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DIVISION OF MINERALS

STATE OF NEVADA
COMMISSION ON MINERAL RESOURCES
DIVISION OF MINERALS
400 W. King Street, Suite 106
Carson City, Nevada 89703
(775) 684-7040 | Fax (775) 684-7052
http://minerals.nv.gov

Date Received	
API Number	27-013-90146
County	HUMBOLDT
Permit Number	1505
FOR DIVISION USE ONLY	

GEOHERMAL INJECTION WELL PERMIT APPLICATION

The applicant

NGP Blue Mountain I, LLC

Name (or Corporate/Business Name)

Street Address 15250 Blue Mountain Road

City Winnemucca State NV Zip Code 89445

Telephone 775-786-4322

Email larry.allen@cyrqenergy.com

hereby makes application for a geothermal development permit, State of Nevada, Division of Minerals.

Applicant is: Land Owner Lease Holder

Well Name: BM 31(34-22)-23

Lease Name/No: BNSF 197556 Split Estate? Yes No

Land Type: Federal (BLM, USFS, etc.) Private State

Type and Amount of Bond: Statewide Cash - \$50,000
(Exempt for Domestic Class)

Bond Issued by: Wilmington Trust

Serial No. 500-MIN02272013

Well Location: NE 1/4, NW 1/4, Section 23

Township 36N, Range 34E, County Humboldt

UTM Northing _____ N; UTM Easting _____ E (NAD83 Datum)

Operator's:

Name: NGP Blue Mountain I, LLC

Address: 15250 Blue Mountain Road

City, St Zip: Winnemucca, NV, 89445

Drilling Contractor's:

Name: TBD

Address:

City, St Zip:

Telephone:

Hole Size: See Attached Casing Size: See Attached Weight/Gauge: See Attached

Size of BOP: 2000 psi 3000 psi 5000 psi

Rotary Description:

See Attached Drilling Program for Details

Identify or locate the sources of the fluids which will be injected:

Geothermal water is produced from production wells located in Section 14, T36N, R34E. The produced geothermal water is co-mingled and flows through the geothermal power plant and is subsequently injected into wells located in Sections 14 and 15, T36N, R34E.

Estimated average daily volume of fluids injected 2,340,000 gallons.

Maximum daily volume of fluids injected ~ 2,880,000 gallons.

Estimated maximum injected pressure 1,000 psi, temperature 150-200 °F

List proposed metering equipment, pipelines and safety devices that will be used to prevent accidental pollution:

See Attached Drilling Program for Details

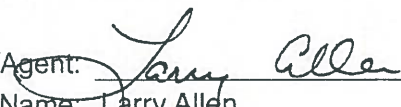
Total Depth to be Drilled: Approximately 8,073' TVD; 13,400' MD

Drilling will Commence On: 1st week of January 2021

Is this well location under an Underground Injection Permit?

If so, provide NDEP Permit number UNEV To be added to existing permit UNEV2007202

I certify this information to be true, correct, and complete and that no pertinent matter inquired about in this application has been omitted.

Signature of Applicant/Agent: 
Print Name: Larry Allen
Date: 10-8-2020

Please attach a detailed drilling program including the following information:

1. Well design schematic; casing and mud programs; potential water supply; drilling rig to be used and pad layout; blow out prevention equipment diagram and testing program; directional drilling information if applicable; map of location and access roads. Additional information may be required upon review.
2. The required fee per NAC 534A 210 or 534A.212.

CONDITIONS OF PERMIT

1. All permittees must comply with appropriate sections of the Geothermal Rules and Regulations of the Division of Minerals and with applicable rules and regulations of other local, state, and federal agencies.
2. During the drilling of geothermal injection wells, all water strata above the geothermal horizon being used must be sealed or separated in order to prevent their contents from passing into other strata.
3. All fresh water and water of value or possible value for other beneficial uses must be confined to their respective strata and be adequately protected by methods approved by the Division. Precautions must be taken in drilling and abandoning wells to guard against any loss of fresh water from the strata in which it occurs, and the contamination of any fresh water by objectionable water.
4. The operator of any well must shut off and exclude all water from any geothermal resource-bearing stratum to the satisfaction of the Division.
5. See attached Conditions of Approval.
6. Please send daily drilling reports to : Lowell Price.....lprice@minerals.nv.gov
and
Valerie Kneefel.....vkneefel@minerals.nv.gov
7. Additional Conditions/Comments

A.	
B.	
C.	

This permit does not extend the permittee the right of ingress and egress on public, private or corporate lands.

