

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

**APPLICATION OF CHEVRON USA INC.
FOR A GAS CAPTURE PILOT PROJECT
INVOLVING THE OCCASIONAL INJECTION
OF PRODUCED GAS INTO THE BONE SPRING
FORMATION, LEA COUNTY, NEW MEXICO**

**CASE NO 21020
ORDER NO. R-21336**

ORDER OF THE DIVISION

This case was heard by the Oil Conservation Division (“OCD”) at 8:15 a.m. on February 6, 2020, in Santa Fe, New Mexico, and reopened on April 16, 2020 to collect additional testimony.

The OCD Director, having considered the testimony, the record, and the recommendations of Hearing Examiner Dylan Rose-Coss, 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) Chevron USA, Inc. (“Chevron”(OGRID 4323) seeks approval of a gas capture pilot project (“Project”) to intermittently inject produced gas into the Bone Spring formation (WC-025 G-06 S263319P; BONE SPRING pool, Pool Code 97955) within the following 318.84 acres, more or less, located in Lea County, New Mexico:

Township 26 South, Range 33 East, NMPM
Section 19: W/2 W/2 and W/2 E/2

- (3) The Project involves the injection of produced gas into existing producing wells for temporary storage during pipeline service interruptions at the third-party gas processing facility contracted to take the gas from Chevron's gathering system.
- (4) The Project will inject the produced gas into two existing wells that are producing from the Bone Spring formation: Salado Draw 19 26 33 Federal Com 2H (API No. 30-025-42662) and the SD EA 19 Federal P6 #005H (API: 30-025-42797) ("Wells"). Salado Draw 19 26 33 Federal Com 2H is a horizontal well with a surface location 200 feet from the north line and

948 feet from the west line and a bottom-hole location 280 feet from the south line and 964 feet from the west line of Section 19, Township 26 South, Range 33 East, NMPM, Lea County, New Mexico. SD EA 19 Federal P6 #005H is a horizontal well with a surface location 227 feet from the north line and 1,747 feet from the east line and a bottom hole location 404 feet from the south line and 2,249 feet from the east line of Section 19, Township 26 South, Range 33 East, NMPM, Lea County, New Mexico.

- (5) Chevron will intermittently inject the produced gas through the Wells into the upper Bone Spring formation along the perforated portion of the wellbores at a surface injection pressure not to exceed 1,250 pounds per square inch (“psi”).
- (6) Chevron testified that:
 - (a) The goal of the Project is to safely divert gas produced during gathering system interruptions into active wells for temporary storage.
 - (b) The Project will prevent waste by temporarily storing produced gas that normally would be flared. In doing so, the Project also seeks to protect correlative rights, the public health, and the environment.
 - (c) Chevron’s target injection interval is the Upper Bone Spring formation. The Bone Spring formation is sometimes referred to as the Avalon or Leonard Shale, and is encountered at a total vertical depth (“TVD”) of between approximately 9,122 to 9,196 in the Wells. Wireline log and core analyses indicate that the reservoir consists of faintly laminated, siliceous, silty mudstones interbedded and interlaminated with argillaceous siltstones and thinly bedded carbonate (limestone). Air permeability measurements indicate reservoir matrix permeabilities of between approximately 0.4 and 5 microdarcys with a reservoir thickness of approximately 250 feet. The bottom hole pressures range between approximately 550 and 650 psi following a twelve (12) hour build-up in the Wells. The cross section and formation isopach demonstrated that the formation is a siliceous mudstone with low permeability that will prohibit migration of the produced gas away from the wellbore and facilitate greater recovery of the produced gas. Additionally, the injection interval is bounded above and below by impermeable limestone formations that will prohibit the produced gas from migrating out of the Upper Bone Spring Shale.

