CASE 5255: MOTION OF THE OCC TO CONSIDER ADOPTION OF RULES GOVERNING GEOTHERMAL RESOURCES.

CASE No. 5255

Application,

Transcripts,

Small Exhibits

ETC.

Case 5255

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

I. R. TRUJILLO
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY – DIRECTOR

Portales News-Tribune

JUN 9 1974

New Mexico Press Clipping Bureau
Albuquerque, N. M.

N.M. briefs 22

MEETING SET

SANTA FE, N.M. (AP) — Proposed regulations to govern geothermal drilling in New Mexico will be considered by the state Oil Conservation Commission at a hearing next Tuesday in Santa Fe. Jurisdiction over geothermal drilling was given to the commission by the 1973 legislature.

SILVER CITY DAILY
PRESS

JUN 10 1974

New Mexico Press Clipping Bureau
Albuquerque, N. M.

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FARMINGTON
DAILY TIMES

D JUN 9 1974

New Mexico Press Clipping Bureau
Albuquerque, N. M.

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Roswell Daily Record
ROSWELL, N. M.

JUN 8 1974

New Mexico Press Clipping Bureau

MEETING SET

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Lovington Daily Leader

C JUN 8 1974

New Mexico Press Clipping Bureau
Albuquerque, N. M.

Oil hearing Set June 11th 22

SANTA FE, N.M. (UPI) — The New Mexico Oil Conservation Commission has scheduled a hearing June 11 on proposed rules and regulations governing drilling for and production of geothermal resources in New Mexico.

The OCC was given authority to set up regulations for geothermal activity by the 1973 Legislature due to similarity of drilling operations for steam and oil and gas wells.

Dan Nutter, chief engineer for the OCC, said the staff had circulated its proposed rules and regulations "to all known interested parties." He also said the rules and regulations were discussed at a recent meeting of the Geothermal Resources Council in San Francisco.

The hearing will be conducted in Santa Fe at the Land Office Building.

Las Cruces Sun-News

C JUN 9 1974

New Mexico Press Clipping Bureau
Albuquerque, N. M.

THE NEW MEXICO Oil Conservation Commission has scheduled a hearing June 11 on proposed rules and [illegible] governing drilling for and production of [illegible] resources in New Mexico. The OCC was given authority to set up regulations for geothermal activity by the 1973 Legislature due to similarity of drilling operations for steam and oil and gas wells. 22

Daily News-Sun

JUN 8 1974

Mexico Press Clipping Bureau
N. M.

MEETING SET

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Gallup Daily
Independent

F JUN 8 1974
New Mexico Press Clipping Bureau
Albuquerque, N. M.

FE, N.M. (AP) — Proposed regulations to govern geothermal drilling in New Mexico will be considered by the state Oil Conservation Commission at a hearing next Tuesday in Santa Fe. Jurisdiction over geothermal drilling was given to the commission by the 1973 legislature.

CHAPTER 75

AN ACT

RELATING TO THE CONSERVATION, REGULATION AND PREVENTION OF WASTE OF GEOTHERMAL RESOURCES; GIVING THE OIL CONSERVATION COMMISSION AUTHORITY TO REGULATE, CONSERVE AND PREVENT WASTE OF GEOTHERMAL RESOURCES.

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF NEW MEXICO:

Section 1. The oil conservation commission is hereby vested with the authority and duty of regulating the drilling, development and production of geothermal resources and with the authority and duty of conserving and preventing waste of geothermal resources within this state in the same manner, insofar as is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas. "Geothermal resources" as used herein 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. Nothing in this section shall be construed to supersede the authority which any state department or agency has with respect to the management, protection and utilization of the state lands and resources under its jurisdiction.

House Bill 156
Approved March 15, 1973

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

CASE NO. 5255
Order No. R-4860

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO UPON ITS OWN MOTION TO CONSIDER THE ADOPTION OF GENERAL RULES AND REGULATIONS GOVERNING THE DRILLING FOR AND PRODUCTION OF GEOTHERMAL RESOURCES IN THE STATE OF NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 11, 1974, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 1st day of October, 1974, 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 Legislature of the State of New Mexico, by House Bill No. 156, enacted Chapter 75, Laws of 1973, an Act... "Relating to the conservation, regulation, and prevention of waste of geothermal resources; giving the Oil Conservation Commission authority to regulate, conserve and prevent waste of geothermal resources."

(3) That said Act was signed into law by the Governor of the State of New Mexico on the 15th day of March, 1973.

(4) That said Act reads as follows:

Section 1. The oil conservation commission is hereby vested with the authority and duty of regulating the drilling, development and production of geothermal resources and with the authority and duty of conserving and preventing waste of geothermal resources within this state in the same manner, insofar as is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas. "Geothermal resources" as used herein 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. Nothing in this section shall be construed to supersede the authority which any state department or agency has with respect to the management, protection and utilization of the state lands and resources under its jurisdiction.

