STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION DIVISION

TONEY ANAYA
GOVERNOR

POST OFFICE BOX 2088
STATE LAND OFFICE BUILDING
SANTA FE, NEW MEXICO 87501
(505) 827-5800

August 24, 1983

Mr. James Purdy
State Records Administrator
State Records Center and Archives
404 Montezuma
Santa Fe, New Mexico 87501

Case 7891

Dear Mr. Purdy:

On August 12, 1983, I attempted to file our Geothermal Rules with your office.

This attempt was unsuccessful because the geothermal rules carried many numbers identical to the Oil and Gas rules filed with you under current SRC rules. For example, both our oil and gas and geothermal rules contain a Rule 101.

To correct this matter with as little variation as possible from our historic practices, it is proposed to preface all geothermal rules with a letter G. The result would be oil and gas rules numbered Rule 1, Rule 2, Rule 101, Rule 102, etc., and geothermal rules numbered Rule G-1, Rule G-2, Rule G-101, Rule G-102, etc.

As this change requires public notice and hearing and as filing of all geothermal rules at one-time is an extensive task, we would like to be assured that this numbering system meets with your approval prior to its adoption and request confirmation of the same.

Sincerely,

R. L. STAMETS
Technical Support Chief

RLS/jc

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Ex. 1

MEMORANDUM

TO: ALL INTERESTED PARTIES

FROM: JOE D. RAMEY, DIRECTOR

SUBJECT: PROPOSED GEOTHERMAL RULE CHANGES

Attached are certain proposed rule changes affecting geothermal operations within this state. The attached material is arranged so that any new material is underlined and any former material which is being deleted has been bracketed and lined through. You will also note that those present Geothermal Rules and Regulations which are not subject to these proposed amendments are not included. Also included are revised Geothermal Bond Forms which are proposed for use on future bonds only.

These proposals are being circulated for review. A Commission Hearing relating to the adoption of these proposed rule changes is presently scheduled for June 1, 1983. Comments or suggestions may be submitted to the Division prior to this hearing date, or may be presented to the Commission for its consideration at that hearing.

dr/

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dr/

[~~A. DEFINITIONS~~] A.

RULE 0.1 DEFINITIONS

COMMISSION shall mean the Oil Conservation Commission.

CONDENSATE shall mean the liquid recovered from the condensation of gases or steam produced from a geothermal reservoir.

CORRELATIVE RIGHTS shall mean the opportunity afforded, insofar as is practicable to do so, the owner of each property in a geothermal reservoir to produce his just and equitable share of the geothermal resources within such reservoir, being an amount, so far as can be practicably determined, and so far as can be practicably obtained without waste, substantially in the proportion that the quantity of recoverable geothermal resources under such property bears to the total recoverable geothermal resources in the reservoir, and for such purpose to use his just and equitable share of the natural heat or energy in the reservoir.

DESIGNATED AGENT shall mean that person designated by the owner or operator of any geothermal resources well to be his agent in all matters concerning the keeping of records within the state.

DEVELOPMENT WELL shall mean a well drilled within the established limits of a designated geothermal field or within one mile thereof, for the commercial production of geothermal resources.

DISPOSAL WELL shall mean a well drilled or converted for the purpose of disposing of fluids into a formation other than a geothermal reservoir.

DIVISION shall mean the Oil Conservation Division of the New Mexico Energy and Minerals Department.

DRILLING OPERATIONS shall mean the actual drilling, redrilling, completion, or recompletion of a well for geothermal production or injection, including the running and cementing of casing, the performance of such operations as logging and perforating, and the installation of wellhead equipment.

EXPLORATORY WELL shall mean a well drilled for the discovery or evaluation of geothermal resources one mile or more beyond the established limits of a designated geothermal field.

GEOTHERMAL SECTION shall mean that section of the Oil Conservation Division charged with the authority and duty of regulating the drilling, development, and production of geothermal resources, and with conserving and preventing waste of geothermal resources within this state pursuant to the provisions of the Geothermal Resources Conservation Act.

GEOTHERMAL FIELD shall mean an area defined by the Division which contains a well, or wells, capable of commercial geothermal production. "Geothermal Field" includes "Low-Temperature Thermal Field."

GEOTHERMAL GRADIENT WELL (SEE THERMAL GRADIENT WELL)

GEOTHERMAL OBSERVATION WELL shall mean any ~~geothermal resources~~ well which is to be utilized for the express purpose of evaluating or monitoring a geothermal reservoir by pressure observation or limited production. [~~a well drilled solely for temperature observation purposes, and which shall not be completed as a geothermal producing well or as an injection well.~~]

GEOTHERMAL RESERVOIR shall mean any common source of geothermal resources, whether the fluids produced from the reservoir are native to the reservoir, or flow into or are injected into said reservoir.

GEOTHERMAL RESOURCES shall mean the natural heat of the earth, or the energy, in whatever form, below the surface of the earth present in, resulting from, created by, or which may be extracted from, this natural heat, and all minerals in solution or other products obtained from naturally heated fluids, brines, associated gases, and steam, in whatever form, found below the surface of the earth, but excluding oil, hydrocarbon gas and other hydrocarbon substances.

GEOTHERMAL RESOURCES AREA shall mean the same general surface area which is underlain, or appears to be underlain, by one or more formations containing geothermal resources.

GEOTHERMAL RESOURCES WELL (See WELL)

GEOTHERMAL WATERS shall mean the water or ~~[of]~~ brine produced from a geothermal reservoir.

INJECTION shall mean the placing of fluids in an underground stratum through a wellbore, whether by pressure at the surface or by gravity flow, and whether for disposal or other purpose.

INJECTION WELL shall mean a well drilled or converted for the purpose of injecting fluids into a geothermal reservoir.

LOG or WELL LOG shall mean a systematic detailed and correct recorded description of the lithologic sequence encountered while drilling a geothermal well.

LOW-TEMPERATURE THERMAL FIELD shall mean an area defined by the Commission which contains a well, or wells, capable of production of low-temperature thermal waters.