- (d) Reservoir modeling demonstrated that the produced gas will not migrate from the formation, affect underground sources of drinking water (“USDWs”), or interfere with other wells, and will ultimately have a neutral effect on recovery.
- (e) Chevron will inject the produced gas with a maximum allowable surface pressure (“MASP”) of 1,250 psi, which will not exceed 0.14 psi/ft.
- (f) Chevron presented well diagrams depicting the casing, cementing, and perforation details of the Wells.
- (g) The Wells are constructed with 5½-inch, 20-pound, P-110 production casing and have a casing burst pressure rating of 12,630 psi. The given burst pressure rating is greater than one hundred twenty (120) percent of the MASP plus the hydrostatic pressure from a full column of reservoir fluid.
- (h) The MASP will not exceed ninety (90) percent of the horizon’s assumed propagation pressure minus the expected bottom hole hydrostatic pressure generated by a fluid column consisting of the reservoir fluid.
- (i) Chevron performed a mechanical integrity test (“MIT”) on January 31, 2020, which confirmed the Wells’ casing is capable of a load exceeding one hundred ten (110) percent of the MASP.
- (j) Chevron will install equipment on the Wells to prevent the surface pressure from exceeding the MASP.
- (k) Chevron submitted a cement bond log (“CBL”) and drilling reports for SD EA 19 Federal P6 #005H, along with drilling reports for the Salado Draw 19 26 33 Federal Com 2H. Taken together, the information suggests there is adequate cement coverage throughout the entire vertical length of the wells to prevent injection into unauthorized formations and provide sufficient tie-back between casing intervals.
- (l) Chevron determined the one-half mile radius for the area of review (“AOR”) for the Wells by taking the horizontal segment of each well as the center line and the endpoints based on the surface and bottom-hole locations.

- (m) Within the AOR, Chevron identified twenty (20) producing wells that penetrate the injection interval, all of which are properly cased and cemented to prevent vertical migration of the produced gas.
 - (n) The source of the produced gas is the Bone Spring, Wolfcamp and Atoka formations.
 - (o) The produced gas will be delivered to the Wells by a localized gas lift compressor station, and if necessary, an additional compressor station installed on site.
 - (p) The analysis of the gas sample collected from the Wells indicates the produced gas contains appreciable volumes of CO₂, but damage to the casing will be mitigated by chemical additives and dehydration of the gas.
 - (q) The produced gas will be injected through the open annular space between the tubing and the production casing into the tubing through the gas lift valves, and a packer will be installed in both wells to prevent non-dehydrated gas and other reservoir fluids from entering the annulus.
 - (r) The Project will be conducted remotely through an existing Supervisory Control and Data Acquisition (“SCADA”) system, including the collection of all relevant data for safe operations, such as production flow rate, injection gas flow rate, and surface pressure.
 - (s) Chevron will utilize an existing plan to address any environmental or engineering emergency that may occur during the Project.
- (7) Chevron demonstrated that it gave proper notice to affected persons, including the surface landowner, and published notice in a newspaper with general circulation in the county where the Project will be located.
- (8) Mr. Thomas Singer appeared at the hearing on behalf of the Governor’s Methane Advisory Panel to offer support for the application. No other party appeared at hearing or opposed the application.

CONCLUSIONS OF LAW

- (9) Chevron has the technical capability, existing and planned infrastructure, and contingency plans to successfully implement the Project.

- (10) The geologic and reservoir evidence demonstrates with reasonable probability that the injection interval can accommodate the produced gas, and that the produced gas will be contained within the injection interval.
- (11) The MASP of 1,250 psi will not degrade the mechanical integrity of the Wells or cause fracturing in the injection interval or confining layers.
- (12) The Wells are properly cased and cemented to protect USDWs and other active wells within the AOR.
- (13) The active wells located within the AOR are adequately cased and cemented such that they will not become a conduit for the escape of produced gas from the injection interval, and accordingly; no well within the AOR requires remedial work prior to implementing the Project.
- (14) The Project will not, in reasonable probability, cause waste or harm correlative rights, public health, or the environment.

