

STATE OF ALASKA  
DEPARTMENT OF NATURAL RESOURCES

Competitive Geothermal Resources Lease ADL NO.

THIS LEASE is entered into between the State of Alaska, "the state," and

"the lessee."

In consideration of the cash payment made by the lessee to the state, which payment includes the first year's rental, and any required cash bonus, and subject to the provisions of this lease, including any exhibits and addendums attached to this lease, and by reference incorporated in this lease, the state and the lessee agree as follows:

1. GRANT. (a) The state grants to the lessee:

(1) the exclusive right to explore for, develop, or use all of the geothermal resources in or upon the following tract of land:

containing approximately \_\_\_\_\_ acres, more or less (referred to as the "leased area"); and

(2) the right, subject to reasonable concurrent uses as determined by the state, to use the surface to explore for, develop, or use geothermal resources located within the leased area, subject to the lessee obtaining the required federal, state, borough and municipal agency approvals, as required by law, such approval not to be unreasonably withheld

(b) For the purposes of this lease, the leased area contains the legal subdivisions as shown on the attached plat marked Exhibit A.

(c) The state makes no representations or warranties, express or implied, as to title, or access to, or quiet enjoyment of, the leased area. The state is not liable to the lessee for any deficiency in title to the leased area, nor is the lessee or any successor in interest to the lessee entitled to any refund due to deficiency in title for any rentals, bonuses, or royalties paid under this lease.

2. RESERVED RIGHTS. (a) The state reserves all rights not expressly granted to the lessee by this lease. These reserved rights include:

- (1) The right to conduct geological and geophysical surveys within the leased area;
  - (2) The right to explore for, develop, and remove natural resources other than geothermal resources on or from the leased area;
  - (3) The right to establish or grant easements and rights-of-way upon, through, or within the lease area for any lawful purpose;
  - (4) The right to dispose of land within the leased area for well sites and well bores of wells drilled from or through the leased area to explore for or produce geothermal resources in and from lands not within the leased area; and
  - (5) The right otherwise to manage and dispose of the surface of the leased area or interests in that land by grant, lease, permit, or otherwise to third parties;
- (b) The rights reserved may be exercised by the state, or by any other person or entity acting under authority of the state, in any manner that does not unreasonably interfere with or endanger the lessee's operations under this lease.

3. TERM. This lease is issued for a primary term of ten (10) years from the effective date of this lease.

4. RENEWAL AND EXTENSION. (a) After the expiration of the primary term, this lease may be renewed for one additional term of five years if, at the end of the primary term, the lessee is diligently conducting operations necessary to drill a geothermal well, with equipment at the lease area of sufficient size and capacity to drill to the total depth proposed for the well.

(b) This lease will be extended automatically if it is committed to a unit approved or prescribed by the state and will remain in effect for long as it remains committed to that unit.

(c) This lease will be extended for the duration of commercial production of geothermal resources from the leased area.

(d) If the state issues a written direction to suspend operations or production from the leased area or issues a written approval of such action, a period of time equivalent to the period of suspension will be added to the lease term.

(e) If the state determines that the lessee has been prevented by force majeure, after efforts made in good faith, from performing any act that would extend the lease, it will not expire during the period of force majeure and the state will grant a reasonable extension of time which may be different than the period of force majeure.

(f) Nothing in subparagraph (c) or (d) suspends the obligation to pay royalties or other production or profit-based payments to the state from operations on the leased area that are not affected by any suspension or force majeure, or suspends the obligation to pay rentals.

5. RENTALS. (a) The lessee shall pay annual rental to the state in the amount of \$3.00 per acre or fraction of an acre, provided that the state may adjust the annual rental rate as provided by applicable law beginning 20 years after the commencement of commercial production and at ten year intervals thereafter.

(b) The lessee shall pay the annual rental to the state in advance, on or before the annual anniversary date of this lease. If the state's (or depository's) office is not open for business on the annual anniversary date of this lease, the time for payment is extended to include the next day on which that office is open for business. If the annual rental is not paid timely, this lease automatically terminates as to both parties at 11:59 p.m., Alaska Standard Time, on the date by which the rental payment was to have been made.

(c) The rental for a year shall be credited against royalties accruing for that year.

