

**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. 12418
ORDER NO. R-11641**

**APPLICATION OF SAGA PETROLEUM, L.L.C. FOR APPROVAL OF A
WATERFLOOD PROJECT FOR ITS CROSSROADS SILURO DEVONIAN
UNIT AREA AND QUALIFICATION OF SAID PROJECT FOR THE
RECOVERED OIL TAX RATE PURSUANT TO THE ENHANCED OIL
RECOVERY ACT, LEA COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on September 7, 2000, and on July 12, 2001, at Santa Fe, New Mexico, before Examiner David R. Catanach.

NOW, on this 27th day of August, 2001, 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) Division Cases No. 12417 and 12418 were consolidated at the time of the hearing for the purpose of testimony.
- (3) The applicant, Saga Petroleum, L.L.C. ("Saga") seeks authority to institute a waterflood project within its Crossroads Siluro Devonian Unit Area (being the subject of companion Case No. 12417) by the injection of water into the Crossroads Siluro-Devonian Pool, Lea County, New Mexico, through the following-described four initial injection wells:

<u>Well Name & Number</u>	<u>API Number</u>	<u>Well Location</u>
U. D. Sawyer No. 4 (Crossroads Siluro Devonian Unit No. 304)	30-025-03610	660' FNL & 660' FEL Unit A, Section 27

U. D. Sawyer No. 6 (Crossroads Siluro Devonian Unit No. 306)	30-025-22303	990' FSL & 1650' FEL Unit O, Section 27
U. D. Sawyer No. 11 (Crossroads Siluro Devonian Unit No. 311)	30-025-28836	2561' FSL & 1610' FEL Unit J, Section 27
Texaco U. D. Sawyer No. 4 (Crossroads Siluro Devonian Unit No. 104)	30-025-03632	990' FSL & 1650' FEL Unit O, Section 34

(4) The U. D. Sawyer Well No. 4 (API No. 30-025-03610), U. D. Sawyer Well No. 6 (API No. 30-025-22303), U. D. Sawyer Well No. 11 (API No. 30-025-28836) and the Texaco U. D. Sawyer Well No. 4 (API No. 30-025-03632) should hereinafter be referred to as the Crossroads Siluro Devonian Unit Wells No. 304, 306, 311 and 104, respectively.

(5) The applicant originally sought to qualify the waterflood project as an Enhanced Oil Recovery Project pursuant to the Enhanced Oil Recovery Act (NMSA 1978 Sections 7-29A-1 through 7-29A-5); however, at the hearing, the applicant requested that this portion of its application be dismissed.

(6) Cases No. 12417 and 12418 were originally heard on September 7, 2000, at which time these cases were taken under advisement. Subsequent to the hearing, the Division determined that: i) notice was not provided to all parties entitled to receive notice in Case No. 12417; and ii) the additional engineering data requested by the Division at the September 7, 2000 hearing had not been provided by the applicant. These cases were reopened and heard on July 12, 2001 in order to allow the applicant the opportunity to correct the deficiencies in the application.

(7) The Crossroads Siluro Devonian Unit is proposed to comprise the following described acreage in Lea County, New Mexico:

Township 9 South, Range 36 East, NMPM

Section 27: N/2, SE/4
Section 34: E/2

(8) The wells in the project area are in an advanced state of depletion.

(9) The applicant proposes to initially utilize four injection wells and six producing wells within the project area.

(10) The applicant testified that the proposed project will incorporate water injection, polymer squeeze jobs and perforation of "new pay" in the Devonian formation in order to maximize oil recovery from the project area.

(11) The applicant further testified that the proposed operations within the Crossroads Siluro Devonian Unit should result in the recovery of an additional 1.361 million barrels of oil over a fifty-year period that would otherwise not be recovered, thereby preventing waste.

(12) Approval of the proposed waterflood project should result in the recovery of additional hydrocarbons from the Devonian formation within the project area that may otherwise not be recovered, thereby preventing waste, and will not violate correlative rights.

(13) Division records demonstrate that the Crossroads Siluro Devonian Unit Well No. 104 was originally permitted as a disposal well by Division Order No. R-3612 dated December 16, 1968. Order No. R-3612 authorized Texaco Exploration & Production Inc. to utilize the well to dispose of produced water into the Devonian formation through the open-hole interval from approximately 12,400 feet to 12,550 feet.

(14) The applicant testified that the Crossroads Siluro Devonian Unit Well No. 104 has been inactive for at least three years. Pursuant to Division Rule 705.C., the authority to inject into this well has terminated.

(15) Saga did not file a Division Form C-108 (Application to Inject) for the Crossroads Siluro Devonian Unit Well No. 104 as part of its application in this case.

(16) The applicant should be required to re-permit the Crossroads Siluro Devonian Unit Well No. 104 for injection by filing a new Division Form C-108 subsequent to the entry of this order.

(17) Division records demonstrate that the Crossroads Siluro Devonian Unit Well No. 311 was originally permitted as a disposal well by Division Order No. SWD-662 dated June 23, 1997. Order No. SWD-662 authorized Saga to utilize the well to dispose of produced water into the Devonian formation through the perforated interval from approximately 12,616 feet to 12,683 feet.

(18) By letter to the Division's Hobbs District Office dated July 17, 2001, the Examiner in this case requested information relating to the mechanical integrity testing and current status of the Crossroads Siluro Devonian Unit Wells No. 104, 304, 306 and 311. This information was delivered to the Santa Fe Office of the Division by E-Mail on

July 17, 2001. This information was then subsequently conveyed to Saga's legal counsel on the same date.