LOW-TEMPERATURE THERMAL WATER shall mean naturally heated water the temperature of which is less than boiling at the altitude of occurrence, which has value by virtue of the heat contained therein, and is found below the surface of the earth, or in warm springs on the surface.

LOW-TEMPERATURE THERMAL WELL shall mean a well drilled to produce low-temperature thermal water for the purpose of extracting heat for agricultural, commercial, industrial, municipal, or domestic uses.

MULTIPLE COMPLETION shall mean the completion of a well in such a manner as to produce from more than one geothermal reservoir.

OPERATOR shall mean any person drilling, maintaining, operating, producing, or in control of any well, and shall include "Owner" when any well is operated or has been operated or is about to be operated by or under the direction of the owner.

OWNER shall mean the person who has the right to drill into and to produce from any geothermal resources area, and to appropriate the geothermal resources thereof for himself or for himself and another.

PERSON shall mean any individual, firm, association, or corporation or any other group or combination acting as a unit.

POTENTIAL shall mean the properly determined ability of a well to produce geothermal resources under conditions prescribed by the Division.

TEMPORARY ABANDONMENT shall mean a state or period of suspended operations during which essentially continuous drilling, production, injection, storage, or work-over procedures have not taken place. Such period shall be 60 days for drilling wells and six months for all other classes of ~~[or]~~ wells.

THERMAL GRADIENT WELL shall mean a well drilled or used solely for temperature observation purposes, and which shall not be completed as a geothermal producing well or as an injection or disposal well.

UNORTHODOX WELL LOCATION shall mean a location which does not conform to the well location requirements established by the Geothermal Rules and Regulations of the Division.

WASTE shall mean any physical waste including, but not limited to, underground waste resulting from the inefficient, excessive or improper use or dissipation of reservoir heat or energy or resulting from the location, spacing, drilling, equipping, operation or production of a geothermal resources well in such a manner as to reduce or tend to reduce the ultimate economic recovery of the geothermal resources within a reservoir, and surface waste resulting from the inefficient production, gathering, transportation, storage, or utilization of geothermal resources, and the handling of geothermal resources in such a manner that causes or tends to cause the unnecessary or excessive loss or destruction of geothermal resources obtained or released from a geothermal reservoir.

WELL shall mean any exploratory well, development well, injection well, disposal well, thermal gradient well, geothermal observation well, or low-temperature thermal well, as defined herein.

C. DRILLING AND PRODUCTION

RULE 101. PLUGGING BOND

A. [~~(a)~~] Any person who has drilled or is drilling or proposes to drill any geothermal resources well shall post with the Division, and obtain approval thereof, a bond, in a form approved by the Division, conditioned to plug such well, if non-productive or when abandoned, in such a way as to confine all fluids in their native strata. Each such bond shall be executed by a responsible surety company authorized to transact business in the State of New Mexico and shall describe, or by subsequent rider describe, the name and exact location of the well, or wells, covered by the bond. Bonds may be either one-well bonds or multi-well bonds, in the amounts stated below in accordance with type of bond and depth of well(s): [~~The bond shall be in the amount prescribed below:~~]

(1) ONE-WELL BONDS

Projected Depth of Proposed Well or Actual Depth of Existing Well	Amount of Bond
Less than 500 feet deep ("shallow")	$2,000
500 feet to 2,000 feet deep ("intermediate")	$3,000
More than 2,000 feet deep ("deep")	$5,000

(a) Revised plans for an actively drilling shallow or intermediate well being drilled under a one-well bond may be approved by the Division for drilling as much as 15 percent deeper than the maximum depth on the well's bond, provided, however, any well drilled more than 15 percent deeper than the maximum allowed depth on the bond must be covered by a new bond in the amount prescribed for the deeper depth bracket, in which case the old bond will be released.

(2) MULTI-WELL BONDS

Projected Depth of Proposed Wells or Actual Depth of Existing Wells	Amount of Bond
Less than 500 feet deep ("shallow")	$10,000
500 feet to 2,000 feet deep ("intermediate")	$10,000
More than 2,000 feet deep ("deep")	$10,000

(a) Not more than ten shallow wells may be drilled under a $10,000 multi-well bond. A $2,000 one-well bond shall be posed for each additional shallow well drilled or an additional $10,000 multi-well bond must be posted for each additional ten (or portion thereof) shallow wells drilled.

(b) Not more than six intermediate wells may be drilled under a $10,000 multi-well bond. A $3,000 one-well bond shall be posted for each additional intermediate well drilled or an additional $10,000 multi-well bond must be posted for each additional six (or portion thereof) intermediate wells drilled.

(c) Not more than four deep wells may be drilled under a $10,000 multi-well bond. A $5,000 one-well bond shall be posted for each additional deep well drilled or an additional $10,000 multi-well bond must be posted for each additional four (or portion thereof) deep wells drilled.

(d) The $10,000 multi-well bond may be used to cover the drilling of a combination of wells, i.e., shallow and intermediate, shallow and deep, intermediate and deep, or shallow, intermediate and deep, provided however, that the $10,000 capacity of the bond shall be charged in an amount equal to the one-well bond requirement for each such combination well according to its depth.

(e) Revised plans for an actively drilling shallow or intermediate well being drilled under a multi-well bond may be approved for drilling as much as 15 percent deeper than the well's maximum depth bracket without affecting the bond. Any well drilled more than 15 percent deeper than its depth bracket, however, shall be placed in the next deeper depth bracket, and the $10,000 capacity of the multi-well bond charged accordingly. Additional bonding will be required in the event the capacity of the bond to cover the well in its new depth bracket is inadequate.

[~~(1) One-well geothermal exploratory, development, injection, or disposal well bond: $5,000;~~

~~(2) One-well low temperature thermal well or geothermal observation well bond: $2,000~~.