6. RECORDS. (a) The lessee shall maintain records showing the development and production (including records of development and production expenses) and disposition (including records of sales prices, volumes, and purchasers) of all geothermal resources produced from the leased area. The lessee shall permit the state or its agent to examine these records at all reasonable times, and to make copies of those records. Upon request by the state, the lessee's records shall be made available to the state at the state office designated by the state. The lessee's records of development, production, and disposition must employ methods and techniques that will ensure the most accurate figures reasonably available. The lessee shall use generally accepted accounting principles (GAAP) consistently applied for its financial accounting records. The state is entitled to review all other relevant documents including those not subject to GAAP.

(b) The lessee shall maintain accurate records of lease ownership and secondary overriding royalty interest ownership and shall submit the information to the state within 15 days upon receipt of request.

7. APPORTIONMENT OF ROYALTY FROM APPROVED UNIT. The landowners' royalty share of the unit production allocated to each separately owned tract shall be regarded as royalty to be distributed to and among, or the proceeds of it paid to, the landowners, free and clear of all unit expense and free of any lien for it. Under this provision, the state's royalty share of any unit production allocated to the leased area will be regarded as royalty to be distributed to, or the proceeds of it paid to, the state, free and clear of all lease or unit expenses (and any portion of those expenses

incurred away from the unit area), including, but not limited to, expenses for separating, cleaning, dehydration, gathering, and saltwater disposal, and free of any lien for them.

8. PAYMENTS. All payments to the state under this lease must be made payable to the State of Alaska, Department of Natural Resources in the manner directed by the state, and unless otherwise specified, must be tendered to the state at:

DEPARTMENT OF NATURAL RESOURCES  
ATTENTION: FINANCIAL SERVICES SECTION  
550 West 7th Avenue, Suite 1410  
Anchorage, Alaska 99501-3561

or in person at either of the Department's Public Information Centers located at:

550 W. 7th Avenue, Suite 1260  
Anchorage, Alaska

3700 Airport Way  
Fairbanks, Alaska

or to any depository designated by the state with at least 60 days notice to the lessee.

9. PLAN OF OPERATIONS. (a) Except as provided in (b) of this section, a plan of operations for all or part of the leased area must be approved by the state before any operations may be undertaken on or in the leased area.

(b) A plan of operations is not required for activities that would not require a land use permit under AS 38.05 and 11 AAC.

(c) The lessee shall meet with the state annually to discuss lessee's ongoing operations, and any plans for future exploration, development and operation, as such operations or plans relate to the leased or unitized area.

10. PLAN OF EXPLORATION. Within one year after the issuance of this lease, the lessee shall submit to the state for approval a proposed plan of exploration that describes the lessee's plans for exploring the leased area, as set out in 11 AAC 84. No exploration of the leased area may occur until a plan of exploration has been approved by the state.

11. PLAN OF DEVELOPMENT. Before commencing development activities, the lessee shall submit to the state for approval a proposed plan of development that describes the lessee's plans for developing the leased area, as set out in 11 AAC 84. No development of the leased area may occur until a plan of development has been approved by the state. The plan of development shall be submitted by the ninth anniversary of the lease.

12. INFORMATION ACQUIRED FROM OPERATIONS. (a) The lessee shall submit to the state, at the Department of Natural Resources, Division of Oil and Gas (Division) all geological, geophysical, and engineering data obtained from the lease within 30 days following completion, abandonment, or suspension of each well, pilot hole, and plugged back well bore. The lessee shall also submit to the Division on behalf of the state, data acquired subsequent to completion, abandonment, or suspension of each well, pilot hole, and plugged back well bore within 30 days following acquisition of those data. The Division, on behalf of the state, may waive receipt of operational data from some development, service, or injection wells, and will inform the operator of the waiver in writing prior to data submittal.

Data shall be submitted according to the instructions set out in Attachment 1.

Submission of data under this paragraph does not affect any statutory or regulatory obligation to submit data or other information to the state or any of its agencies.

(b) Any data submitted to the state, at the Department of Natural Resources, Division of Oil & Gas will be available at all times for use by the state and its agents, and will be held confidential as provided in AS 38.05.035(a)(8) and its applicable regulations. In accordance with AS 38.05.035(a)(8)(c), in order for geological, geophysical, and engineering data to be held confidential, the lessee must request confidentiality at the time of submission and mark the data "CONFIDENTIAL" in compliance with applicable regulations.