The issuance of this permit does not waive the requirements that the permit holder obtain other permits from State, Federal, and local agencies.

PERMIT APPROVAL

Approved 2/16/2021 with the conditions noted above.
Date

Permit Number 1505



Administrator
Division of Minerals



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STEVE SISOLAK
Governor

Las Vegas Office: 375 E. Warm Springs Rd, Ste 205, Las Vegas, NV 89119
Phone: (702) 486-4343; Fax: (702) 486-4345

MICHAEL VISHER
Administrator

GENERAL CONDITIONS OF APPROVAL FOR WELLS TO BE HYDRAULICALLY STIMULATED
(ADDITIONAL CONDITIONS OF APPROVAL MAY BE REQUIRED)

Operator: Cyrq Energy
Lease Name: BNSF 197566 (Private surface, enters NVN 77668 at depth)
Permit Number/Well: Permit 1505, Injection Well 31(34-22)-23

A COPY OF THESE CONDITIONS OF APPROVAL MUST BE FURNISHED
TO YOUR FIELD REPRESENTATIVE TO INSURE COMPLIANCE

Communications with the Division shall be directed to:

Lowell Price, Fluid Minerals Program Manager

Office 775-684-7045 Email lprice@minerals.nv.gov
Cell 775-721-1774
Fax 775-684-7052

Courtney Brailo, Field Specialist

Office 775-684-7046 Email cbrailo@minerals.nv.gov
Cell 775-721-2726
Fax 775-684-7052

Michael Visher, Division Administrator

Office 775-684-7044 Email mvisher@minerals.nv.gov
Cell 775-721-7625
Fax 775-684-7052

Voicemail is available on all cell phones and office phones. Please leave a message if you are unable to speak to someone and we will return your call as quickly as possible.

By provision of the current Memorandum of Understanding between NDOM and BLM, you may contact the following individuals for information or approvals if necessary. Approvals under the MOU apply to Fee and Federal lease locations.

