

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

**APPLICATION OF LUCID ENERGY DELAWARE, LLC  
FOR AUTHORIZATION TO INJECT,  
LEA COUNTY, NEW MEXICO**

**Case No. 20779  
Order No. R-20916-H**

**ORDER OF THE COMMISSION**

**THIS MATTER** comes before the New Mexico Oil Conservation Commission (“Commission”) on Lucid Energy Delaware, LLC’s (“Lucid”) *Application for Authorization to Inject, Lea County, New Mexico* (“Application”). The Commission, having conducted a hearing on September 3, 2020, and having considered the testimony and the record in this case, enters the following findings of fact, conclusions of law, and order.

**FINDINGS OF FACT**

1. On August 8, 2019, Lucid filed its Application seeking authorization to inject treated acid gas composed of 87% CO<sub>2</sub>, 12% H<sub>2</sub>S, and traces of light hydrocarbons (“TAG”) from its Red Hills Gas Processing Plant (“Plant”) into the proposed Red Hills AGI No. 2 well (“Well”).
2. The Well is an Underground Injection Control (“UIC”) Class II well subject to the requirements of 19.15.26 NMAC.
3. The Well is vertical with an approximate surface and bottom hole location at 1800’ FSL and 150’ FEL in Section 13, Township 24 South, Range 33 East in Lea County.
4. The target injection zone is the Devonian and Upper Silurian Wristen and Fusselman formations at depths of approximately 16,000 to approximately 17,600 feet.
5. The Well’s maximum daily injection rate is thirteen million standard cubic feet per day (“MMSCFD”).
6. The Well’s maximum surface injection pressure is approximately 4,838 pounds per square inch gauge (“psig”).
7. The surface location of the Well is within the Plant’s boundary.
8. Lucid gave personal notice of the Application and the Commission’s hearing via certified mail, return receipt requested to all operators, surface owners, and lessees within a one-mile radius of the location for the Well.

9. The Commission gave public notice of the Application and the Commission's hearing by publication in a newspaper of general circulation in Lea County.

10. The Oil Conservation Division ("OCD") filed an Entry of Appearance and Notice of Intervention on September 30, 2019.

11. Matador Production Company and MRC Permian Company (collectively, "Matador") filed an entry of appearance on October 2, 2019.

12. EOG Resources, Inc. ("EOG") filed an entry of appearance on October 9, 2019.

13. Matador filed a withdrawal of its appearance on July 30, 2020.

14. EOG filed a withdrawal of its appearance on August 4, 2020.

15. Lucid filed its Pre-Hearing Statement on August 27, 2020. Lucid's Pre-Hearing Statement explained that Matador and EOG's initial concerns regarding the location of the Well were resolved.

16. OCD filed a Pre-Hearing Statement on August 27, 2020. OCD's Pre-Hearing Statement explained that OCD supports the approval of Lucid's Application subject to permit conditions identical to those included in Order No. R-20913-C (Case No. 20780) with two additions – one that relates to construction of the Well and one that requires Lucid to install and maintain a seismic monitoring station as part of New Mexico Tech's Seismological Observatory ("Permit Conditions").

17. No other person filed an objection to the Application or an entry of appearance.

18. The Commission held a hearing on the Application on September 3, 2020.

19. In support of the Application, Lucid presented the testimony of four witnesses: Mr. Matthew Eales, Vice President of Environmental, Health, Safety and Regulatory, Lucid; Mr. Alberto Gutierrez, President of Geolex, Inc.; Mr. David White, Geologist, Geolex, Inc., and William Ampomah, Ph.D., Petroleum Engineer, New Mexico Tech.

20. Mr. Eales provided background regarding Lucid, including its current and future H<sub>2</sub>S treating investment and natural gas infrastructure. Mr. Eales also testified regarding the benefits of disposing of TAG through an acid gas injection ("AGI") well. Specifically, Mr. Eales testified that an AGI well allows for the sequestration of CO<sub>2</sub> and eliminates flaring as a control for sulfur derived from the processing of sour gas. Mr. Eales testified that, in his opinion, Lucid's proposal to dispose of TAG through the Well will protect public health and the environment and result in more efficient operation of the Plant. Mr. Eales explained that Lucid currently operates the Red Hills AGI No. 1 at the Plant and will use the Well to dispose of TAG and as a redundant well. Mr. Eales also testified that Lucid agrees to the Permit Conditions proposed by OCD in OCD

Exhibit 1.

21. Mr. Gutierrez testified regarding the information contained in the Application and regarding the site geology and hydrogeology and stated that, in his opinion, the proposed injection zone provides a sufficient capacity and geologic seal to contain the injected TAG and prevent its migration into other zones; the injection zone is sufficiently isolated from any protectable groundwater sources; and there is no evidence that injection will impair existing or potential hydrocarbon production in the area.

