

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

**APPLICATION OF OXY USA, INC.
FOR APPROVAL OF A PRESSURE
MAINTENANCE PROJECT, EDDY
COUNTY, NEW MEXICO.**

**CASE NO. 20194
ORDER NO. R-21357**

ORDER OF THE DIVISION

This case came in for hearing before the Oil Conservation Division (“OCD”) at 8:15 a.m. on January 11, 2019, in Santa Fe, New Mexico.

The OCD Director, having considered the testimony, the record, the recommendations of Hearing Examiner Phillip R. Goetze, these findings of fact, and conclusions of law issues this Order.

FINDINGS OF FACT

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

(2) By this application, OXY USA, Inc. ("Applicant" or “OXY”) seeks approval of a pressure maintenance project in the 2nd Bone Spring formation, Pierce Crossing; Bone Spring, East pool (Pool code 96473), within the following 640 acres, more or less, within Eddy County, New Mexico:

Township 24 South, Range 29 East, NMPM
S/2 of Section 27 and S/2 of Section 28

(3) Applicant proposes to inject produced gas, produced water and produced CO2 into two existing producing wells:

- (a) The Cedar Canyon 27 Federal 6H at a true vertical depth interval from approximately 8718 feet to approximately 8778 feet below the surface,
- (b) and the Cedar Canyon 28 Federal 6H well at a true vertical depth interval from approximately 8619 feet to approximately 8697 feet below the surface.
- (c) The injection will benefit three existing producing offsetting wells: the Cedar Canyon 28-27 Federal Com 5H, Cedar Canyon 27 Federal 7H, and the Cedar Canyon 28 Federal 7H wells.

(4) The two candidate injector wells are:

- (a) Cedar Canyon 27 Federal No. 6H (API No. 30-015-43232) with a surface location of 1850 feet from the South line and 240 feet from the East line (Unit letter I) of Section 28,

Township 24 South, Range 29 East, NMPM, and a terminus of 1755 feet from the South line and 250 feet from the East line (Unit letter I) of Section 27, Township 24 South, Range 29 East, NMPM.

- (b) Cedar Canyon 28 Federal No. 6H (API No. 30-015-43234) with a surface location of 1820 feet from the South line and 240 feet from the East line (Unit letter I) of Section 28, Township 24 South, Range 29 East, NMPM, and a terminus of 1692 feet from the South line and 229 feet from the West line (Unit letter L) of Section 28, Township 24 South, Range 29 East, NMPM

(5) EOG Resources appeared through counsel at the hearing but did not oppose the application. No other party appeared at the hearing or otherwise opposed the application.

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

- (a) In this area of Eddy County, the 2nd Bone Spring sand is a productive interval within the Bone Spring formation and is well delineated and characterized.
- (b) The Cedar Canyon 27 Federal No. 6H and the Cedar Canyon 28 Federal No. 6H (the “proposed injection wells”) are horizontal wells in the Bone Spring formation that are producing from the 2nd Bone Spring sand.
- (c) Applicant has designed a pressure maintenance pilot project limited to the S/2 of Section 27 and S/2 of Section 28 utilizing the proposed injection wells to benefit these three existing horizontal oil wells: the Cedar Canyon 28-27 Federal Com 5H well (30-015-43645), Cedar Canyon 27 Federal 7H well (30-015-43233), and the Cedar Canyon 28 Federal 7H well (30-015-43238)
- (d) Applicant will utilize produced water for injection as a component of pressure maintenance in conjunction with the produced gas injection to mitigate early offset breakthrough at low injection pressures.
- (e) Applicant will utilize the proposed injection wells with existing perforations and well construction. Applicant additionally stated that the proposed injection wells will not be stimulated prior to the beginning of the project.
- (f) Applicant provided analyses of the produced water and produced gas along with testimony demonstrating compatibility with well components and the reservoir conditions.
- (g) Applicant has proposed maximum surface injection pressures for each injection fluid: 1720 pounds per square inch (psi) for produced water, 4350 psi for produced gas and 2300 psi for carbon dioxide. Applicant submitted pressure analyses in support of the proposed maximum surface injection pressures.

- (h) Applicant has proposed the placement of the packers below the kick-off point but significantly above the first perforations located in the horizontal portion of the production casing. Applicant requested an exception for the 100-foot packer setting depth requirement applied to vertical injection wells.
- (i) Applicant has requested that unlined tubing be allowed for use in the injection operation of produced gas and CO₂, while requesting lined tubing when injecting water. Applicant stated that the unlined tubing would be preferable due to the increased use of wireline equipment in the proposed injection well, and the lack of significantly corrosive fluids being used for injection.
- (j) Applicant established a modified area of review (AOR) using the horizontal segment of each well (as defined by the surface location, the first take point, and the terminus) as the center line for the one-half mile radius, the AOR being defined as the area within one-half mile of any point on the horizontal well lateral. Not only did they look at the injection interval, they analyzed any part of the wellbore penetrating the Bone Spring formation. All wells in the two AORs are properly cemented.
- (k) Applicant found no fresh water wells within one mile of the proposed injection wells. The database of the New Mexico Office of the State Engineer identified two wells within one mile of the proposed injection wells, but both wells are shallow disposal wells associated with the Interstate Stream Commission's River Desalination Project.
- (l) Applicant has provided proper notice to affected persons including the surface land owner. Applicant has also published notice of the pilot project in Carlsbad Current-Argus, a newspaper with general circulation in the county where the project is located.