(5) That pursuant to the authority and duty vested in it by the aforesaid Section 1, the Commission has caused to be prepared certain rules and regulations governing the drilling, development and production of geothermal resources in this State, with the objective of conserving and preventing waste of said geothermal resources in the same manner, insofar as it is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas.

(6) That while there is considerable dissimilitude between geothermal resources and natural or hydrocarbon gas, there is sufficient similarity between the drilling for and development and production of these two natural resources as to make it practicable to apply the same general concepts for the prevention of waste of geothermal resources as are applied to the prevention of waste of natural or hydrocarbon gas.

(7) That to prevent the waste of geothermal resources, it is also necessary to apply the concept of the protection of correlative rights, inasmuch as the protection of correlative rights is a necessary adjunct to the prevention of waste, and waste will result unless the Commission can also act to protect correlative rights.

(8) That to prevent the waste of geothermal resources, rules and regulations should be adopted by the Commission which, among other things, would:

(a) provide definitions of geothermal resources, operations, and related subjects;

(b) prohibit waste of geothermal resources, make provision for cooperation by the Commission with the federal government and other state agencies, and require geothermal operations to be conducted in such a manner as to afford maximum reasonable protection to human life and health and to the environment;

(c) provide for the requirement of a resident agent and the posting of plugging bonds with the Commission prior to commencement of drilling operations;

(d) establish acreage dedication requirements and spacing and well location rules;

(e) require wells to be drilled, cased, and cemented in such a manner as to protect useable underground waters;

(f) require wells to be drilled and produced and geothermal products to be handled in a safe manner to prevent loss of or damage to human life and health or to property or natural resources;

(g) require notification to the Commission of fires, breaks, leaks, spills, and blowouts so that appropriate action may be taken to minimize damage resulting from such incidents;

(h) require the keeping of books, records, and well histories and logs to ensure compliance with the geothermal rules and regulations;

(i) require the filing of forms and reports concerning the drilling for and production of geothermal resources and the injection of fluids underground to ensure compliance with the rules and regulations;

(j) require proper plugging and abandonment of wells in such a manner as to prevent waste of geothermal resources, useable underground waters, and other natural resources;

(k) require the ratable taking of geothermal resources within a single geothermal reservoir by any purchaser therein, in order to protect correlative rights and prevent the waste of geothermal resources;

(l) provide for the limitation and allocation of geothermal resources production if such production is causing waste;

(m) require prior approval from the Commission before injecting fluids into any geothermal resources reservoir, or before injecting geothermal fluids into any formation for disposal purposes;

(n) require the use of blowout prevention equipment to prevent loss of geothermal resources from high pressure reservoirs;

(9) That to provide procedures for the amendment of these rules, for obtaining exceptions thereto, for having hearings and rehearings concerning geothermal matters, and to generally outline the lawful processes attendant to the execution and administration of the geothermal laws and rules and regulations, Rules on Procedure should be adopted.

(10) That the Rules and Regulations, Geothermal Resources, should apply to all present and future geothermal operations in the State of New Mexico, provided however, that any low-temperature thermal well drilled and completed prior to the date of this order should be exempted from the bonding requirements of these rules, and from the casing and cementing requirements of these rules as long as it appears that the casing and cementing of any such well is adequate to prevent waste; and provided further, that the owner of any such low-temperature thermal well should file with the Commission an affidavit listing the location of each such well he owns, the date of completion of said well, the capacity of the well in gallons per minute, and the temperature of the water produced from the well, such affidavit being due at the Commission's Santa Fe office not later than 180 days after the adoption of these rules, whereupon the Commission will determine what forms or reports, if any, will be required for such wells in the future.

(11) That the adoption of the Rules and Regulations, Geothermal Resources, as contained in Exhibit "A" attached hereto and made a part hereof, is in the public interest, will prevent waste of geothermal resources within the State and will protect correlative rights, and should be approved.

(12) That the adoption of the Forms described in Section D, Rules 201 through 212, inclusive, of Exhibit "A" of this order, and as shown by Exhibits "B" through "M", inclusive, attached hereto and made a part hereof, is in the public interest and will facilitate the prevention of waste of geothermal resources within the State and the protection of correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That rules and regulations governing the drilling, development and production of geothermal resources within this State are hereby adopted and promulgated, said rules and regulations being in the form of Exhibit "A" attached hereto and made a part hereof, entitled, "State of New Mexico Oil Conservation Commission Rules and Regulations Geothermal Resources".

(2) That the following forms, identified as exhibits attached hereto and made a part hereof, are hereby adopted and promulgated:

(a) Form G-101, Application for Permit to Drill, Deepen, or Plug Back-Geothermal Resources Well: Exhibit "B".

(b) Form G-102, Geothermal Resources Well Location and Acreage Dedication Plat: Exhibit "C".

(c) Form G-103, Sundry Notices and Reports on Geothermal Resources Wells: Exhibit "D".