13. DIRECTIONAL DRILLING. This lease may be maintained in effect by directional wells whose bottomhole location is within the leased area but that are drilled from locations on lands outside of this lease. In those circumstances, drilling will be considered to have commenced on the leased area when actual drilling is commenced on those other lands for the purpose of directionally drilling into the leased area. Production of geothermal resources from the leased area through any directional well surfaced on those other lands, or drilling or reworking of that directional well, will be considered production or drilling or reworking operations on the leased area for all purposes of this lease. Nothing contained in this paragraph is intended or will be construed as granting to the lessee any interest, license, easement, or other right in or with respect to those lands in addition to any interest, license, easement, or other right that the lessee

may have lawfully acquired from the state or from others.

14. DILIGENT AND SAFE DEVELOPMENT AND PREVENTION OF WASTE. (a) All operations on or into the leased area shall be carried on in a safe and workmanlike manner; in compliance with all state, federal, borough or municipal permits and authorizations; in accordance with generally accepted, good engineering practice; with due regard for the protection of life and property, preservation of the environment and conservation of natural resources; and in such a manner as to avoid damage to and waste of geothermal and non-geothermal natural resources. The lessee shall carry out, at the lessee's expense, all orders and requirements of the state relative to the prevention of waste and to the preservation of the leased area. If the lessee fails to carry out these orders, the state will have the right but not the obligation, together with any other available legal recourse, to enter the leased area to repair damage or prevent waste at the lessee's expense.

(b) The lessee shall exercise reasonable diligence as determined by the state in drilling, producing, and operating wells on the leased area unless consent to suspend operations temporarily is granted by the state.

(c) Metering equipment shall be maintained and operated so that it will meet acceptable standards of accuracy in order to measure production from the leased area. Use of such equipment shall be discontinued at any time the state determines that acceptable standards of accuracy are not being maintained. Production shall be stopped until measurement accuracy has been obtained.

(d) Upon development of a geothermal resource on the leased area, the lessee or his agent shall determine whether methods to enhance energy recovery are feasible. The lessee shall conduct studies that evaluate reinjection of spent geothermal liquids, injection of source water or brine for the purpose of energy extraction or means of enhancing energy recovery by improvement of producibility. Results of such evaluations shall be included in the lessee's Plan of Development, and reports, evaluations and conclusions shall be filed with the state.

15. OFFSET WELLS. In the event any well is completed or in commercial production after the effective date of this lease on other than state land, with any part of its producing interval within 1000 feet from the exterior boundary of this lease and within the same geothermal system, or if drainage is a material risk, then the state may notify the lessee in writing to commence drilling an offset well, and within reasonable time, not to exceed 120 days, the lessee shall commence operations for drilling an offset well on the leased area or shall unitize with the well that is draining state land or pay compensatory royalty to the state. An offset well shall mean a well in which the producing interval is situated in the leased area within 1000 feet of the exterior boundary of the lease nearest to the producing interval of the well to be offset. Wells drilled into an approved geothermal unit shall not create an obligation to drill an offset well as to any portion of the leased area that is included within such unit and participating in the revenue.

16. INSPECTION. The lessee shall keep open at all reasonable times, for inspection by any duly authorized representative of the state, the leased area, all wells, improvements, machinery, and fixtures on the leased area, and all reports and records relative to operations, surveys, or investigations on or with regard to the leased area or under this lease. Upon request, the lessee shall furnish the state with copies of and extracts from any such reports and records.

17. UNITIZATION. As provided by law, the lessee may unite with others in collectively adopting and operating under a cooperative or unit agreement for the exploration, development, or operation of the geothermal system or part of the geothermal system that includes or underlies the leased area or any part of the leased area whenever the state determines and certifies that the cooperative or unit agreement is in the public interest.

18. SUSPENSION. The state may from time to time direct or approve in writing suspension of production or other operations under this lease.