John Menghini, Fluid Minerals Team, Petroleum Engineer, BLM Reno

Office 775-861-6573 Email jmenghin@blm.gov
Cell 775-223-1359
Fax 775-861-6711

Jose Rios, Fluid Minerals Team, Petroleum Engineer Technician, Reno

Office 775-861-6641 Email jrios@blm.gov
Cell 775-335-5934
Fax 775-861-6711

YOUR APPLICATION TO DRILL THE 31(34-22)-23 WELL, PERMIT XXXX, IS APPROVED
SUBJECT TO THE FOLLOWING PERMIT CONDITIONS

1. Approval of this APD does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon. In addition, approval of this APD does not imply that the operator has legal access to the drilling location. When crossing private surface and when crossing public surface off-lease the operator must have an approved right-of-way.
2. All operations shall conform to the Nevada Division of Minerals Geothermal Chapter 534A.
3. A complete copy of the approved drilling permit and conditions of approval (COA) must be at the drill site during the construction of the roads and drill pad, the drilling of the well, and the completion of the well.
4. The Fluid Minerals Program Manager with the Nevada Division of Minerals will be notified 24 hours prior to spudding well by either telephone or email.
5. Verbal notification shall be given to the Nevada Division of Minerals Fluid Minerals Program Manager at least 24 hours in advance of running and cementing casing (other than conductor casing), BOPE tests, and formation integrity tests (FIT). BOPE pressure curves, or test charts, are to be submitted to the Nevada Division of Minerals Fluid Minerals Program Manager by email at the completion of testing.
6. Type G Portland Cement is to be utilized for the cementing of all casing and liner strings, or as approved by the Administrator, or Deputy Administrator, of the Nevada Division of Minerals.
7. Surface casing is to be cemented to the surface. If cement does not completely circulate back to the surface, distance to the top of the cement is to be measured in the annular space and reported to the Nevada Division of Minerals Fluid Minerals Program Manager. A cement top job of the open annular space will be required. A sonic cement bond log (CBL) covering the surface casing from its casing shoe to the surface may be required by the Administrator, or Deputy Administrator, in the event significant loss of cement occurs during the cementing of the surface casing, as indicated by the amount of top job required. The CBL will be run over the surface casing prior to, or at, the next bit run in the intermediate bore hole, if required by the Administrator or Deputy Administrator. In the event a CBL does not document adequate cement occupying the annular space, the Administrator, or Deputy Administrator, may also require an ultrasonic cement bond log to be run. Digital copies of the cement bond log(s) and integrated interpretive log(s) will be provided to the Nevada Division of Minerals Fluid Minerals Program Manager as soon as digital versions are available.
 - A. Cement tickets and cement job report illustrating pressure/rate/density curves related to the cementing of surface casing are to be submitted via email to the Nevada Division of Minerals Fluid Minerals Program Manager at the completion of the cementing procedure.
 - B. A surface casing pressure test will be run prior to drilling out the surface casing shoe. Casing will be pressured to a minimum of 1,500 psig for a minimum of 15 minutes. The casing pressure test curve is to be submitted via email to the Nevada Division of Minerals Fluid Minerals Program Manager at the conclusion of the test.
8. The intermediate liner string is to be cemented from the liner shoe to the liner hanger. Additional cementing requirements may be invoked if the Administrator, or Deputy Administrator, of the Nevada Division of Minerals deems necessary.

- A. Cement tickets and cement job report illustrating pressure/rate/density curves related to the cementing of the intermediate casing are to be submitted via email to the Nevada Division of Minerals Fluid Minerals Program Manager at the completion of the cementing procedure.
 - B. An intermediate liner pressure test will be run prior to drilling out the intermediate casing shoe. The intermediate casing will be pressured to a minimum of 1,500 psig for a minimum of 15 minutes. The casing pressure test curve is to be submitted via email to the Nevada Division of Minerals Fluid Minerals Program Manager at the conclusion of the test.
 - C. A cement bond log (CBL) will be run over the intermediate liner from the intermediate liner shoe to the liner hanger in order to document adequate cement to the liner hanger. A digital copy of the CBL will be provided to the Nevada Division of Minerals Fluid Minerals Program Manager as soon as a digital version is available.
9. The production casing string is to be cemented to a minimum of 1,000 true vertical feet (TVD) above the horizontal plane of the wellbore. Horizontal plane is estimated to be at 8073 feet (TVD).
- A. Cement tickets and cement job report illustrating pressure/rate/density curves related to the cementing of the production casing are to be submitted to the Nevada Division of Minerals Fluid Minerals Program Manager at the completion of the cementing procedure.
 - B. A production casing pressure test will be run to a minimum of 3,000 psig for a minimum of 15 minutes. The pressure curve is to be submitted via email to the Nevada Division of Minerals Fluid Minerals Program Manager at the conclusion of the test.
10. Pressure curves for Blowout Prevention Equipment (BOPE) and Formation Integrity Tests (FIT) are to be submitted via email to the Nevada Division of Minerals Fluid Minerals Program Manager at the conclusion of the testing.
11. The Nevada Division of Minerals will be included on the daily morning operational report distribution list during the drilling/completion of the well, starting on spud date and through date of drill rig release, or date of completion rig and/or completion equipment release, whichever occurs last. The operational morning report is to be emailed to Lowell Price (lprice@minerals.nv.gov) and Valerie Kneefel (vkneefel@minerals.nv.gov). The operational morning reports will include date of report, the spud date, casing information such as size, grade, weight, hole size, setting depth, and as needed, the amount and type of cement used, top of cement, depth of cementing tools, casing test method, as well as lithological descriptions of section drilled; intervals perforated, tested, acidized, fractured and results obtained; and the dates all work was performed.
12. Any changes in the drilling and/or completion program require approval by the Administrator, or Deputy Administrator, of the Nevada Division of Minerals prior to any work being performed related to the change in operation. A sundry notice and the proposed change of procedure will be submitted to the Nevada Division of Minerals for approval. The submission of the sundry notice and the proposed change of procedure can be submitted by email.
13. A Hydrogen Sulfide (H₂S) Contingency Plan will be submitted when required by the Nevada Division of Minerals. However, minimum safety precautions must be taken at all times. Personal safety equipment, including a portable hydrogen sulfide detector situated in a position to detect gas from the well must be on location. If company policy requires a higher standard, the operator will supply the Nevada Division of Minerals with a copy of the company plan or requirement, if not already submitted.