~~(3) Multiple well geothermal exploratory, development, injection, or disposal well bond: $10,000. (Not more than five such wells may be drilled under such bond. A $5,000 one well bond shall be posted for each additional well drilled or an additional $10,000 bond must be posted for each additional five wells or portion thereof drilled.)~~

~~(4) Multiple well low-temperature thermal well or geothermal observation well bond: $10,000. (Not more than ten such wells may be drilled under such bond. A $2,000 one well bond shall be posted for each additional well drilled or an additional $10,000 bond must be posted for each additional ten wells or portion thereof drilled.)~~]

B. [~~(b)~~] For the purposes of the Division, the bond required is a plugging bond, not a drilling bond, and shall endure until the well has been plugged and abandoned, and such plugging and abandonment approved by the Division. Transfer of the well or property does not release the bond. In case of transfer and the principal desires to be released from the bond, he shall proceed as follows:

(1) The principal on the bond shall notify the Division in writing that the well, or wells, covered by the bond are being or have been transferred to a certain transferee. The notice shall name the wells and shall give their exact location.

(2) On the same instrument the transferee shall recite that he accepts such transfer and accepts the responsibility for such well, or wells, under his bond which shall be tendered therewith.

(3) When the Division has approved the transfer, the transferor is immediately released of the plugging responsibility of the well, or wells, constitute all of the wells covered by the bond, such bond will be released by written notice from the Division to the principal and to the surety company.

C. [~~(c)~~] The Division Director is vested with power to act for the Division in all matters relating to this rule.

RULE 102. DRILLING PERMIT

(a) Prior to the commencement of operations, the owner or operator of any proposed well to be drilled for geothermal exploration, production, [~~or~~] observation, or thermal gradient, or for injection or disposal purposes, shall file Division Form G-101, Application for Permit to Drill, Deepen, or Plug Back-Geothermal Resources Well, and obtain approval thereof from the Division. Form G-101 shall be accompanied by Form G-102, Geothermal Resources Well Location and Acreage Dedication Plat.

(b) No permit shall be approved for the drilling of any well within the corporate limits of any city, town, or village of this state unless notice of intention to drill such well has been given to the duly constituted governing body of such city, town, or village or its duly authorized agent. Evidence of such notification shall accompany the application for a permit to drill (Form G-101).

RULE 103. SIGN ON WELLS

(a) Each well, other than a thermal gradient well, shall be identified by a sign, posted on the drilling rig or not more than 20 feet from the well. Such sign shall be of durable construction and the lettering thereon kept in legible condition. Lettering shall be such that under normal conditions it shall be legible at a distance of 50 feet. Each sign shall show the name of the owner or operator of the well, the name of the lease, the number of the well, and the location of the well by quarter-quarter section, township, and range. Each lease shall have a different and distinctive name, and the wells thereon shall be numbered in non-repetitive, logical sequence.

RULE 104. WELL SPACING

A. CLASSIFICATION OF WELLS

Any well, other than a thermal gradient well, a geothermal observation well, or a low-temperature thermal well, which is drilled a distance of one mile or more outside the boundary of any defined geothermal field and a distance of one mile or more beyond any well which is within one mile of such field, shall be classified as an exploratory well, and as such shall be spaced, drilled, operated, and produced in accordance with these Geothermal Rules and Regulations.

Any well, other than a thermal gradient well, a geothermal observation well, or a low-temperature thermal well, which is not an exploratory well as defined above shall be classified as a development well, unless such well is being drilled for injection or disposal purposes, in which case it will be appropriately classified.

Any well classified as a development well or injection or disposal well within a given geothermal field shall be drilled, operated, and produced in accordance with these Geothermal Rules and Regulations unless special rules in conflict therewith have been promulgated for such field, said special rules then being applicable.

B. ACREAGE AND WELL LOCATION REQUIREMENTS

(1) Exploration Wells

A well classified as an exploratory well shall be located on a designated drilling tract comprising at least 40 surface acres (being a quarter-quarter section of the U. S. Public Land Surveys, or a projection thereof if on unsurveyed land), and shall be located at least 330 feet from the outer boundary of the quarter-quarter section, at least 660 feet from the nearest such other well drilling to or capable of producing from or injection into the same formation to which it is projected, and at least 100 feet from any public road, street, or highway dedicated prior to commencement of drilling.

(2) Development Wells

A well classified as a development well shall be located on a designated drilling tract comprising at least 10 surface acres (being a quarter-quarter-quarter section of the U. S. Public Land Surveys or a projection thereof if on unsurveyed land), and shall be located at least 165 feet from the outer boundary of the quarter-quarter-quarter section, at least 330 feet from the nearest well drilling to or capable of production from or injection into the same geothermal reservoir to which it is projected, and at least 100 feet from any public road, street, or highway dedicated prior to commencement of drilling.

(3) Injection Wells

Injection wells drilled for the purpose of injecting into a geothermal reservoir shall be located at least 330 feet from the outer boundary of the lease or drilling parcel and at least 100 feet from any public road, street, or highway dedicated prior to commencement of drilling.

(4) Disposal Wells

There shall be no restriction as to the placement of geothermal disposal wells.

(5) [Geothermal Observation] Thermal Gradient Wells and Low-Temperature Thermal Wells

There shall be no restriction as to the placement of ~~[geothermal observation]~~ thermal gradient wells or low-temperature thermal wells.

C. NON-STANDARD LOCATIONS

(1) The Division Director shall have the authority to grant an exception to the well location requirements of Rules B (1), (2), and (3) above without notice and hearing when such application is based upon topographical or geologic or engineering considerations.

(2) Applications for such administrative approval shall be filed in duplicate and shall be accompanied by a plat showing the ownership of surrounding lands (within a 990-foot radius of the proposed location if application is for exception to Rule 104 B (1) Exploration Wells; within a 495-foot radius of the proposed location if application is for exception to Rule 104 B (2) Development Wells; within a 990-foot radius of the proposed location if application is for exception to Rule 104 B (3) Injection Wells) and all drilling or completed wells thereon. If the proposed non-standard location is based upon topography, the plat shall also show the existent topographical conditions. If it is based upon geologic or engineering considerations, the application shall be accompanied by a geologic or engineering analysis, explaining the necessity for the non-standard location.