CONCLUSIONS OF LAW

(7) All of the wells (active and plugged) in the one-half mile modified AOR surrounding the proposed injection well appear to be adequately cased and cemented, so that none will become a conduit for the escape of injected fluid or gas from the permitted injection interval. Accordingly, there is no requirement for remedial work on any wells within the modified AOR for each of the injection wells.

(8) Applicant should be authorized to inject fluids at a surface injection pressure not to exceed 1720 pounds per square inch (psi) for produced water, 4350 psi for produced gas and 2300 psi for carbon dioxide. Applicant may apply to the OCD 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 that would otherwise be produced therefrom, will prevent waste, and will not impair correlative rights.

- (10) Accordingly, the application should be approved.

ORDER

(1) OXY USA, Inc. ("OXY" or "operator") is hereby authorized to inject produced water, produced gas, and CO₂ into the Bone Spring formation [Pierce Crossing; Bone Spring, East pool (Pool code: 96473)], at a true vertical depth interval from approximately 8619 to approximately 8778 feet below the surface based on depths from the two proposed injector wells: the Cedar Canyon 27 Federal 6H and the Cedar Canyon 28 Federal 6H.

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

Township 24 South, Range 29 East, NMPM
S/2 of Section 27 and S/2 of Section 28

- (3) OXY USA, Inc. (OGRID 16696) is the designated operator of the project.

- (4) The existing horizontal wells (the "injection well") are approved for injection:

(a) Cedar Canyon 27 Federal No. 6H (API No. 30-015-43232) with a surface location of 1850 feet from the South line and 240 feet from the East line (Unit letter I) of Section 28, Township 24 South, Range 29 East, NMPM, and a terminus of 1755 feet from the South line and 250 feet from the East line (Unit letter I) of Section 27, Township 24 South, Range 29 East, NMPM.

(b) Cedar Canyon 28 Federal No. 6H (API No. 30-015-43234) with a surface location of 1820 feet from the South line and 240 feet from the East line (Unit letter I) of Section 28, Township 24 South, Range 29 East, NMPM, and a terminus of 1692 feet from the South line and 229 feet from the West line (Unit letter L) of Section 28, Township 24 South, Range 29 East, NMPM.

(5) 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.

(6) The injection wells shall use the existing construction with injection occurring through perforations currently in place.

(7) Water from outside the operator's Cedar Canyon Treating Facility shall not be injected into these wells. The operator shall utilize its Cedar Canyon Central Delivery Point for the source of the produced gas to be used in the injection phases of the pilot project.

(8) Injection shall be accomplished through tubing installed in a packer set in the production casing so as to provide a proper seal while being as close as practical to the uppermost injection perforations. The limit for the upper placement of the packer in the production casing shall be no greater than 100 feet above the true vertical depth of the kick-off point for the individual well.

(9) The injection wells shall be initially equipped with a pressure control device or acceptable substitute that will limit the maximum surface injection pressure to no more than 1720 pounds per square inch (psi) for produced water, 4350 psi for produced gas and 2300 psi for carbon dioxide.

(10) 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.

(11) The injection wells 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 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.

(12) The injection wells shall be monitored with a SCADA system and the operator shall ensure that additional sensor systems for each injection well, as proposed in the C-108 application, are installed and monitored.

(13) 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 OCD'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.

(14) The operator shall provide written notice of the date of commencement of injection into each of the wells to the OCD's District II office.

(15) The operator shall immediately notify the supervisor of the OCD's District II office of any failure of the tubing, casing, or packer in either 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 either injection well, and shall take all steps as may be timely and necessary to correct such failure or leakage.

(16) The Project shall be governed by OCD Rules 19.15.26.8 through 19.15.26.15 NMAC. The operator shall submit monthly reports of the injection operations on OCD Form C-115, in accordance with Rules 19.15.26.13 and 19.15.7.28 NMAC.

(17) 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 OCD, upon written request by the operator filed prior to the expiration of the two-year time period, may grant an extension for good cause.

(18) The operator shall provide written notice to the OCD upon permanent cessation of injection into the Project.

(19) This Order does not relieve the 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 OCD rules or other state, federal or local laws or regulations.

(20) 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 OCD 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.

(21) Jurisdiction of this case is retained for the entry of such further orders as the OCD may deem necessary.

DONE at Santa Fe, New Mexico, on this 1st day of July, 2020.

STATE OF NEW MEXICO
OIL CONSERVATION DIVISION

A handwritten signature in black ink, appearing to read 'AS', is written over a horizontal line.

ADRIENNE SANDOVAL
DIRECTOR