22. Mr. Gutierrez testified regarding the design and operation of the Well and confirmed that Lucid would perform testing and monitoring after the Well is drilled to ensure that the plume will not migrate out of the injection zone, and would modify and submit Lucid's H<sub>2</sub>S Contingency Plan for OCD approval prior to the commencement of injection.

23. Mr. Gutierrez testified that, in his opinion, the Well will not pose health and safety risks, and the Well will not cause waste or damage correlative rights in any formations in the area.

24. Mr. Gutierrez testified that Lucid agrees with the Permit Conditions set out in OCD Exhibit 1.

25. Mr. White testified regarding Geolex's evaluation of the potential for induced seismicity, including its seismic review of the area and the preparation of fault-slip modeling. Based on this evaluation, Mr. White testified that operation of the Well is not anticipated to contribute significantly to the total potential for injection-induced fault slip.

26. Mr. White testified regarding Geolex's evaluation of local subsurface pressure conditions to assess reservoir containment and volumetric determinations of the TAG plume. Mr. White testified that under radial dispersion conditions, the plume volume after 30 years is anticipated to extend a maximum of 0.48 miles from the AGI well bore, and if the TAG preferentially migrates up dip as a result of local structure and TAG density characteristics, the plume is anticipated to extend 0.67 to 0.9 miles. Mr. White testified regarding over-pressure conditions overlying the injection interval, drilling-fluid characteristics, and drilling-fluid programs for the Well and concluded that the Well is not anticipated to present any risk for vertical migration of TAG out of the target reservoir and into overlying productive zones.

27. Dr. Ampomah testified regarding the Petrel/Eclipse injection simulations he performed to assess the impact of TAG injection on the target Siluro-Devonian reservoir. Dr. Ampomah presented simulation results for closed and open faults. He testified that based on the data analyzed: the proposed injection zone is a good candidate for the injection of TAG; the TAG plume and pressure front will not reach producing intervals; the TAG plume will be contained within the injection interval; and TAG can safely be injected into the Well. Dr. Ampomah concluded that the Well will not result in waste, impair correlative rights, or have a negative impact on health or the environment.

28. The Division presented the testimony of technical witness Phillip Goetze, along with four exhibits in support of his testimony. Mr. Goetze testified that OCD favors AGI wells and that Lucid currently operates an AGI well at the Plant and wants a redundant well.

29. Mr. Goetze testified regarding existing and proposed salt-water disposal (“SWD”) wells in the Devonian formation in the area of the Well and regarding the Affidavit of Todd Reynolds submitted by NGL Water Solutions Permian, LLC (“NGL”) in Case Nos. 20141 and 20142. Mr. Goetze testified that the proposed Devonian SWD wells in the vicinity of the Well may or may not be approved. He also testified that Mr. Reynolds did not testify or present seismic modelling in Case Nos. 20141-20142 and that his affidavit states the faults he identified are at a low risk for induced seismicity.

30. Mr. Goetze testified that OCD supports the approval of Lucid’s Application with the Permit Conditions provided as OCD Exhibit 1, which include seismic monitoring. Mr. Goetze also proposed that the Commission require Lucid to commence injection within two years of the date of the Commission’s order.

### **CONCLUSIONS OF LAW**

1. The Commission has jurisdiction over the Parties and the subject matter of this case.
2. Proper public notices of the Application and the Commission’s hearing were given, including personal notices to all operators, surface owners, and lessees within a one-mile radius of the Well.
3. The Application is complete.
4. OCD records show that Lucid Energy Delaware, LLC (OGRID No. 372422) is in compliance with Subsection A of 19.15.5.9 NMAC.
5. The Well, if constructed and operated in accordance with the Permit Conditions, will comply with the requirements of 19.15.26 NMAC.
6. Lucid’s injection of TAG, if conducted in accordance with the Permit Conditions and the additional conditions adopted by the Commission at the hearing, will not cause waste, impair correlative rights, or harm the public health and environment.

### **ORDER**

1. The Application is approved, and Lucid is authorized to drill and operate the Well with an approximate surface and bottom hole location at 1800’ FSL and 150’ FEL in Section 13, Township 24 South, Range 33 East in Lea County, to dispose of TAG at a maximum daily injection rate of 13 MMSCFD into the Devonian and Upper Silurian Wristen and Fusselman formations at depths of approximately 16,000 to 17,600 feet and a maximum surface injection pressure of

approximately 4,838 psig.