(19) Data currently available for the Crossroads Siluro Devonian Unit Well No. 311 demonstrates that:

- (a) the well passed a mechanical integrity pressure test on July 16, 1998;
- (b) the well failed a mechanical integrity bradenhead test on September 12, 2000;
- (c) there is no evidence that a radioactive tracer survey was conducted on this well before it was placed on injection in 1997, or annually thereafter, as required by Division Order No. SWD-662; and
- (d) Saga has filed a Division Form C-103 dated April 20, 2001, stating its intent to plug and abandon this well due to mechanical problems and fish in the hole from a depth of 6,435 feet to 11,948 feet.

(20) The evidence demonstrates that the Crossroads Siluro Devonian Unit Well No. 311 will not be utilized as an injection well in the Crossroads Siluro Devonian Unit Waterflood Project.

(21) Division records demonstrate that the Crossroads Siluro Devonian Unit Well No. 306 was originally permitted as a disposal well by Division Order No. SWD-693 dated February 9, 1998. Order No. SWD-693 authorized Saga to utilize the well to dispose of produced water into the Devonian formation through the perforated interval from approximately 12,068 feet to 12,135 feet.

(22) Data currently available for the Crossroads Siluro Devonian Unit Well No. 306 demonstrates that:

- (a) the well passed a mechanical integrity pressure test on February 18, 1998;
- (b) the well passed a mechanical integrity bradenhead test on January 3, 2001;

- (c) there is no evidence that a radioactive tracer survey was conducted on this well one year after injection commenced, and annually thereafter, as required by Division Order No. SWD-693; and
- (d) Saga has filed a Division Form C-103 dated April 20, 2001, stating that pursuant to a procedure approved by the Division's Hobbs District Office, it will continue fishing operations on the well in order to remove the 2 7/8 inch tubing to a point 50 feet below the 7 5/8 inch intermediate casing shoe at a depth of 4,194 feet. This Form C-103 further states that subsequent to completion of fishing operations, Saga will consult with the Division's Hobbs District Office in order to obtain a plugging procedure for the well.

(23) The evidence demonstrates that the Crossroads Siluro Devonian Unit Well No. 306 will not be utilized as an injection well in the Crossroads Siluro Devonian Unit Waterflood Project.

(24) Data currently available for the Crossroads Siluro Devonian Unit Well No. 104 demonstrates that the well was shut-in on May 7, 1997, pending further evaluation due to parted tubing in the well.

(25) The current mechanical condition of the Crossroads Siluro Devonian Unit Well No. 104 is unknown.

(26) The evidence demonstrates that Saga is not in compliance with the provisions set forth by Division Orders No. SWD-662 and SWD-693.

(27) The applicant presented as evidence a Division Form C-108 for the Crossroads Siluro Devonian Unit Well No. 304. The evidence demonstrates that this well should be authorized for injection.

(28) 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.

(29) Injection into the Crossroads Siluro Devonian Unit Well No. 304 should be accomplished through 2 3/8 inch internally plastic-lined tubing installed in a packer at approximately 11,985 feet. 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.

(30) The Crossroads Siluro Devonian Unit Well No. 304 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 2417 psi.

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

(32) The operator should give advanced 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 well, so these operations may be witnessed.

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

(34) The proposed waterflood project should be approved and the project should be governed by Division Rules No. 701 through 708.

(35) The injection authority granted herein for the Crossroads Siluro Devonian Unit Well No. 304 should 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.

IT IS THEREFORE ORDERED THAT:

(1) Saga Petroleum, L.L.C. is hereby authorized to institute a waterflood project within its Crossroads Siluro Devonian Unit Area, described as follows, by the injection of water into the Crossroads Siluro-Devonian Pool, Lea County, New Mexico, in its Crossroads Siluro Devonian Unit Well No. 304 (API No. 30-025-03010) located 660 feet from the North and East lines (Unit A) of Section 27, Township 9 South, Range 36 East, NMPM:

Crossroads Siluro Devonian Unit
Township 9 South, Range 36 East, NMPM

Section 27: N/2, SE/4
Section 34 : E/2

(2) The applicant's request to utilize its Crossroads Siluro Devonian Unit Wells No. 104, 306 and 311, all described in Finding No. (3), as injection wells within the Crossroads Siluro Devonian Unit Waterflood Project is hereby dismissed.

(3) Authorization to utilize any additional wells for injection within the Crossroads Siluro Devonian Unit Waterflood Project may be granted by the Division only after formal application by Saga pursuant to the procedure set forth by Division Rule No. 701.

(4) 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.

(5) Injection shall be accomplished through 2 3/8 inch internally plastic-lined tubing installed in a packer at approximately 11,985 feet. 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.

(6) The Crossroads Siluro Devonian Unit Well No. 304 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 2417 psi.

(7) 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.

(8) Prior to commencing injection operations, the casing shall be pressure tested throughout the interval from the surface down to the proposed packer setting depth to assure the integrity of such casing.

(9) The 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 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 the 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 Crossroads Siluro Devonian Unit 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 for the Crossroads Siluro Devonian Unit Well No. 304 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) The portion of the application seeking to qualify the Crossroads Siluro Devonian Unit Waterflood Project as an Enhanced Oil Recovery Project pursuant to the Enhanced Oil Recovery Act (NMSA 1978 Sections 7-29A-1 through 7-29A-5) is hereby dismissed.

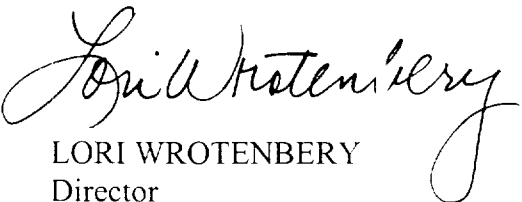
(14) Jurisdiction is hereby retained for the entry of such further orders as the Division may deem necessary.

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



S E A L

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION


LORI WROTENBERY
Director