(3) A copy of the application and accompanying plats and documents shall also be sent to the other owners, if any there be, within the above prescribed radii of the proposed non-standard location and the application shall state that such required copies have been so furnished. The Division Director may approve the non-standard location upon receipt of waivers from the above other owners or if no such other owner has entered an objection to the non-standard location within 20 days after receipt of the application by the Division. If such objection is received, the matter will be set for hearing if the applicant so desires. If the Director is not convinced of the necessity or desirability of such exception, he may require supplemental information to justify the exception, or set the matter for hearing if the applicant so desires.

D. OFFSETTING ACTION

Whenever an exception to the well location requirements is granted, the Division after hearing may take such action as may be necessary to offset any advantage the person securing the exception may gain over other owners within the same geothermal reservoir.

E. SPECIAL ACREAGE AND WELL LOCATION REQUIREMENTS

In order to prevent waste and protect correlative rights, the Division may, after notice and hearing, adopt different well location requirements and greater or lesser acreage dedication requirements than those contained in Rules 104 B (1), (2), and (3) above for a particular geothermal reservoir and may adopt special well location and acreage dedication requirements for a particular low-temperature thermal field.

RULE 105. ROTARY DRILLING AND CABLE TOOL DRILLING

Rotary drilling equipment, adequately equipped to contain underground pressures and prevent or control blowouts shall be used for the drilling of all geothermal resources wells except thermal gradient [~~geothermal observation~~] wells, low-temperature thermal wells and disposal wells, none of which will penetrate any high pressure zone or formation, in which case cable tools may be used.

RULE 106. DRILLING MUD AND MUD PITS

(a) In order to assure an adequate supply of drilling fluid to confine all natural fluids to their respective native strata and to prevent blowouts, each operator shall, prior to commencing drilling operations, provide a pit of adequate size to hold such drilling fluid and to receive drill cuttings, and such pit shall be so constructed and maintained to prevent contaminants from overflowing on the surface of the ground and/or entering any water course.

(b) The temperature of the return mud shall be monitored continuously during the drilling of the surface casing hole, and in the case of a thermal gradient well, shall be monitored to total depth. Either a continuous temperature recording device shall be installed and maintained in good working condition, or the temperature shall be measured manually and recorded at least one time each hour.

RULE 108. CASING AND CEMENTING REQUIREMENTS

A. All wells drilled for the production of geothermal resources, including low-temperature thermal wells, and all specialty wells, including injection and disposal wells, shall be cased and cemented in such a manner as to protect surface waters, if any, useable ground waters, geothermal resources, and life, health, and property. Thermal gradient [~~Geothermal observation~~] wells shall be drilled, completed, and plugged in such a manner as to protect surface waters, if any, and useable ground waters. The Division may require casing & cementing as ~~required~~ as is deemed necessary for such wells.

B. All casing strings reaching the surface shall provide adequate anchorage for blowout prevention equipment, hole pressure control, and protection for all natural resources. Although specifications for casing programs shall be determined on a well-to-well basis, the following general casing requirements should be used as guidelines in submitting Form G-101, Application for Permit to Drill, Deepen, or Plug Back-Geothermal Resources Well.

(1) Conductor Pipe. A minimum of 90 feet and a maximum of 200 feet. In special cases the Division may allow conductor pipe to be run and cemented at deeper depths. Annular space is to be cemented solid to the surface. An annular blowout-preventer or equivalent approved by the Division shall be installed on conductor pipe on exploratory wells and on development wells when deemed necessary by the Division. Note: For thermal gradient wells and low-temperature thermal wells the conductor pipe requirement may be reduced or waived by the Division.

The above conductor pipe requirements are not meant to be applicable to the single or double joint of large diameter pipe often run to keep mud out of the cellar.

(2) Surface Casing. Except in the case of thermal gradient wells and low-temperature thermal wells, the surface casing hole shall be logged with an electrical or radioactivity log, or equivalent, before running casing. Note: This requirement may vary from area to area, depending upon the amount of subsurface data available, and may be waived under certain conditions. Requests for exceptions to the logging requirement should be noted on Form G-101 when applying for a drilling permit.

Surface casing shall provide for control of formation fluids, for protection of useable ground water, and for adequate anchorage for blowout-prevention equipment. All surface casing shall be, if possible, cemented solid to the surface.

(a) Length of Surface Casing.

(1) In areas where subsurface geological conditions are variable or unknown, surface casing in general shall be set at a depth equalling or exceeding 10 percent of the proposed total depth of the well. A minimum of 200 feet and a maximum of 1,500 feet of surface casing shall be set.

(2) In areas of known high formation pressure, surface casing shall be set at a depth determined by the Division after a careful study of geological conditions. The Division will make such a determination within 30 days. Drilling shall not commence until such determination has been made.

(3) Within the confines of designated geothermal fields, the depth at which surface casing shall be set shall be determined by the Division on the basis of known field conditions. Requirements (a)(1) and (a)(2) above may be waived for low-temperature thermal wells.

(b) Cementing Point for Surface Casing

(1) In areas where subsurface geological conditions are variable or unknown, surface casing shall be set in accordance with (a) (1) above and through a sufficient series of low permeability, competent lithologic units (such as claystone or siltstone) to ensure a solid anchor for blowout-prevention equipment and to protect useable ground water and surface water from contamination. A second string of surface casing may be required if the first string has not been cemented through a sufficient series of low permeability, competent lithologic units and either a rapidly increasing thermal gradient or rapidly increasing formation pressures are encounted.

(2) In areas of known high formation pressure, surface casing shall be set in accordance with (a)(2) above and through a sufficient series of low permeability, competent lithologic units (such as claystone, siltstone, or basalt) to ensure a solid anchor for blowout-prevention equipment and to protect useable ground water and surface water from contamination. A second string of surface casing may be required, before drilling into the known high pressure zone is permitted, if the first string of surface casing has not been cemented through a sufficient series of low-permeability, competent lithologic units.

(3) Within the confines of designated geothermal fields, cementing point shall be determined by the Division on the basis of known field conditions. Requirements (b)(1) and (b)(2) above may be waived for low-temperature thermal wells.