2. Lucid shall conduct an annual mechanical integrity test (MIT) on the proposed well.
3. Lucid shall conduct continuous monitoring of surface TAG injection pressure, temperature, rate, surface annular pressure, and bottom-hole (or “end of tubing”) temperatures and pressures in the tubing and annulus.
4. Lucid shall conduct step-rate and fall-off tests on the completed Well before commencing injection. Lucid may adjust the maximum surface injection pressure for the Well after these tests with OCD’s written approval.
5. Lucid shall maintain a maintenance log, including the volume of annular fluid (diesel) replaced in the annulus of the Well.
6. Lucid shall establish temperature parameters for injected fluid, install and maintain temperature-activated controls to govern the temperature of injected fluid, and install and maintain an alarm system for the controls to indicate exceedance of the parameters.
7. Lucid shall report to OCD on a quarterly basis the summary data for injection parameters monitored under the permit, and upon request by OCD, shall submit annual reports after each year of operation. This report shall include the composition and volume of the acid gas injected into the Well.
8. Lucid shall equip the well with a pressure-limiting device and a one-way safety valve (with the appropriate interior drift diameter) on the tubing approximately 250 feet below the surface.
9. Lucid shall use a corrosion-inhibiting diesel with a biocide component as the annular fluid of the Well.
10. Lucid shall circulate cement for all casing to the surface.
11. Well construction shall be designed for exposure to corrosive environment including the casing, casing cement, tubing, and packer in proximity of the approved injection interval.
12. Prior to commencing injection, Lucid shall obtain OCD's approval of a hydrogen-sulfide contingency plan that complies with 19.15.11.9 NMAC, and that includes a contingency plan for and a GIS mapping layer showing the gathering lines associated with the natural gas processing plant(s) served by the Well.
13. No later than 30 days prior to commencing injection, Lucid shall obtain OCD's approval of immediate notification parameters for annulus pressure and tubing and casing

differential pressure at a set injection temperature.

14. No later than 45 days after Lucid completes the drilling of the Well, Lucid shall submit to OCD's district office the well drilling logs including mudlogs, electric logs, daily reports, and static bottom-hole pressure measured at completion of drilling the Well.

15. No later than 45 days after completion of the Well, Lucid shall submit to OCD the final reservoir evaluation and confirm that the open-hole portion of the Well does not intersect the fault plane of any identified fault that occurs within the approved injection interval.

16. No later than 90 days after commencing injection, and no less frequently than annually thereafter, Lucid shall consult with OCD regarding the immediate notification parameters. If OCD determines that the immediate notification parameters should be modified, Lucid shall provide modified parameters within 30 days of notification for review by OCD.

17. No later than 30 days after the fifth year of injection, Lucid shall submit to OCD a report summarizing the Well's performance, including injected volumes by fluid type, change in reservoir pressures, the models used in the Application calibrated using that information, and seismic modeling. Lucid shall provide an in-person presentation of the report to the Commission at its request.

18. Lucid shall construct the Well in accordance with the specifications stated in the C-108 application, including the use of corrosion-resistant casing or cement in the proposed injection interval in the Silurian-Devonian formations and the existing injection interval for the Red Hills AGI No. 1 well (API No. 30-025-40448) in the Delaware Mountain Group.

19. Lucid shall install, operate, and monitor for the life of the permit a seismic monitoring station or stations as directed by the Manager of the New Mexico Tech Seismological Observatory ("state seismologist") at the New Mexico Bureau of Geology and Mineral Resources. OCD shall be responsible for coordinating with the state seismologist for appropriate specifications for the equipment and the required reporting procedure for the monitoring data.

20. The injection authority herein granted shall terminate two years after the effective date of this order if Lucid has not commenced injection operations. The OCD Director, upon written request of Lucid submitted prior to the expiration of this order, may extend this time for good cause shown.

21. In the event Lucid transfers ownership of the Well, Lucid shall seek approval of such change in ownership from the OCD pursuant to 19.15.9.9 NMAC.

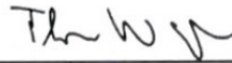
22. After thirty (30) years from the date of the Commission's order in this case, the authority granted by this order shall terminate unless applicant, or its successor in interest, shall make application before the Commission for an extension of its authority to inject.

DONE at Santa Fe, New Mexico on the 15th day of October, 2020.

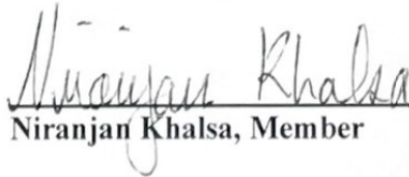
STATE OF NEW MEXICO  
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Adrienne Sandoval, M. E., Chair



Dr. Thomas Engler, P.E., Member



Niranjani Khalsa, Member