19. ASSIGNMENT. This lease, or an interest in this lease, may, with the approval of the state, be assigned, subleased, or otherwise transferred to any person or persons qualified to hold a lease. No assignment, sublease, or other transfer of an interest in this lease, including assignments of working or royalty interests and operating agreements and subleases, will be binding upon the state unless approved by the state. The lessee shall remain liable for all obligations under this lease accruing prior to the approval by the state of any assignment, sublease, or other transfer of an interest in this lease. All provisions of this lease will extend to and be binding upon the heirs, administrators, successors, and assigns of the state and the lessee. Applications for approval of an assignment, sublease, or other transfer must comply with all applicable regulations and must be filed within 90 days after the date of final execution of the instrument of transfer. The state will approve a transfer of an undivided interest in this lease unless the transfer would adversely affect the interests of Alaska, or the application does not comply with applicable regulations. The state will disapprove a transfer of a divided interest in this lease if the transfers covers only a portion of the lease or a separate and distinct zone or geological horizon unless the lessee demonstrates that the proposed transfer of divided interest is reasonably necessary to accomplish exploration or development of the lease, the lease is committed to an approved unit agreement, the lease is allocated production within an approved participating area, or the lease has a well capable

of production in paying quantities. The state will make a written finding stating the reasons for disapproval of a transfer of a divided interest. Where an assignment, sublease, or other transfer is made of all or a part of the lessee's interest in a portion of the lease area, this lease may, at the option of the state or upon request of the transferee and with the approval of the state, be severed, and a separate and distinct lease will be issued to the transferee having the same effective date and terms of this lease.

20. SURRENDER. The lessee may at any time file with the state a written surrender of all rights under this lease or any portion of the leased area comprising one or more legal subdivisions or, with the consent of the state, any separate and distinct zone or geological horizon underlying the lease area or one or more legal subdivisions of the leased area. That surrender will be effective as of the date of filing, subject to the continued obligations of the lessee to make payment of all accrued royalties and to place all wells and surface facilities on the surrendered land in condition satisfactory to the state for suspension or abandonment. After that, the lessee will be released from all obligations under this lease with respect to the surrendered lands.

21. TERMINATION FOR DEFAULT. Failure of the lessee to perform timely its obligations under this lease, or the failure of the lessee otherwise to abide by all express and implied provisions of this lease, is a default of the lessee's obligations under this lease. The state may terminate this lease in an administrative proceeding whenever the lessee fails, within 60 days after written notice of that default, to begin and diligently prosecute operations to remedy that default. Failure to submit a plan of exploration or plan of development for approval in a timely fashion may result in termination.

22. RIGHTS UPON TERMINATION. Upon the expiration or earlier termination of this lease as to all or any portion of the leased area, the lessee will be directed in writing by the state and will have the right at any time within a period of one year after the termination, or any extension of that period as may be granted by the state, to remove from the leased area or portion of the leased area all machinery, equipment, tools, and materials. Upon the expiration of that period or extension of that period and at the option of the state, any machinery, equipment, tools, and materials that the lessee has not removed from the leased area or portion of the leased area become the property of the state or may be removed by the state at the lessee's expense. At the option of the state, all improvements such as roads, pads, and wells must either be abandoned and the sites rehabilitated by the lessee to the satisfaction of the state, or be left intact and the lessee absolved of all further responsibility as to their maintenance, repair, and eventual abandonment and rehabilitation. Subject to the above conditions, the lessee shall deliver up the leased area or those portions of the leased area to the satisfaction of the state.

23. DAMAGES AND INDEMNIFICATION. (a) No rights under this lease may be exercised by the lessee until the lessee has provided to pay the owner of another estate in the land subject to this lease, his lessees and permittees, full payment for all damages that may be sustained by the owner by reason of the exercise of the rights granted by this lease. If the owner for any reason does not settle the damages, the lessee may enter the land after posting a surety bond determined by the state, after notice and an opportunity to be heard, to be sufficient as to form, amount, and security to secure to the owner, his lessees and permittees, payment for damages, and may institute legal proceedings in a court of competent jurisdiction where the land is located to determine the damages which the owner of the land may suffer. The lessee agrees to pay for any damages that may become payable under AS 38.05.130 and to indemnify the state and hold it harmless from and against any claims, demands, liabilities, and expenses arising from or in connection with such damages.