14. A Well Completion Report will be filed with the Nevada Division of Minerals within thirty (30) days of the completion of drilling operations/release date of drill rig. If the well is to be completed prior to the drill rig being released, the Well Completion Report is due within thirty (30) days after completion operations are completed and drill rig is released. If a completion rig and/or completion equipment is brought onto location at a later date to complete the well, an amended Well Completion Report is to be filed with the Nevada Division of Minerals within thirty (30) days after completion rig and/or completion equipment is released. A complete set of daily operational reports are to be submitted with each Completion Report for the time period covered.
15. Two copies of all logs run on the well and one copy of the computed logs in electronic format such as LAS, are to be submitted to the Nevada Division of Minerals within 30 days of the date of being run. Two copies of the mud log are to be submitted within 30 days of the completion of drilling operations. Any data the company wants to remain confidential for a period of six months after drilling rig is released must be marked as "Confidential", or a separate written request for all of the well's down hole data to remain confidential for the six month period can be made to the Nevada Division of Minerals.
16. **The State of Nevada (NAC 522A.215) - Cuttings – requirements for permit. Samples of cuttings shall be collected and submitted to the Nevada Bureau of Mines and Geology (NBMG). The Nevada Division of Minerals conditions of approval further require a minimum of 30-foot sample intervals from surface to the surface casing shoe and 10-foot intervals from the surface casing shoe to total depth.**

TWO separate sets of cuttings are to be sent prepaid to the Great Basin Science Sample and Records Library, Nevada Bureau of Mines and Geology, 2175 Raggio Parkway, Reno, Nevada 89512. For more information call 775-682-8766 or e-mail nbmg@unr.edu.

EACH SET is to consist of at least 15 milliliters of cuttings per sampling interval that must be cleaned, dried, and placed into 3"x5" sample envelopes. The envelopes are to be placed in order by interval into common drill boxes with the approximate dimensions of 3"x5"x20". The envelopes are to be identified by the Nevada Division of Minerals permit number, well name/number as noted on the Application for Permit to Drill a Geothermal Well (Kettleman number alone will suffice if given), and depth interval.

The sets are to be PROPERLY IDENTIFIED as follows: Each box is to have legibly written on one end the name of the operator and well as noted on the Application for Permit to Drill a Geothermal Well, Division permit number, total interval (missing intervals noted), and set number.

NOTE: the cuttings are not to be sent to the Nevada Division of Minerals. The cuttings are due within 15 days of completion of the well. The operator will be responsible for the cost of any further handling of the samples by NBMG required to meet standards set out in this permit condition.

