

**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. 15235
ORDER NO. R-13957**

**APPLICATION OF CAZA OPERATING, LLC FOR A LEASE PRESSURE
MAINTENANCE PROJECT IN THE DELAWARE FORMATION, EDDY
COUNTY, NEW MEXICO.**

ORDER OF THE DIVISION

BY THE DIVISION:

This case came on for hearing at 8:15 a.m. on November 20, 2014, at Santa Fe, New Mexico, before Examiner Phillip R Goetze.

NOW, on this 17th day of February, 2015, the Division Director, having considered the testimony, the record and the recommendations of the Examiner,

FINDS THAT:

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

(2) By this application, Caza Operating, LLC ("Applicant") seeks approval of a lease pressure maintenance project in the Cass Draw-Delaware Pool (Pool code: 10410) within the horizontal boundaries described below, in Eddy County, New Mexico.

Township 23 South, Range 27 East, NMPM
Section 22: S/2
Section 27: N/2 and SW/4

(3) Applicant proposes to inject produced water from Delaware wells on its Forehand Ranch Lease into the Cherry Canyon formation of the Delaware Mountain group at a depth interval from approximately 3315 feet to 3337 feet below the surface, through its Forehand Ranch 27 State Well No. 4 (API No. 30-015-42309), located 1980 feet from the North line and 660 feet from the East line (Unit letter H) of Section 27.

(4) The Commissioner of Public Lands appeared through counsel at the hearing. No other party appeared at the hearing or otherwise opposed the application.

(5) Applicant appeared through counsel and presented engineering testimony and exhibits to the effect that:

- (a) The Forehand Ranch 27 State Well No. 4 (the "proposed injection well") is a recently completed vertical well in the Cherry Canyon formation with no history of production. Swab tests following completion of the well showed little or no hydrocarbons.
- (b) The Cherry Canyon reservoir has been productive to the northwest of Forehand Ranch 27 Well No. 4. Cumulative production of the Forehand Ranch 27 State Well No. 5, another recent Cherry Canyon completion, was 3,200 barrels of oil (BO) along with 56,100 barrels of produced water.
- (c) The primary drive mechanisms in this reservoir are solution-gas and water drive. Applicant contends the reservoir in this area is bounded by a paleochannel system with a permeability barrier. This barrier is modified within the project area by a structural high which impacts the Cherry Canyon formation in the SE/4 of Section 22 and NE/4 of Section 27. As a result of the structural feature, the three existing producing wells (the Forehand Ranch 27 State Well No. 1H, Forehand Ranch 27 State Well No. 5, and Forehand 22 State Well No. 1) are up dip from the proposed injection well.
- (d) The injection of produced water into the proposed injection well will supplement the existing water drive mechanism and increase the recovery of oil in the three up-dip producing wells.
- (e) The injection of produced water, in the opinion of Applicant's engineering witness, will increase the estimated ultimate recovery from approximately 39,400 BO to 80,000 BO within the pressure maintenance project.
- (f) There are two producing wells that penetrate the injection interval and are within the one-half mile area of review. There are no plugged and abandoned wells that penetrate the injection interval and are within the one-half mile area of review. All of the producing wells are properly cemented.
- (g) Applicant has discussed this project with the New Mexico State Land Office, who had objected to the project as originally proposed. Applicant agreed to the completion of a relief well with an approximate location in Unit letter A of Section 27. This relief well (designated the Forehand Ranch 27 State Well No. 6) is proposed to be completed in the Cherry Canyon formation to monitor the effectiveness of the project, to capture production of the pressure maintenance project and to protect correlative rights on adjoining acreage.

(h) The lease area for the project is south of the Capitan Reef. Applicant provided geologic testimony that there is no evidence of any hydrologic connection with the Reef and the proposed injection interval.

(6) Counsel for the New Mexico State Land Office provided testimony that affirmed the withdrawal of the objection to the project with the inclusion of the relief well in the final project plan.

The Division concludes that:

(7) All of the producing wells in the one-half mile area of review ("AOR") surrounding the proposed injection well appear to be adequately cased and cemented, so that none of them will become a conduit for the escape of injected fluid from the permitted injection formation. Accordingly, no remedial work on wells in the AOR need be required.

(8) Applicant should be authorized to inject fluids at a surface injection pressure not to exceed 663 pounds per square inch (psi) (0.2 psi per foot of depth to the uppermost perforation). Applicant may apply to the Division for a higher injection pressure upon satisfactorily demonstrating that an increase in injection pressure will not result in fracturing of the injection formation or confining strata.

(9) The proposed project will, in reasonable probability, result in production of substantially more hydrocarbons from the project area than would otherwise be produced therefrom, will prevent waste, and will not impair correlative rights.

(10) Accordingly, the application should be approved.