(b) The lessee shall indemnify the state for, and hold it harmless from, any claim, including claims for loss or damage to property or injury to any person caused, directly or indirectly, by or resulting from any act or omission committed under this lease by or on behalf of the lessee. The lessee is not responsible to the state under this subparagraph for any loss, damage, or injury caused by or resulting from the sole negligence of the state.

(c) The lessee acknowledges that the lease is in the vicinity of an active volcano, and that working near a volcano carries inherent risks. The lessee assumes all risks of harm created directly or indirectly by the volcano and shall indemnify the state for, and hold it harmless from, any claims, including claims for loss or damage to property or injury to any person caused, directly or indirectly, by the volcano to lessee or any of lessee's licensees or invitees.

(d) The lessee expressly waives any defense to an action for breach of a provision of this lease or damages resulting from any harm to the environment that is based on an act or omission committed by an independent contractor in the lessee's employ. The lessee expressly agrees to assume responsibility for all actions of its independent contractors.

24. BONDS. (a) The lessee shall furnish a bond prior to the commencement of lease operations in an amount established by the state and must maintain that bond as long as required by the state.

(b) The state may, after notice to the lessee and a reasonable opportunity to be heard, require a bond in a reasonable amount greater than the amount specified by law where a greater amount is justified by the nature of the surface and its uses, the degree of risk, and the nature of the activity involved in the types of operations being or to be carried out under this lease. A statewide bond will not satisfy any requirement of a bond imposed under this

subparagraph, but may be considered by the state in determining the need for and the amount of any additional bond under this subparagraph.

25. AUTHORIZED REPRESENTATIVES. The Director of the Division of Oil and Gas, Department of Natural Resources, State of Alaska, and the person executing this lease on behalf of the lessee shall be authorized representatives for their respective principals for the purposes of administering this lease. The state or the lessee may change the designation of its authorized representative or the address to which notices to that representative are to be sent by a notice given in accordance with Paragraph 25 below. Where activities pursuant to a plan of operations are underway, the lessee shall also designate, pursuant to a notice under Paragraph 25 below, by name, job title, and address, an agent who will be present in the state during all lease activities.

26. NOTICES; PROTEST. (a) Any notices required or permitted under this lease must be by electronic media producing a permanent record or in writing and must be given personally or by registered or certified mail, return receipt requested, addressed as follows:

TO THE STATE:

DIRECTOR, DIVISION OF OIL AND GAS  
DEPARTMENT OF NATURAL RESOURCES  
550 WEST 7TH AVENUE, SUITE 1100  
ANCHORAGE, ALASKA 99501-3560

TO THE LESSEE:

representative.

(b) Any notice given under this paragraph will be effective when delivered to the above authorized

(c) A lessee who wishes to protest the amount of money due the state under the lease or any action of the state regarding a provision of this lease must file a written protest with the Division of Oil and Gas within 30 days after the mailing date of the state's notice or bill. A lessee who fails to file a protest within the required time waives any further right to protest. The state will establish the administrative appeal procedure to be followed and will inform the lessee of the procedure no later than 30 days after the filing of the written protest.

27. **STATUTES AND REGULATIONS.** This lease is subject to all applicable state, federal, borough, and municipal statutes, regulations, and ordinances in effect on the effective date of this lease, and insofar as is constitutionally permissible, to all statutes, regulations and ordinances placed in effect after the effective date of this lease. A reference to a statute or regulation in this lease includes any change in that statute or regulation whether by amendment, repeal and replacement, or other means. This lease does not limit the power of the State of Alaska or the United States of America to enact and enforce legislation or to promulgate and enforce regulations affecting, directly or indirectly, the activities of the lessee or its agents in connection with this lease or the value of the interest held under this lease. In case of conflicting provisions, statutes and regulations take precedence over this lease.

28. **INTERPRETATION.** This lease is to be interpreted in accordance with the law of the State of Alaska. The paragraph headings are not part of this lease and are inserted only for convenience. The state and the lessee expressly agree that any judicial proceeding affecting this lease shall be conducted in the state Superior Court, Third Judicial District, at Anchorage.

29. **INTEREST IN REAL PROPERTY.** It is the intention of the parties that the rights granted to the lessee by this lease constitute an interest in real property in the leased area.