(c) Return Mud Temperatures

(1) Return mud temperatures shall be entered into the log book after each joint of pipe has been drilled down. See Rule 106(b).

(d) Blowout-Prevention Equipment (BOPE). BOPE capable of shutting in the well during any operation shall be installed on the surface casing and maintained ready for use at all time (see Section H).

(3) Intermediate Casing. Intermediate casing shall be required for protection against anomalous pressure zones, caveins, washouts, abnormal temperature zones, uncontrollable lost circulation zones or other drilling hazards. Intermediate casing strings shall be, if possible, cemented solid to the surface. This requirement (to circulate cement) may be waived if the production casing will be cemented to the surface.

(4) Production Casing. Production casing may be set above or through the producing or injection zone and cemented above the objective zones. Sufficient cement shall be used to exclude overlying formation fluids from the zone, to segregate zones, and to prevent movement of fluids behind the casing into zones that contain useable ground water. Production casing shall either be cemented solid to the surface or lapped into intermediate casing, if run. If the production casing is lapped into an intermediate string, the casing overlap shall be at least 50 feet, the lap shall be cemented solid, and it shall be pressure tested to ensure its integrity.

In order to reduce casing corrosion, production casing used to produce corrosive brine reservoirs shall be of the same nominal inside diameter from the shoe of the casing to the ground surface.

(5) Casing and Cement Tests. All casing strings shall be tested after cementing and before commencing any other operations on the well. Form G-103 shall be filed for each casing string reporting the grade and weight of pipe used. In the case of combination strings utilizing pipe of varied grades or weights, the footage of each grade and weight used shall be reported. The results of the casing test, including actual pressure held on the pipe and the pressure drop observed, shall also be reported on the Form G-103. See Rule [203C(4)] 203C(2).

(a) Casing strings in wells drilled with rotary tools shall be pressure-tested. Minimum casing test pressure shall be approximately one-third of the manufacturer's rated internal yield pressure except that the test pressure shall not be less than 600 pounds per square inch and need not be greater than 1500 pounds per square inch. In cases where combination strings are involved, the above test pressures shall apply to the lowest pressure-rated casing used. Test pressures shall be applied for a period of 30 minutes. If a drop of more than ten percent of the test pressure should occur, the casing or cement job shall be considered defective and corrective measures shall be taken before commencing any further operations on the well.

(b) Casing strings in wells drilled with cable tools may be tested as outlined in Rule 5(a) above, or by bailing the well dry, in which case the well must remain satisfactorily dry for a period of at least one hour before commencing any further operations on the well.

(6) Defective Casing or Cementing. If the cementing of any casing appears to be defective, or if the casing in any well appears to be defective or corroded or parted, or if there appears to be any underground leakage for whatever other reason, which may cause or permit underground waste, the operator shall proceed with diligence to use the appropriate method or methods to eliminate such hazard. If such hazard of waste cannot be eliminated, the well shall be plugged and abandoned in accordance with a Division approved plugging program.

(7) Logging. All wells, except thermal gradient [~~geothermal observation~~] wells and low-temperature thermal wells, shall be logged with an electrical or radioactivity log, or equivalent, from total depth to the surface casing shoe. This requirement may be waived by the Division depending upon geological or engineering conditions.

RULE 111. RIGHT OF ENTRY

The Division or its duly authorized representatives shall have the right of entry onto any geothermal resources site [~~lease~~] for the purpose of inspecting wells and equipment, and for the purpose of determining whether compliance with or violation of these rules is occurring.

D. RECORDS AND REPORTS

RULE 202. GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT. (FORM G-102)

Form G-102 is a dual purpose form used to show the exact location of the well and the acreage dedicated thereto. The form is also used to show the ownership and status of each lease contained within the dedicated acreage. When there is more than one working interest or royalty owner on a given lease, designation of the majority owner et al. will be sufficient.

All information required on Form G-102 shall be filled in and certified by the operator of the well except the well location on the plat. This is to be plotted from the outer boundaries of the section and certified by a registered professional engineer and/or land surveyor, registered in the State of New Mexico, or a surveyor approved by the Division. The surveyed location of thermal gradient wells is not required. Instead, an estimated location in a given quarter-quarter section will suffice.

Form G-102 shall be submitted in QUADRUPLICATE or QUINTUPLICATE as provided in Rule 201.

Amended Form G-102 (in QUADRUPLICATE or QUINTUPLICATE) shall be filed in the event there is a change in any of the information previously submitted. The well location need not be certified when filing amended Form G-102.

RULE 205. GEOTHERMAL RESOURCES WELL LOG (FORM G-105)

A. For Producing, Injection, or Disposal Wells

Form G-105, Geothermal Resources Well Log, shall be filed in TRIPLICATE with the Form G-104 when it is desired to put any geothermal resources well on production or injection or disposal. It shall be accompanied by copies of such logs, surveys, and tests which may have been conducted on the well, including electric logs, deviation and directional surveys, physical or chemical logs, water analyses, tests, including potential tests, and temperature surveys. Failure to include these data and materials with the Form G-105 will result in withholding approval of the Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources. Distribution of Form G-105 for producing, injection, or disposal wells shall be one copy to the New Mexico Bureau of Mines, one copy to the United States Geological Survey, and one copy retained by the Division.

B. For Inactive or Temporarily Abandoned Wells

Form G-105, Geothermal Resources Well Log, with the attachments described in Rule 205 A, shall be filed in TRIPLICATE for every geothermal resources well, except thermal gradient wells, not on active producing or injection or disposal status within six months after cessation of active drilling operations on the well unless a permit for temporary abandonment shall have been approved for the well in accordance with Rule 303 B. In no event, even in the case of prolonged temporary abandonment approved by the Division, shall the filing of Form G-105 with required attachments be delayed for more than five years after cessation of active drilling operations. Distribution of Form G-105 for inactive or temporarily abandoned wells shall be one copy to the New Mexico Bureau of Mines, one copy to the United States Geological Survey, and one copy retained by the Division.

