Entered November 15, 1983

STATE OF NEW MEXICO
ENERGY AND MINERALS DEPARTMENT
OIL CONSERVATION COMMISSION

IN THE MATTER OF THE HEARING
CALLED BY THE OIL CONSERVATION
COMMISSION ON ITS OWN MOTION TO
CONSIDER CERTAIN AMENDMENTS TO
ITS GEOTHERMAL RULES AND REGULATIONS.

CASE NO. 7891
Order No. R-7360

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at Santa Fe, New Mexico, on June 1, 1983 and September 22, 1983, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 15th day of November, 1983, the Commission, a quorum being present, having considered the testimony presented and the exhibits received at said hearing, and being fully advised in the premises,

FINDS:

(1) That due public notice having been given as required by law, the Commission has jurisdiction of this cause and the subject matter thereof.

(2) That the Oil Conservation Division, hereinafter referred to as the "Division," proposes certain amendments to its geothermal rules and regulations by the amendment of its Definitions and Geothermal Rules 101, 102, 103, 104, 105, 106, 108, 111, 202, 205, 206, 207, 301, 303 and 601 and the adoption of certain new plugging bond forms.

(3) That to permit filing of the amended geothermal rules and all other geothermal rules with the State Records Center under current style and format requirements, all existing and amended geothermal rules should be preceded by the letter "G".

(4) That this change should encompass the following geothermal rules: Rules 1 through 10, Rules 100 through 119, Rules 200 through 212, Rules 301 through 304, Rules 401 through 403, Rules 501 through 506, Rules 601 through 604 and Rules 701 through 723 with the resultant rule numbers being RULE G-1, RULE G-2, etc.

(5) That the geothermal rule Definitions should be designated as RULE G-0.1.

(6) That the Division has jurisdiction over all matters pertinent to the regulation of, the exploration for, development of, and production of geothermal energy.

(7) That in addition to its rules and regulations covering the approval, use, monitoring, and reporting of geothermal wells, the Division has developed policies, procedures, and conventions which should now be included within said regulations.

(8) That such geothermal rules should be amended to clarify their applicability.

(9) That Rule G-0.1 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

A.

RULE G-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 well which is to be utilized for the express purpose of evaluating or monitoring a geothermal reservoir by pressure observation or limited production.

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 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 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.

(10) That Rule G-101 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-101. PLUGGING BOND

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):

(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.

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, and if such 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. The Division Director is vested with power to act for the Division in all matters relating to this rule.

(11) That Rule G-102 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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, 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).

(12) That Rule G-103 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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.

(13) That Rule G-104 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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) Thermal Gradient Wells and Low-Temperature Thermal Wells

There shall be no restriction as to the placement of 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 G-104 B (1) Exploration Wells; within a 495-foot radius of the proposed location if application is for exception to Rule G-104 B (2) Development Wells; within a 990-foot radius of the proposed location if application is for exception to Rule G-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 G-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.

(14) That Rule G-105 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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 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.

(15) That Rule G-106 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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.

(16) That Rule G-108 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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 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 and cementing 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 encountered.

(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 G-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 G-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 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.

(17) That Rule G-111 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-111. RIGHT OF ENTRY

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

(18) That Rule G-202 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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 G-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. Unless there is a change in the well location, the well location need not be certified when filing amended Form G-102.

(19) That Rule G-205 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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 Bureau of Land Management, 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 G-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 G-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 Bureau of Land Management, 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 G-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 Bureau of Land Management, and one copy retained by the Division.

(20) That Rule G-206 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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 Bureau of Land Management, 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 G-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 Bureau of Land Management, and one copy retained by the Division.

(21) That Rule G-207 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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 Bureau of Land Management, 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 G-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 Bureau of Land Management, 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 Bureau of Land Management, and one copy retained by the Division.

(22) That Rule G-301 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-301. LIABILITY

The owner of any geothermal resources well or any seismic, core, or other exploratory hole drilled for geothermal purposes shall be responsible for the plugging thereof.

(23) That Rule G-303 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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,

or other 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 G-205 B and Rule G-206 B if a Division representative has had access to and has inspected the data and materials described in Rule G-200 B. Also see Rule G-203 A and Rule G-203 C(3).

The Santa Fe office of the Division shall have authority to grant <u>one</u> extension 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.

(24) That Rule G-601 of the Division Geothermal Rules and Regulations should read in its entirety as follows:

RULE G-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.

The Division Geothermal Supervisor shall have the authority to waive the requirement for casing and/or blowout preventers for holes less than 500 feet deep.

(25) That the One-Well Geothermal Plugging Bond should be revised to be in the form and content prescribed in Exhibit "A" attached hereto and made a part hereof.

(26) That the $10,000 Multiple-Well Geothermal Bond should be revised to be in the form and content prescribed in Exhibit "B" attached hereto and made a part hereof.

(27) That said definitions, rule changes, new rules, form revision, and new forms as described in the above findings are in the public interest, will serve to prevent waste, will not violate correlative rights, and should be approved.

(28) That the effective date of this order and of all of the amendments, revisions, changes, and adoptions contained herein should be November 15, 1983.

IT IS THEREFORE ORDERED:

(1) That the Geothermal Rules and Regulations of the New Mexico Oil Conservation Division are hereby amended by addition of the prefix "G" to each rule number as shown in Finding No. (4) of this order.

(2) That the Definitions to the said Rules and Regulations are hereby designated as Rule G-0.1.

(3) That the said Rules and Regulations are hereby further amended as follows:

A. That Rule G-0.1 is amended as described in Finding No. (9) above.

B. That Rule G-101 is amended as described in Finding No. (10) above.

C. That Rule G-102 is amended as described in Finding No. (11) above.

D. That Rule G-103 is amended as described in Finding No. (12) above.

E. That Rule G-104 is amended as described in Finding No. (13) above.

F. That Rule G-105 is amended as described in Finding No. (14) above.

G. That Rule G-106 is amended as described in Finding No. (15) above.

H. That Rule G-108 is amended as described in Finding No. (16) above.

I. That Rule G-111 is amended as described in Finding No. (17) above.

J. That Rule G-202 is amended as described in Finding No. (18) above.

K. That Rule G-205 is amended as described in Finding No. (19) above.

L. That Rule G-206 is amended as described in Finding No. (20) above.

M. That Rule G-207 is amended as described in Finding No. (21) above.

N. That Rule G-301 is amended as described in Finding No. (22) above.

O. That Rule G-303 is amended as described in Finding No. (23) above.

P. That Rule G-601 is amended as described in Finding No. (24) above.

(4) That Oil Conservation Division One-Well Geothermal Plugging Bond is hereby revised to be in the form and content prescribed in Exhibit "A" attached hereto and made a part hereof.

(5) That Division $10,000 Multiple-Well Geothermal Bond is hereby revised to be in the form and content prescribed in Exhibit "B" attached hereto and made a part hereof.

(6) That the effective date of this order and of all of the amendments, revisions, changes and adoptions contained herein shall be November 15, 1983.

(7) That jurisdiction of this cause is retained for the entry of such further orders as the Commission may deem necessary.

DONE at Santa Fe, New Mexico, on the day and year hereinabove designated.

STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

JIM BACA, Member

ED KELLEY, Member

JOE D. RAMEY, Chairman and Secretary

S E A L