30. **WAIVER OF CONDITIONS.** The state reserves the right to waive any breach of a provision of this lease, but any such waiver extends only to the particular breach so waived and does not limit the rights of the state with respect to any future breach; nor will the waiver of a particular breach prevent termination of this lease for any other cause or for the same cause occurring at another time. Notwithstanding the foregoing, the state will not be deemed to have waived a provision of this lease unless it does so in writing.

31. **SEVERABILITY.** If it is finally determined in a judicial proceeding that any provision of this lease is invalid, the state and the lessee may jointly agree by a written amendment to this lease that, in consideration of the provisions in that written amendment, the invalid portion will be treated as severed from this lease and that the remainder of this lease, as amended, will remain in effect.

32. **CONDITIONAL LEASE.** If all or a part of the leased area is land that has been selected by the State of Alaska under laws of the United States granting lands to the State of Alaska, but the land has not been patented to the State of Alaska by the United States, then this lease is a conditional lease as provided by law until the patent becomes effective. If for any reason the selection is not finally approved, or the patent does not become effective, any rental, royalty, or other production or profit-based payments made to the state under this lease will not be refunded.

33. **NONDISCRIMINATION.** The lessee and the lessee's contractors and subcontractors may not unlawfully discriminate against any employee or applicant for employment.

34. **ROYALTY ON PRODUCTION.** (a) The state's royalty share of production from the lease is not subject to lien and shall be paid to the state, free and clear of all costs including costs incurred for exploration, production, transmission, or transportation, and regardless of whether the costs are incurred on or off the lease.

(b) The lessee shall pay to the state a royalty of 1.75 percent in amount or value of:

(1) the gross revenues derived from the production, sale, or use of geothermal resources from the leased area during the first 10 years immediately following the date the geothermal resource first generates gross income and 3.5 percent of the gross revenues derived from the production, sale, or use of geothermal resources under the lease after that first 10-year period;

(2) the market value of the geothermal resources that are sold in other than a bona fide arm's length transaction between independent parties; and

(3) the market value of the geothermal resources consumed by the lessee.

(c) The state may adjust the royalty rates set out in subparagraph (b) above 20 years after the commencement of commercial production, and at intervals of not less than 10 years thereafter.

(d) With each production royalty payment, lessee shall submit to the state a statement of the geothermal resources produced, processed, used, shipped, or sold, including geothermal resources converted to other forms of energy, together with the price obtained or, where the substances are used without sale, an accounting of the



alternate uses of the energy with evidence of their fair market value, and such other information relating to valuation as the state may require.

35. ROYALTY IN VALUE. Except as provided in Paragraph 35, all royalties are to be paid to the state in value. All royalty payable in value to the state must be paid on or before the last federal banking day of the calendar month following the month in which the geothermal resources are produced. The amount of all royalty in value payments which are not paid when due under this lease or which are subsequently determined to be due to the state as the result of a redetermination will bear interest from the last federal banking day of the calendar month following the month in which the geothermal resources were produced, until the obligation is paid in full. Interest shall accrue at the rate provided by law.

36. ROYALTY IN KIND. (a) At the state's option, which may be exercised from time to time upon not less than 90 days notice to the lessee, the lessee must deliver all or a portion of the state's royalty due under this lease in kind. Delivery must be on the leased area or at a place mutually agreed to by the state and the lessee, and must be delivered to the State of Alaska or to any individual, firm, or corporation designated by the state.

(b) Royalty geothermal resources taken in kind must be delivered in merchantable condition.

(c) After having given notice of its intention to take, or after having taken its royalty on geothermal resources in kind, the state, at its option and upon 90 days notice to the lessee, may elect to receive a different portion or none of its royalty in kind. If, under federal regulations, the taking of royalty geothermal resources in value by the state creates a supplier-purchaser relationship, the lessee hereby waives its right to continue to receive royalty geothermal resources under the relationship, and further agrees that it will require any purchasers of the royalty geothermal resources likewise to waive any supplier-purchaser rights.