C. For Plugged and Abandoned Wells

Form G-105, Geothermal Resources Well Log, together with all the attachments required by Rule 205 A above, shall be filed in TRIPLICATE for all plugged and abandoned wells, except thermal gradient wells, within six months after abandonment. Distribution of Form G-105 for abandoned wells shall be one copy to the New Mexico Bureau of Mines, one copy to the United States Geological Survey, and one copy retained by the Division.

RULE 206. GEOTHERMAL RESOURCES WELL SUMMARY REPORT (FORM G-106)

A. For Producing, Injection, or Disposal Wells

Form G-106, Geothermal Resources Well Summary Report, completely filled in, shall be filed in TRIPLICATE with the Form G-104 when it is desired to put any geothermal resources well on production or injection or disposal. Failure to file a completed Form G-106 will result in withholding approval of the Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources. Distribution of Form G-106 for producing, injection, or disposal wells shall be one copy to the New Mexico Bureau of Mines, one copy to the United States Geological Survey, and one copy retained by the Division.

B. For Inactive or Temporarily Abandoned Wells

Form G-106, Geothermal Resources Well Summary Report, shall be filed in TRIPLICATE for every geothermal resources well, except thermal gradient wells, not on active producing or injection or disposal status within 90 days after cessation of active drilling operations. The owner or operator of the well shall state on the form the general results of the well's condition, i.e., whether the well is capable of production of geothermal resources and will be retained for such purpose, whether the well will be used for injection or disposal purposes, whether the well has been or will be plugged and abandoned, or what other disposition of the well is to be made. A summary of the well's casing and cementing program shall be shown on the form, and in case the well is to be retained for production, injection, or disposal purposes, the total mass flow in pounds per hour, flowing temperature in degrees Fahrenheit, and flowing pressure in pounds per square inch gauge. Distribution of Form G-106 for inactive or temporarily abandoned wells shall be one copy to the New Mexico Bureau of Mines, one copy to the United States Geological Survey, and one copy retained by the Division. If Form G-106 is filed for an inactive or temporarily abandoned well, and the well later goes on active production or injection, refiling of Form G-106 completely filled in accordance with Rule 206-A above is required.

C. For Plugging and Abandoned Wells

Form G-106, Geothermal Resources Well Summary Report, completely filled in, shall be filed in TRIPLICATE for plugged and abandoned wells, except thermal gradient wells, within six months after abandonment. Distribution of Form G-106 for abandoned wells shall be one copy to the New Mexico Bureau of Mines, one copy to the United States Geological Survey, and one copy retained by the Division.

RULE 207. GEOTHERMAL RESOURCES WELL HISTORY (FORM G-107)

A. For Producing, Injection, or Disposal Wells

Form G-107, Geothermal Resources Well History, is a chronological history of the entire operation of drilling and completing the well, and shall be filed in TRIPLICATE with the Form G-104 when it is desired to put any geothermal resources well on production or injection or disposal. Failure to file a completed Form G-107 will result in withholding approval of Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources. Distribution of Form G-107 for producing, injection, or disposal wells shall be one copy to the New Mexico Bureau of Mines, one copy to the United States Geological Survey, and one copy retained by the Division.

B. For Non-Producing or Temporarily Abandoned Wells Other Than Thermal Gradient Wells

Form G-107, Geothermal Resources Well History, shall be filed in TRIPLICATE for every geothermal resources well not on active producing or injection or disposal status within six months after cessation of active drilling operations on the well unless a permit for temporary abandonment shall have been approved for the well in accordance with Rule 303 B. In no event, even in the case of prolonged temporary abandonment approved by the Division, shall the filing of Form G-107 be delayed for more than five years after cessation of active drilling operations. Distribution of Form G-107 for inactive or temporarily abandoned wells shall be one copy to the New Mexico Bureau of Mines, one copy to the United States Geological Survey, and one copy retained by the Division.

C. For Plugged and Abandoned Wells Other Than Thermal Gradient Wells

Form G-107, Geothermal Resources Well History, shall be filed in TRIPLICATE for plugged and abandoned wells within six months after abandonment. Distribution of Form G-107 for abandoned wells shall be one copy to the New Mexico Bureau of Mines, one copy to the United States Geological Survey, and one copy retained by the Division.

E. ABANDONMENT, TEMPORARY ABANDONMENT, AND PLUGGING OF WELLS

RULE 301. LIABILITY

The owner of any geothermal resources well [~~drilled for geothermal exploration or production, or temperature observation,~~] or any seismic, core, or other [~~exploratory~~] hole drilled for geothermal purposes shall be responsible for the plugging thereof.

RULE 303. PLUGGING AND TEMPORARY ABANDONMENT

A. Plugging

Before any well is abandoned, it shall be plugged in a manner that will permanently confine all fluids in the separate strata originally containing them. This operation shall be accomplished by the use of mud-laden fluid, cement, and plugs, used singly or in combination, as may be approved by the Division. In addition, an adequate cement plug at the surface shall be installed to permanently prevent intrusion of any substance into the well. The exact location of abandoned wells shall be shown by a steel marker at least four inches in diameter set in concrete and extending at least four feet above mean ground level. The name and number of the well and its location (quarter-quarter, section, township and range) shall be welded, stamped, or otherwise permanently engraved into the metal of the marker. Seismic, core, thermal gradient, [~~geothermal observation,~~] or other [~~exploratory~~] wells less than 500 feet deep and low-temperature thermal wells less than 500 feet deep shall be plugged in accordance with the applicable provisions recited above but permanent markers shall not be required on such wells.

B. Temporary Abandonment

No well shall be temporarily abandoned for a period in excess of six months unless a permit for such temporary abandonment has been approved by the Division. Such permit shall be for a period not to exceed six months and shall be requested from the Santa Fe office of the Division by filing Form G-103 in duplicate. No such permit shall be approved unless evidence is furnished that the condition of the well is such as to prevent damage to any producing zone, migration of fluids from one zone to another, the waste or contamination of useable underground waters or other natural resources, and the leakage of any substance at the surface, all as substantiated by the filing of Form G-105, Geothermal Resources Well Log, and Form G-106, Geothermal Resources Well Summary Report, with the request for a temporary abandonment permit. Filing of these forms may be delayed as provided in Rule 205 B and Rule 206 B if a Division representative has had access to and has inspected the data and materials described in Rule 200 B. Also see Rule 203 A and Rule 203 C(3).

