

**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. 13893  
ORDER NO. R-12251-A**

**APPLICATION OF YATES PETROLEUM CORPORATION FOR APPROVAL  
OF A PILOT PROJECT IN THE NORTH DAGGER DRAW UPPER  
PENNSYLVANIAN UNIT FOR PURPOSES OF ESTABLISHING PROPER  
WATERFLOOD INJECTION PATTERNS AND FOR A TEMPORARY  
EXEMPTION FROM THE PROVISIONS OF DIVISION RULE 203  
CONCERNING APPROVED TEMPORARY ABANDONMENT OF WELLS,  
EDDY COUNTY, NEW MEXICO.**

**ORDER OF THE DIVISION**

**BY THE DIVISION:**

This case came on for hearing at 8:15 a.m. on March 29 and April 26, 2007, at Santa Fe, New Mexico, before Examiners David R. Catanach and Richard I. Ezeanyim, respectively.

NOW, on this 5<sup>th</sup> day of July, 2007, 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) By Order No. R-12251 issued in Cases No. 13227 and 13228 on December 20, 2004, the Division, upon the application of Yates Petroleum Corporation, statutorily unitized 5,612.95 acres, more or less, of state, federal and fee lands in Eddy County, New Mexico, described as follows, and designated this area the North Dagger Draw Upper Pennsylvanian Unit Area ("Unit Area"):

Township 19 South, Range 25 East, NMPM

Sections 16 and 17:	All
Section 18:	NE/4 NE/4, S/2 NE/4, SE/4 NW/4, S/2
Sections 19 through 21:	All
Sections 28 through 30:	All

(3) Order No. R-12251 further authorized Yates Petroleum Corporation to institute waterflood operations within the Unit Area by the injection of water into the North Dagger Draw-Upper Pennsylvanian Pool through five initial injection wells located in Sections 19 and 30, Township 19 South, Range 25 East, NMPM, Eddy County, New Mexico.

(4) The applicant, Yates Petroleum Corporation ("Yates"), seeks:

- (a) authority to conduct a 3-year pilot study within a portion of the Unit Area to determine an effective injection pattern for waterflood operations. The pilot study is proposed to be conducted within the S/2 of Section 20 and all of Section 29, Township 19 South, Range 25 East, NMPM, ("pilot study area"); and
- (b) an exemption from the provisions of Division Rule 19.15.4.203 to allow Yates to shut-in Unit Area wells located outside of the pilot study area during the 3-year pilot study.

(5) Division Rule No. 19.15.4.203 provides that a well may be temporarily abandoned and held for potential future beneficial use for enhanced recovery or injection provided that certain conditions are met and the well demonstrates mechanical integrity. Pursuant to the provisions of this rule, mechanical integrity must be demonstrated by either of the following two methods: i) a cast iron bridge plug ("CIBP") or retrievable bridge plug ("RBP") will be set within 100 feet of the uppermost perforations or casing shoe, the annulus will be filled with an inert fluid, and the casing will be pressure tested to 500 pounds per square inch for thirty minutes with a pressure drop not to exceed 10%; or ii) a casing inspection log will be run confirming the mechanical integrity of the casing. This rule further provides that a well may be temporarily abandoned for a period of up to five years.

(6) Rather than temporarily abandon its wells, Yates proposes that it be allowed, during the pilot study, to shut-in all inactive wells, including production and injection wells, located within the Unit Area but outside the pilot study area.

(7) There are currently one-hundred and one (101) wells within the Unit Area, summarized as follows:

<u>Number of Wells</u>	<u>Current Status</u>
11	Active producing oil wells (pumped)
5	Active injection wells
3	Temporarily abandoned wells
60	Producing gas wells (minimal gas production)
22	Shut-in wells

(8) Yates presented evidence that demonstrates that:

- (a) based upon the results of an engineering study conducted prior to unitization, Yates implemented secondary recovery operations within the Unit Area in September, 2005 by initiating injection into five injection wells. The injection well pattern, which was recommended by the engineering report, is not conventional;
- (b) injection within the Unit Area has continued for 18 months during which time approximately 4.9 million barrels of water have been injected into the reservoir;
- (c) the engineering study forecasted that in March, 2006, a significant oil response would occur within the Unit Area. As of March, 2007, no production response to injection has occurred within the Unit Area;
- (d) current Unit Area production is approximately 44 barrels of oil, 934 MCF of gas and 2000 barrels of water per day;
- (e) prior to unitization, the wells within the Unit Area cumulatively produced approximately 24.7 million barrels of oil and 63.5 BCF of gas; and
- (f) Yates estimates that the remaining oil in place within the Unit Area is approximately 50 million barrels of oil.

(9) Yates' proposed pilot study would consist of three phases, described as follows:

- Phase 1. Yates will conduct a 6-month engineering study on the North Dagger Draw Upper Pennsylvanian Unit Wells No. 61 and 135,

located, respectively, in Unit E of Section 20 and Unit O of Section 29, to determine oil saturation within the reservoir. Yates will also conduct interference tests to determine east-west and north-south permeability. If the results of this testing show adequate oil saturation, the study will continue on to the next phase;

Phase 2. Yates will initiate a 15-month injection test utilizing either a five-spot injection pattern or a line-drive injection pattern. The five-spot injection pattern will utilize four injection wells and approximately seven producing wells, and the line-drive injection pattern will utilize six injection wells and approximately nine producing wells; and

Phase 3. Yates will initiate an additional 15-month injection test utilizing the injection test pattern not utilized in Phase 2.

(10) During phases 1 and 2 of the pilot study, Yates will actively inject into and produce those wells within the injection pattern being tested. Yates also stated that during the pilot study, it will continue to produce gas from any Unit Area wells capable of flowing gas. The remainder of the Unit Area wells will be shut-in.