IT IS THEREFORE ORDERED THAT:

(1) Caza Operating, LLC ("Applicant" or "Operator") is hereby authorized to inject produced water into the Cherry Canyon formation of the Delaware Mountain group [Cass Draw-Delaware Pool (Pool code: 10410)], at a depth interval from 3315 to 3337 feet below the surface, through its Forehand Ranch 27 State No. 4 (API No. 30-015-42309), located 1980 feet from the North line and 660 feet from the East line (Unit letter H) of Section 27 (the "injection well").

(2) This project is hereby designated the **Forehand Ranch Cherry Canyon Pressure Maintenance Project**, and shall consist of the Cherry Canyon formation underlying the following lands in Eddy County, New Mexico:

Township 23 South, Range 27 East, NMPM

Section 22: S/2

Section 27: N/2 and SW/4

(3) Caza Operating, LLC (OGRID 249099) is designated operator of the project.

(4) Water from outside the Forehand Ranch lease shall not be injected into this well. The operator shall monitor the oil and water production from the producing area of review wells and shall report this production to the Division in a quarterly summary.

(5) The Operator shall complete a relief well (designated the Forehand Ranch 27 State Well No. 6) in the NE/4 of the NE/4 of Section 27 within one year of commencement of injection into the Forehand Ranch 27 State No. 4. The Operator shall notice the Oil, Gas and Minerals Division of the New Mexico State Land Office with the proposed location of the relief well prior to filing of the Application for Permit to Drill with Division's District II office. The Division Director shall have the authority to administratively grant an extension, for good cause, for the completion of this relief well, upon written request by the Operator filed prior to the expiration of the one-year time period.

(6) The Operator shall take all steps necessary to ensure that the injected fluid enters only the injection interval and is not permitted to escape to other formations or onto the surface from injection, production, or plugged and abandoned wells.

(7) The injection well shall use the existing construction with injection occurring through perforations from 3315 feet to 3337 feet below the surface.

(8) Injection shall be accomplished through plastic-lined steel tubing installed in a packer set in the casing below the top of the injection formation and within 100 feet of the uppermost injection perforations. 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 detect leakage in the casing, tubing or packer.

(9) The injection well shall pass a mechanical integrity test prior to initial commencement of injection and prior to resumption of injection each time the packer is unseated. All testing procedures and schedules shall conform to the requirements of Division Rule 19.15.26.11.A NMAC. The Division Director retains the right to require at any time wireline verification of completion and packer setting depths.

(10) The injection well shall be initially equipped with a pressure control device or acceptable substitute that will limit the surface injection pressure to no more than 663 pounds per square inch.

(11) The Division Director shall have the authority to administratively authorize an increase in injection pressure upon a showing by the operator that such higher pressure will not result in fracturing of the injection formation or confining strata. The operator shall give at least 72 hours advance notice to the supervisor of the Division's District II office of the date and time (i) injection equipment will be installed, and (ii) the mechanical integrity pressure test will be conducted, so these operations may be witnessed.

(12) The Operator shall provide written notice of the date of commencement of injection into the well to the Division's District II office.

(13) The Operator shall immediately notify the supervisor of the Division's District II office of the failure of the tubing, casing or packer in the injection well, or the leakage of water, oil, gas or other fluid from or around any producing or abandoned well within one-half mile of the injection well, and shall take all steps as may be timely and necessary to correct such failure or leakage.

(14) The Project shall be governed by Division Rules 19.15.26.8 through 26.15 NMAC. The operator shall submit monthly reports of the injection operations on Division Form C-115, in accordance with Division Rules 19.15.26.13 and 19.15.7.28 NMAC.

(15) The injection authority granted herein shall terminate two years after the effective date of this order if the operator has not commenced injection operations; provided, however, the Division, upon written request by the Operator filed prior to the expiration of the two-year time period, may grant an extension for good cause.

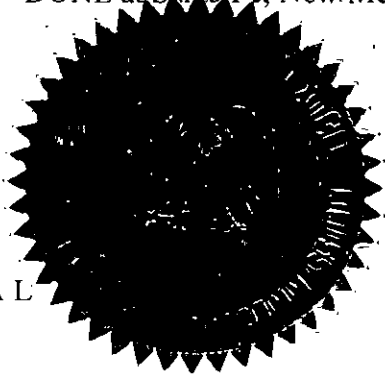
(16) The Operator shall provide written notice to the Division upon permanent cessation of injection into the Project.

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

(18) Upon failure of the operator to conduct operations (1) in such manner as will protect fresh water or (2) in a manner consistent with the requirements in this Order, the Division may, after notice and hearing (or without notice and hearing in event of an emergency, subject to the provisions of NMSA 1978 Section 70-2-23), terminate the injection authority granted herein.

(19) Jurisdiction of this case is 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 cursive script that reads "David R. Catanach".

DAVID R. CATANACH
Director