The Santa Fe office of the Division shall have authority to grant one extention to the permit for temporary abandonment. Such extension shall not exceed one year and shall be requested in the same manner as the original permit for temporary abandonment. No extension shall be approved unless good cause therefor is shown, and evidence is furnished that the continued condition of the well is as described above.

Upon expiration of the permit for temporary abandonment and any extension thereto, the well shall be put to beneficial use or shall be permanently plugged and abandoned, unless it can be shown to the Division after notice and hearing that good cause exists why the well should not be plugged and abandoned, and a permit for further temporary abandonment should be issued. No such permit for further temporary abandonment shall be approved by the Division unless a one-well plugging bond for the well, in an amount satisfactory to the Division, but not to exceed $10,000.00, is on file with the Division to ensure future plugging of the well.

The requirements of the paragraph immediately above may be waived and additional extensions granted for thermal gradient wells and in those cases where it can be shown that a contract exists for the construction of electric power plants and such plants are being designated, on order, or under construction, where facilities are being designed or are under construction for direct use of geothermal energy, or in the case where a geothermal reservoir has been discovered and there is an ongoing exploration program of the reservoir to determine its commercial feasibility.

C. Drilling Wells

When drilling operations on a well have been suspended for 60 days, the well shall be plugged and abandoned unless a permit for temporary abandonment has been obtained for the well in accordance with Section B above.

H. BLOWOUT PREVENTION

RULE 601. GENERAL

In areas where high subsurface pressures are known to exist, or where there is a history of lost circulation and/or blowouts, or in areas where subsurface pressures are not known, all proper and usual precautions shall be taken for keeping the well under control, including the use of blowout preventers and high pressure fittings attached to properly cemented casing strings.

~~Blowout preventers shall not~~ be required for ~~the drilling of thermal gradient~~ wells, low-temperature thermal wells, ~~geothermal observation~~ wells, and seismic, core, or other holes [~~exploratory wells~~] less than 500 feet deep.

The Div. Geo. Super shall have the authority to waive the require. for csg + or Blowout prev. for holes less than 500 feet deep.

Form GB-OW-1
Adopted

STATE OF NEW MEXICO
ONE-WELL GEOTHERMAL PLUGGING BOND

BOND NO. _____

AMOUNT OF BOND _____

COUNTY _____

NOTE: For wells less than 500 feet deep, the minimum bond is $2,000*
For wells 500 feet to 2,000 feet deep, the minimum bond is $3,000*
For wells more than 2,000 feet deep, the minimum bond is $5,000

*Under certain conditions, a well being drilled under a $2,000, $3,000 or $5,000 bond may be permitted to be drilled as much as 15 percent deeper than the normal maximum depth. (See Geothermal Rule 101)

FILE WITH OIL CONSERVATION COMMISSION
P. O. BOX 2088, SANTA FE, NEW MEXICO 87501

KNOW ALL MEN BY THESE PRESENTS:

That _____, (An individual)

(a partnership) (a corporation organized in the State of

_____, with its principal office in the

city of _____, State of _____,
and authorized to do business in the State of New Mexico), as

PRINCIPAL, and _____, a
corporation organized and existing under the laws of the State of

_____, and authorized to do business in the State of New Mexico, with duly appointed resident agent licensed in the State of New Mexico to execute this bond on behalf of the surety company, as SURETY, are held firmly bound unto the State of New Mexico, for the use and benefit of the Oil Conservation Division of New Mexico pursuant to Section 71-5-8 N.M.S.A., 1978, in the sum of _____ Dollars lawful money of the United States, for the payment of which, well and truly to be made, said PRINCIPAL and SURETY hereby bind themselves, their

Bond No. _____

successors and assigns, jointly and severally, firmly by these presents.

The conditions of this obligation are such that:

WHEREAS, The above principal has heretofore or may hereafter enter into geothermal resources leases with the State of New Mexico; and

WHEREAS, The above principal has heretofore or may hereafter enter into geothermal resources leases on lands patented by the United States of America to private individuals, and on lands otherwise owned by private individuals; and

WHEREAS, The above principal, individually, or in association with one or more other parties, has commenced or may commence the drilling of one well to prospect for and produce geothermal resources, or does own or may acquire, own or operate such well, or such well started by others on land embraced in said State geothermal resources leases, on lands patented by the United States of America to private individuals, and on lands otherwise owned by private individuals, the identification and location of said well being:

Lease	Well Number	Maximum Depth

Footage	Section-Township-Range

NOW, THEREFORE, If the above bounden principal and surety or either of them or their successors or assigns, or any of them, shall plug said well if non-productive or when abandoned in accordance with the rules, regulations, and orders of the Oil Conservation Division of New Mexico in such way as to confine any geothermal resources or oil, gas, and water in the strata in which they are found, and to prevent them from escaping into other strata;

Bond No. _____

THEN, THEREFORE, This obligation shall be null and void; otherwise and in default of complete compliance with any and all of said obligations, the same shall remain in full force and effect.

_____	_____
PRINCIPAL	SURETY
_____	_____
Address	Address
By_____	_____
Signature	Attorney-In-Fact
_____	
Title	

(Note: Principal, if corporation, affix corporate seal here)

(Note: Corporate surety affix corporate seal here.)

(Note: If corporate surety executes this bond by an attorney-in-fact not in New Mexico, the resident New Mexico agent shall countersign here below.)