(d) If a state royalty purchaser refuses or for any reason fails to take delivery of geothermal resources, or in an emergency, and with as much notice to the lessee as is practical or reasonable under the circumstances, the state may elect without penalty to underlift for up to 180 days all or a portion of the state's royalty on geothermal resources produced from the leased or unit area and taken in kind. The state's right to underlift is limited to the portion of royalty geothermal resources that the royalty purchaser refused or failed to take delivery of, or the portion necessary to meet the emergency condition. Underlifted geothermal resources may be recovered by the state at a daily rate not to exceed ten (10) percent of its royalty interest share of daily production at the time of the underlift recovery.

37. REDUCTION OF RENTAL AND ROYALTY. The state may, after public hearing, reduce the lessee's obligation to pay royalty on all of the leased area or on any tract or portion of the leased area segregated for royalty purposes whenever the state determines that it is necessary to do so to promote development, or that the lease cannot be successfully operated under its terms. The state may also waive, suspend, refund or reduce the rental on all or any portion of the leased area in accordance with the applicable statutes and regulations.

38. BINDING EFFECT. The state and the lessee agree that this lease, including all attachments and documents that are incorporated in this lease by reference, contains the entire agreement between the parties, and each of the covenants and conditions in this lease including any attachments will be binding upon the parties and upon their respective heirs, administrators, successors and assigns.

39. DEFINITIONS. All words and phrases used in this lease are to be interpreted where possible in the manner required in respect to the interpretation of statutes by AS 01.10.040 and AS 01.10.050. However, the following words have the following meanings unless the context unavoidably requires otherwise:

(1) "drilling" means the act of boring a hole to reach a proposed bottom hole location through which geothermal resources may be produced;

(2) "force majeure" means war, riots, act of God, unusually severe weather, or other acts of nature.

(3) "geothermal system" means a stratum, pool, reservoir, or other geologic formation containing geothermal resources;

(4) "commercial production" means production of geothermal resources in quantities sufficient to yield a return in excess of operating costs, even if drilling and equipment costs may never be repaid and the undertaking considered as a whole may ultimately result in a loss.

40. EFFECTIVE DATE. This lease takes effect on \_\_\_\_\_.

BY SIGNING THIS LEASE, the state, as lessor, and the lessee agree to be bound by its provisions.

STATE OF ALASKA

By: \_\_\_\_\_  
Derek W. Nottingham  
Director, Division of Oil and Gas

STATE OF ALASKA        )  
  ) ss.  
Third Judicial District    )

This is to certify that on \_\_\_\_\_ before me appeared \_\_\_\_\_, of the Division of Oil and Gas of the State of Alaska, Department of Natural Resources, and who executed this lease and acknowledge voluntarily signing it on behalf of the State of Alaska as lessor.

\_\_\_\_\_  
Notary public in and for the State of Alaska  
My commission expires \_\_\_\_\_

LESSEE \_\_\_\_\_

Signature \_\_\_\_\_

Printed Name/Title \_\_\_\_\_

INSERT NOTARY AND ACKNOWLEDGEMENT STATEMENT OF LESSEES HERE.

## Attachment 1: Submittal of Well Data Required by Lease

Data shall be submitted to the Division via an operator-run, secure FTP site or to the Division's data submittal email address, [DOG.REdata@alaska.gov](mailto:DOG.REdata@alaska.gov). Email attachment size is limited to 20 MB. Files larger than 20 MB may need to be sent via FTP. Instructions for accessing the operator-run FTP site should be sent before submitting data.

For spreadsheets, include the original Excel document. For images such as maps or charts, include a high-resolution TIFF or JPEG. For logs, see formats specified below, but include a graphical image file of logs as a PDF or TIFF in addition to the final merged data file of the log curves. Provide data for each well, pilot hole, and plugged back wellbore. Required data include:

Category	Item No	Type	Clarification
<b>Forms</b>	1	Completion Report (AOGCC form 10-407)	One for each wellbore
	2	Permit to Drill (AOGCC form 10-401)	Include as-built survey of well surface location
	3	Open Flow Potential Test (AOGCC form 10-421)	Include report and all attachments
<b>Reports</b>	4	Daily drilling reports	Summary report is acceptable
	5	List of all logs run	Include depth interval covered for each well
	6	List of formations and geologic markers observed	Include measured depths (MD) and true vertical depths (TVD)
	7	Directional surveys	Include a spreadsheet or plain text file in addition to the formatted report.
	8	Coordinates for completed surface and bottomhole locations	Latitudinal and longitudinal coordinates can be based upon either the NAD 83 or NAD 27 geodetic datum, provided it is clearly specified
	9	Summary of cored intervals (conventional and sidewall)	Include depth, formation name, lithology, presence of oil, gas, gas hydrates, and water, porosity, fractures and apparent dips
	10	Core reports	Include lab analyses of lithology, porosity, permeability (vertical and horizontal, air and liquid), density, capillary pressure, and fluid saturation, if applicable
	11	Core photos	Conventional and sidewall (white light and ultraviolet), if applicable
	12	Hydrocarbon shows	Identified formation names and corresponding depths for oil, gas, and gas hydrate shows.
	13	Pressure zones	Identified depth zones of abnormal pressure.
	14	Summary of testing and all fluid recovery efforts	Include production tests (IP), drill stem tests (DST), wireline formation tests (e.g. repeat formation tests (RFT) and modular dynamics tests (MDT)), and any other production and formation testing data; the summary should include test date, time, depth, formation name, method of operation, recovered fluid type(s) and amount(s), fluid rate, gas-oil ratio (GOR), oil gravity, pressure, and choke size, when available.
	15	Pressure analysis reports	Pressure build-up and fluid PVT analyses
	16	Well test procedures, field chronologies, and field data	Include details for evaluation (intervals open to test; volumes of oil, gas, water, mud, and other borehole substances; API gravity; gas density; wellhead and downhole pressure; and formation and wellhead temperature)
	17	Fluid analysis reports	Geochemical and formation fluid analyses and reports

<b>Reports</b>	18	Fluid sampling procedures	Downhole and surface fluid sampling procedures, field chronologies, raw data, and laboratory test results for all water and hydrocarbon-bearing zones (oil, gas, gas hydrates) sampled; including details sufficient to fully evaluate quality of sample data.
<i>continued</i>	19	Coalbed core, gas, and water quality reports	Include lab analyses of core lithology, coal rank, vitrinite reflectance, maceral composition, total organic carbon, ash, sulfur and BTU content, moisture content, cleating, adsorption/desorption data, residual gas measurements, porosity and permeability analyses, core photos, if applicable.
	20	Final reports of velocity, checkshot or VSP surveys	Submit reports with an ASCII format digital version of the data, including seismic profile data in SEG-Y format. Indicate "none" in your response to this request if no velocity, checkshot, or VSP surveys were taken. <i>Submission of velocity, checkshot, and VSP surveys is always required by DNR under the operator surface-use permit obligations.</i>
<b>Logs &amp; Data</b>	21	Final merged open- and cased-hole logs	LAS Version 2, TAP, TIF, LIS and DLIS (if available) files, including specialty logs (such as Schlumberger's cyberlook, formation microscanners and dipmeter logs), measured-while-drilling (MWD) and logged-while-drilling (LWD) logs. Include image files of the 2-inch MD & TVD logs as a PDF or TIFF with the log data file.
	22	Final composite mudlog or lithology logs	LAS Version 2 of final log curves. Include a graphical image file of the final 2-inch MD & TVD logs, with lithology display, oil, gas, and gas hydrate show indicators, mud properties, and cuttings descriptions and report as a PDF or TIFF with the log data file.
	23	Clear, legible files of all well data and reports	Include paleontology, palynology, petrography (including point-count analyses), X-ray diffraction analyses, SEM micrographs, thermal maturity, vitrinite reflectance, total organic carbon, RockEval pyrolysis, geochronology, fission track analyses, fluid inclusion analyses, mercury injection capillary pressure analyses, chemical analyses (EPMA, XRF, ICP, etc.), isotope analyses, water chemistry, burial and temperature history analyses, strain analyses, acoustic analyses, gas hydrate analyses, and well pressure and temperature survey analyses.
	24	<i>Any other geoscience and engineering related datasets collected from the well(s).</i>	

Submitting data to the Division does not eliminate statutory, regulatory, or lease obligations to submit data, samples, or other information to the state, its agencies, or other lessors, including but not limited to:

- The Alaska Oil & Gas Conservation Commission (AOGCC); or
- The Alaska Department of Revenue Tax Division.