17. **No well fracture stimulation process shall be initiated without review of the intermediate liner and production casing cement bond logs by the Nevada Division of Minerals, and subsequent approval by the Administrator, or Deputy Administrator, of the Nevada Division of Minerals. A sundry notice detailing the completion program procedure of the fracture stimulation process, and the intervals to be perforated, must be submitted by the operator to the Nevada Division of Minerals for approval before any such operation is to begin.**

18. Prior to the hydraulic stimulation completion process, the operator will provide the Nevada Division of Minerals the following: (1) the number of stages to be utilized, (2) measured depth/ true vertical depth to each stage, (3) the length of each stage, (4) all intervals to be perforated in measured depth/true vertical depth, and (5) number of shots per foot, diameter of perforations, and (6) estimated hydraulic pressures to be utilized.
19. All pressures applied during the hydraulic stimulation process will be monitored and recorded. Maximum hydraulic pressure is not to exceed the burst rating of the production casing or liner, or a lower maximum hydraulic pressure as determined/approved by the Administrator, or Deputy Administrator, of the Nevada Division of Minerals.
20. Recorded hydraulic stimulation pressures will be provided to the Nevada Division of Minerals at the completion of the fracture stimulation process.
21. Any additions to, or substitutions of, chemicals from list supplied with approved application proposed to be used in a hydraulic stimulation operation will be provided to the Nevada Division of Minerals at least 14 days before the hydraulic stimulation operation is to begin. The listing shall include the following: trade name, supplier, purpose, ingredients, Chemical Abstract Service Number [CAS#], maximum ingredient concentration in additive [% by mass], and maximum ingredient concentration in hydraulic stimulation fluid [% by mass]. **Operator must submit a sundry notice to the Nevada Division of Minerals at least 30 days before a completion operation is to take place for any chemicals to be used during the hydraulic stimulation process that are not posted on the Nevada Division of Minerals web site.**
22. The source and estimated volume of fresh water required for each well stimulation process will be identified and provided to the Nevada Division of Minerals.
23. The Nevada Division of Minerals is to be informed as to how fresh water for the hydraulic stimulation completion operation will be stored at well site. Additional approvals from the Nevada Division of Environmental Protection will be required if fresh water to be used for hydraulic stimulation is to be stored in a lined surface pit rather than enclosed steel holding tanks.
24. Stimulation fluids that are backwashed from the wellbore at the conclusion of the hydraulic stimulation process are to be placed and stored in enclosed tanks. Approval by the Nevada Division of Environmental Protection will be required if an alternative storage of the wastewater is to be used. The method and location for final disposal of the backwashed fluids must be approved by the Nevada Division of Minerals before any backwash fluids can leave the well pad location.
25. All wells, whether drilling, producing, suspended or abandoned shall be identified by a sign or marker with the name of the operator, the well number, and the surveyed description of the well. The sign or marker will also have the BLM lease serial number if the well is located on or enters a Federal lease at depth.
26. No well abandonment operations will be commenced without the prior approval of the Nevada Division of Minerals. A sundry notice along with the plugging and abandonment procedure will be submitted to the Nevada Division of Minerals for approval.
27. Upon completion of approved plugging, a well identification marker will be erected at the wellsite location. The following information will be permanently placed on the marker: operator name, well name and number, location by quarter/quarter section, township, range, and federal lease number (if location is on a federal lease, or if wellbore enters a federal lease at depth).

28. A Well Plugging Report (Form 12) will be submitted within thirty (30) days following the actual plugging of the wellbore.
29. Lessees, operators, have the responsibility to see that their exploration, development, production, and construction operations are conducted in such a manner which conforms to applicable State of Nevada laws and regulations, as well as Federal laws and regulations if exploration, development, production, and construction operations are being conducted on, or impact, a Federal lease.
30. All undesirable events (fires, accidents, blowouts, spills, and discharges) will be orally reported to the Fluid Minerals Program Manager, or the Administrator of the Nevada Division of Minerals, immediately. These events will be followed with a written report within fifteen (15) days. The Nevada Division of Environmental Protection will also be notified of blowouts and abnormal surface spills and discharges through their 24 hour telephone notification hotline (in-state 1-888-331-6337, out of state 1-775-687-9485).
31. The enclosed Abandoned Mine brochures shall be posted in common personnel areas at the well site. The operator shall inform all drilling personnel and contractors associated with the drilling of the well of potential dangers, including bodily injury and death, associated with the exploration of abandoned mine workings, as well as the disturbance of possible bat habitats.