(11) Depending on the results of the 3-year pilot study, Yates testified that it will either expand waterflood operations within the Unit Area at the conclusion of the pilot study, or begin a plugging program to permanently plug and abandon the unit wells.

(12) Yates presented further economic evidence that demonstrates that:

- (a) the secondary recovery project, as it is being implemented at the current time, is uneconomic; and
- (b) if its application is not granted and Yates is required to keep all of the wells within the Unit Area active during the 3-year pilot test, additional costs of approximately \$300,000 per month, or more, would be incurred. Over the 3-year pilot test period, this would result in additional cumulative costs of approximately \$10.8 million dollars.

(13) The wells within the Unit Area are generally constructed in the following manner:

Casing Size & Setting Depth

Cement

20-inch Surface Casing @ 40-80 feet

Circulated to surface

9 5/8-inch Intermediate Casing @ 1100-1200 feet

Circulated to surface

5.5-inch or 7.0-inch Production Casing @ 8,300 feet      Circulated to surface

(14) Yates presented further evidence and testimony that demonstrates that most of the wells within the Unit Area were drilled in the 1990's and are relatively new wells; however, Yates further testified that the gas produced from the Upper Pennsylvanian formation within the Unit Area is sour and consequently, this gas is likely accelerating corrosion that may be occurring in these wells.

(15) The evidence presented demonstrates that there have been no casing failures within any of the wells in the Unit Area.

(16) In response to examination by the Division, Yates testified to the effect that temporary abandonment of the subject Unit Area wells may be a viable alternative option to simply shutting in the wells, provided that the Division allows Yates to maintain these wells in a temporary abandonment status for the duration of the 3-year pilot test period.

(17) The evidence presented in this case demonstrates that there are considerable remaining oil and gas reserves within the North Dagger Draw-Upper Pennsylvanian Pool underlying the North Dagger Draw Upper Pennsylvanian Unit, and that allowing Yates to explore the feasibility of utilizing alternative methods to recover these reserves is in the best interest of waste prevention and protection of correlative rights.

(18) Data obtained from Division records and from the New Mexico Office of the State Engineer demonstrates that fresh water is present within Township 19 South, Range 25 East, NMPM, at depths ranging from 40 feet to 310 feet.

(19) The Division is currently pursuing an aggressive program to address the statewide problem of inactive wells, and is routinely requiring operators to either: i) bring wells back on production; ii) temporarily abandon wells pursuant to the procedure set forth in Division Rule 19.15.4.203; or iii) permanently plug and abandon wells.

(20) Temporary abandonment of the subject wells within the Unit Area, as opposed to shutting-in wells for the duration of the 3-year pilot study, will provide a much greater level of protection to underground fresh water resources, and will help to ensure that these wells are protected from exposure to corrosive fluids that may render them unusable in the future.

(21) The applicant provided notice of this application to all interest owners within the Unit Area. No interest owner appeared at the hearing.

(22) Yates' application should be approved, provided however, that Yates should be required to temporarily abandon the wells within the Unit Area that are not utilized for testing purposes or are not being produced.

(23) Yates should be required to appear before the Division in June, 2008 to present to the Division the results of the phase 1 testing, and to advise the Division of the status of the 3-year pilot study.

(24) Yates should also be required to appear before the Division in June, 2010, to present the results of the 3-year pilot study, and to advise the Division of its plans for continued secondary recovery development or permanent abandonment of the wells within the Unit Area.

**IT IS THEREFORE ORDERED THAT:**

(1) Yates Petroleum Corporation is hereby authorized to conduct a 3-year pilot study within a portion of the North Dagger Draw Upper Pennsylvanian Unit Area to determine proper waterflood injection patterns. The pilot study area shall comprise the S/2 of Section 20 and all of Section 29, Township 19 South, Range 25 East, NMPM, Eddy County, New Mexico.

(2) The applicant's request that it be allowed to shut-in injection and production wells outside of the pilot study area but within the North Dagger Draw Upper Pennsylvanian Unit Area for the duration of the 3-year pilot test is hereby **denied**.

(3) Within 8 months after the effective date of this order, Yates Petroleum Corporation shall, in accordance with the procedures set forth in Division Rule 19.15.4.203, temporarily abandon all wells within the North Dagger Draw Upper Pennsylvanian Unit Area except:

- (a) those wells that will be utilized to conduct authorized testing operations, including production and/or future injection wells that will be utilized to test line-drive or five-spot injection patterns; and
- (b) those wells that are capable of production and that will be produced during the 3-year pilot test period.

(4) Within 30 days after the effective date of this order, the applicant shall provide to the Artesia District Office of the Division, a list of wells within the North Dagger Draw Upper Pennsylvanian Unit Area to be temporarily abandoned, a list of wells that will be utilized for testing purposes, and a list of wells that will continue to be produced during the 3-year test period.

(5) All wells within the North Dagger Draw Upper Pennsylvanian Unit Area that are successfully temporarily abandoned shall be given Division approval to maintain that status for a period of at least three years.

(6) This case shall be reopened at an Examiner hearing in June, 2008, at which time Yates Petroleum Corporation shall appear and present to the Division the

results of the phase 1 testing, and advise the Division of the status of the 3-year pilot study.

(7) This case shall be reopened (if necessary) at an Examiner hearing in June, 2010, to allow Yates Petroleum Corporation to present the results of the 3-year pilot study, and to advise the Division of its plans for continued secondary recovery development or permanent abandonment of the wells within the North Dagger Draw Upper Pennsylvanian Unit Area.

(8) 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.



SEAL

STATE OF NEW MEXICO  
OIL CONSERVATION DIVISION

A handwritten signature in black ink, appearing to read "Mark E. Fesmire".

MARK E. FESMIRE, P.E.  
Director