ORDER

- (1) Chevron is authorized to conduct a gas capture pilot project involving the intermittent injection of produced gas into the Bone Spring formation utilizing the Salado Draw 19 26 33 Federal Com 2H and the SD EA 19 Federal P6 #005H wells.
- (2) Chevron is designated as the operator of the Project.
- (3) Chevron shall inject produced gas from only the Bone Spring, Wolfcamp, and Atoka formations into the wells.
- (4) Chevron shall mitigate potential damage to the casing caused by injecting produced gas with appreciable volumes of CO₂ by maintaining a chemical injection program and continuing to dehydrate the injected gas. Chevron shall maintain a packer in each well to isolate the annulus from reservoir fluids.
- (5) Chevron shall deliver the produced gas to the Wells through an existing gathering system, provided however, that Chevron may modify the gathering system to achieve the MASP of 1,250 psi.
- (6) Chevron shall equip the Wells with a pressure control device that limits the MASP to 1,250 psi.
- (7) Chevron shall provide written notice via email and Form C-103 to the OCD's District I office supervisor and Engineering Bureau at least forty-

eight (48) hours prior to commencing the initial injection of produced gas into each of the Wells.

- (8) Chevron shall monitor the Wells with a SCADA system during the Project, collect all relevant data for safe operations as specified in Finding of Fact 6(r), and maintain the data for inspection at the request of OCD.
- (9) Chevron shall equip the Wells to continuously monitor the pressure in the annulus between the 5½-inch and 9⅝-inch casings (“intermediate casing annulus”), and shall immediately notify the OCD District I office supervisor via the emergency contact number and the OCD Engineering Bureau in Santa Fe via email if it detects an increase in the pressure above 100 psi. If the pressure in the intermediate casing annulus reaches 1000 psi, Chevron shall immediately cease injection and submit a Form C-103 containing a plan to reduce the pressure below 1000 psi and shall not recommence injection until OCD has approved the plan.
- (10) Chevron shall take all steps necessary to ensure the produced gas enters only the injection interval and does not migrate into other formations or USDW or onto the surface through a well in the AOR.
- (11) Chevron shall immediately notify the OCD’s District I office supervisor via the emergency contact number and the Engineering Bureau in Santa Fe via email if the tubing or casing of the Wells fails, or water, oil, or other fluid leaks from or around the Wells or any well located within the AOR.
- (12) If the tubing or casing of a Well fails, or water, oil, or other fluid leaks from or around the Wells or any well located within the AOR, Chevron shall take all timely and necessary steps, or as otherwise directed by OCD, to correct such failure or leakage.
- (13) Chevron shall comply with 19.15.26.9 and 19.15.26.10 NMAC for all operations related to the Project.
- (14) Chevron shall submit monthly reports for the Project on Form C-115 in accordance with 19.15.26.13 NMAC. If OCD determines that it requires additional information not reported on Form C-115, Chevron shall submit the additional information monthly using Form C-103.
- (15) Chevron shall provide written notice via email to the OCD’s District I office supervisor and Engineering Bureau in Santa Fe upon termination of the Project.

- (16) No later than one hundred and eighty (180) days, but after one hundred and fifty (150) days following the commencement of injection, Chevron shall conduct a MIT on Salado Draw 19 26 33 Federal Com 2H in accordance with 19.15.26.11(A)(1) NMAC.
- (17) No later than sixty (60) days after the completion of the Project, Chevron shall conduct a MIT on the Wells in accordance with 19.15.26.11(A)(1) NMAC.
- (18) No later than ninety (90) days following the completion of the Project, Chevron shall submit a summary report summarizing and compiling the following information: injection rates, injection volumes, injection durations, maximum surface pressure during injection, production rates, gas recovery rates, and delta pressures for adjacent wells during injection.
- (19) The authority granted by this Order shall terminate one (1) year after the date of approval, provided however the OCD Director, upon receipt of a written request submitted before the termination date and for good cause shown, may extend the authority granted by this Order.
- (20) Notwithstanding the authority granted by this Order, Chevron shall be responsible for complying with all applicable OCD rules and any other state, federal, or local law or regulation and if the Project causes any harm or damage or threat of harm or damage to protectable fresh water, public health, or the environment.
- (21) If OCD determines that Chevron has failed to comply with any provision of this Order, OCD may take any action authorized by the Oil and Gas Act or OCD rules.
- (22) OCD retains jurisdiction of this case for the entry of such further orders as may be deemed necessary.

DONE at Santa Fe, New Mexico, on this 21st day of May, 2020.

**STATE OF NEW MEXICO
OIL CONSERVATION DIVISION**



**ADRIENNE SANDOVAL
DIRECTOR**