federal, state or local laws or regulations.

(14) 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.



SEAL

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

MARK E. FESMIRE, P. E.  
Director