Countersigned by:

_____	_____
New Mexico Resident Agent	Address

Bond No. _____

ACKNOWLEDGMENT FORM FOR NATURAL PERSONS

STATE OF _____)
)ss.
COUNTY OF _____)

On this _____ day of _____, 19___, before me personally appeared _____ _____, to me known to be the person (persons) described in and who executed the foregoing instrument and acknowledged that he (they) executed the same as his (their) free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

_____
Notary Public

_____
My Commission Expires:

ACKNOWLEDGMENT FORM FOR CORPORATION

STATE OF _____)
)ss.
COUNTY OF _____)

On this _____ day of _____, 19 ___, before me personally appeared _____ _____, to me personally known who, being by me duly sworn, did say that he is _____, of _____ and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

_____
Notary Public

_____
My Commission Expires

Bond No. _____

ACKNOWLEDGMENT FORM FOR CORPORATE SURETY

STATE OF _____)
)ss.
COUNTY OF _____)

On this _____ day of _____, 19 ___, before me appeared _____, to me personally known, who being by me duly sworn, did say that he is _____ of _____ _____ and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

_____
Notary Public

_____
My Commission Expires

(Note: Corporate surety attach power of attorney)

APPROVED BY
OIL CONSERVATION DIVISION OF NEW MEXICO

By _____

Form GB-MW-1
Adopted

STATE OF NEW MEXICO
$10,000 MULTIPLE-WELL GEOTHERMAL BOND

PLUGGING BOND NO. _____
(For Use of Surety Company)

NOTE: For no more than 10 wells less than 500 feet deep,* or
For no more than 6 wells 500 to 2,000 feet deep,* or
For no more than 4 wells more than 2,000 feet deep.*

*See Geothermal Rule 101 for allowed coverage of bond for wells in different depth ranges.

FILE WITH OIL CONSERVATION DIVISION
P. O. BOX 2088, SANTA FE, NEW MEXICO 87501

KNOW ALL MEN BY THESE PRESENTS:

That_____, (An individual) (a partnership) (a corporation organized in the State of

_____, with its principal office in the city

of _____, State of _____, and authorized to do business in the State of New Mexico), as

PRINCIPAL, and _____, a corporation

organized and existing under the laws of the State of _____

_____, and authorized to do business in the State of New Mexico with duly appointed resident agent licensed in the State of New Mexico to execute this bond on behalf of the surety company, as SURETY, are held firmly bound unto the State of New Mexico, for the use and benefit of the Oil Conservation Division of New Mexico pursuant to Section 71-5-8 NMSA, 1978, in the sum of Ten Thousand ($10,000) Dollars lawful money of the United States, for the payment of which, well and truly to be made, said PRINCIPAL and SURETY hereby bind themselves, their successors and assigns, jointly and severally, firmly by these presents.

Bond No. _____

The conditions of this obligation are such that:

WHEREAS, The above principal has heretofore or may hereafter enter into geothermal resources leases with the State of New Mexico; and

WHEREAS, The above principal has heretofore or may hereafter enter into geothermal resources leases on lands patented by the United States of America to private individuals, and on lands otherwise owned by private individuals; and

WHEREAS, The above principal, individually, or in association with one or more other parties, has commenced or may commence the drilling of wells to prospect for and produce geothermal resources, or does own or may acquire, own or operate such wells, or such wells started by others on land embraced in said State geothermal resources leases, and on lands patented by the United States of America to private individuals, and on lands otherwise owned by private individuals, the identification and location of said wells being as set forth in Schedule A attached hereto.

NOW, THEREFORE, If the above bounden principal and surety or either of them or their successors or assigns, or any of them, shall plug all of said wells if non-productive or when abandoned in accordance with the rules, regulations, and orders of the Oil Conservation Division of New Mexico in such way as to confine any geothermal resources or oil, gas, and water in the strata in which they are found, and to prevent them from escaping into other strata;

THEN, THEREFORE, This obligation shall be null and void; otherwise and in default of complete compliance with any and all of said obligations, the same shall remain in full force and effect.

PROVIDED, HOWEVER, That thirty (30) days after receipt by the Oil Conservation Division of New Mexico of written notice of cancellation from the surety, the obligation of the surety hereunder shall terminate as to property or wells acquired, drilled, or started after said thirty (30) day period but shall continue in effect, notwithstanding said notice, as to property or wells theretofore acquired, drilled, or started.

Bond No. _____

PRINCIPAL	SURETY
Address	Address
By _____ Signature	Attorney-In-Fact
Title	

(Note: Principal, if corporation, affix corporate seal here)

(Note: Corporate surety affix corporate seal here.)

(Note: If corporate surety executes this bond by an attorney-in-fact not in New Mexico, the resident New Mexico agent shall countersign here below.)

Countersigned by:

New Mexico Resident Agent	Address

Bond No. _____

ACKNOWLEDGMENT FORM FOR NATURAL PERSONS

STATE OF _____)
)ss.
COUNTY OF _____)

On this _____day of _____, 19 ___, before me personally appeared _____, to me known to be the person (persons) described in and who executed the foregoing instrument and acknowledged that he (they) executed the same as his (their) free act and deed.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

_____
Notary Public

_____
My Commission Expires:

ACKNOWLEDGMENT FOR FOR CORPORATION

STATE OF _____)
)ss.
COUNTY OF _____

On this _____day of _____, 19 ___, before me personally appeared _____, to me personally known who, being by me duly sworn, did say that he is _____, of _____ and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

_____
Notary Public

_____
My Commission Expires:

Bond No. _____

ACKNOWLEDGMENT FORM FOR CORPORATE SURETY

STATE OF _____)
)ss.
COUNTY OF _____

On this _____ day of _____, 19 ___, before me appeared _____, to me personally known, who being by me duly sworn, did say that he is _____ of _____ and that the foregoing instrument was signed and sealed on behalf of said corporation by authority of its board of directors, and acknowledged said instrument to be the free act and deed of said corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and seal on the day and year in this certificate first above written.

_____
Notary Public

_____
My Commission Expires

(Note: Corporate surety attach power of attorney)

APPROVED BY
OIL CONSERVATION DIVISION OF NEW MEXICO

By _____

BOND NO. _____

$10,000 MULTIPLE-WELL GEOTHERMAL PLUGGING BOND
SCHEDULE A

Lease	Well Number	Maximum Depth	Footage Location	Sec.-Township-Range

(Note: If the identification and location of all of the wells is not known at the time of filing this bond with the Division, the identification and location may be furnished by supplemental rider or riders to this bond.)