(d) Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources: Exhibit "E".

(e) Form G-105, Geothermal Resources Well Log: Exhibit "F".

(f) Form G-106, Geothermal Resources Well Summary Report: Exhibit "G".

(g) Form G-107, Geothermal Resources Well History: Exhibit "H".

(h) Form G-108, Monthly Geothermal Production Report: Exhibit "I".

(i) Form G-109, Monthly Geothermal Purchaser's Report: Exhibit "J".

(j) Form G-110, Monthly Geothermal Injection Report: Exhibit "K".

(k) Form G-111, Annual Geothermal Temperature and Pressure Tests: Exhibit "L".

(l) Form G-112, Application to Place Well on Injection--Geothermal Resources Area: Exhibit "M".

(3) That these Rules and Regulations, Geothermal Resources, shall and do apply to all present and future geothermal resources drilling, development and production operations within the State of New Mexico, provided however, that any low-temperature thermal well as defined herein which was drilled and completed prior to October 1, 1974, shall be exempted from the bonding requirements of these rules and shall remain so exempted, and shall be exempted from the casing and cementing requirements of the rules, and shall remain so exempted for so long as it appears that the casing and cementing of the well is adequate to prevent

waste. Provided further, that for any low-temperature thermal well as defined herein to be exempted from the bonding and casing and cementing requirements of these rules, the owner thereof shall file with the Commission an affidavit listing thereon the location of each such well he owns, the date of completion of said well, the capacity of the well in gallons per minute, and the temperature of the water produced from the well, said affidavit being due at the Commission's Santa Fe office not later than April 1, 1975. Upon receipt of such affidavits, the Commission shall make a determination as to which further forms or reports, if any, will be required in the future for each low-temperature thermal well.

(4) That jurisdiction of this cause is hereby 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

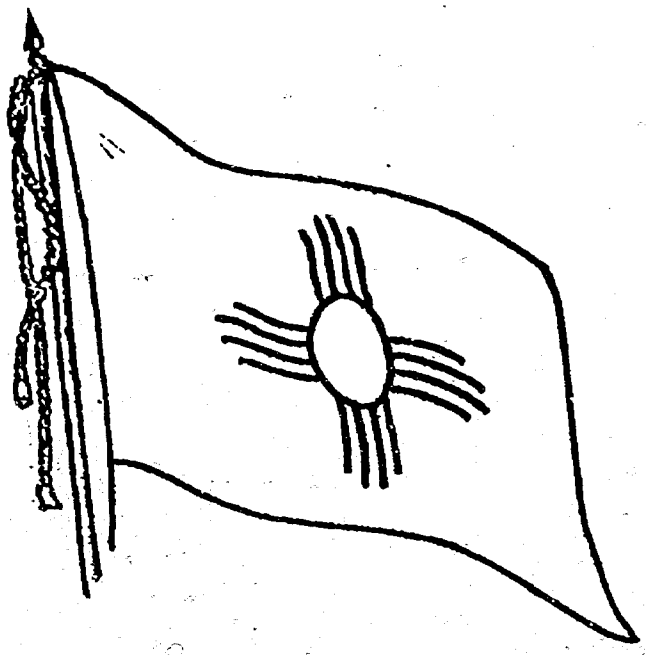
I. R. TRUJILLO, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

S E A L

dr/



STATE OF NEW MEXICO

OIL CONSERVATION COMMISSION

RULES AND REGULATIONS

Geothermal Resources

Order No. R-4860
Exhibit No. A

NEW MEXICO
OIL CONSERVATION COMMISSION

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and

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Engineering Division	827-2533	Director	827-2432
A. L. Porter, Jr., Secretary-Director		D. S. Nutter, Chief Engineer	
R. L. Stamets, Technical Support Chief		J. E. Kapteina, Engineer	
Wm. F. Carr, General Counsel		Carl Ulvog, Geologist	
		W. E. Alarid, Finance Officer	
		T. W. Derryberry, Attorney	

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J. W. Runyan, Geologist and Deputy Oil & Gas Inspector
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N. E. Clegg,
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Deputy Oil & Gas Inspector

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NEW MEXICO
OIL CONSERVATION COMMISSION

GEOTHERMAL RESOURCES DIVISION

RULES AND REGULATIONS

* * * *

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A. DEFINITIONS

COMMISSION shall mean the Oil Conservation Commission created by Section 3, Chapter 168, Laws of 1949.

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, to 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.

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 DIVISION shall mean that division of the Oil Conservation Commission 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 Section 1, Chapter 75, Laws of 1973.

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

GEOTHERMAL OBSERVATION WELL shall mean 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 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 occurence, 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 resource 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 Commission.

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.

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 Commission.

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, geothermal observation well, or low-temperature thermal well, as defined herein.

B. MISCELLANEOUS RULES

RULE 1. SCOPE OF RULES AND REGULATIONS

(a) The following Geothermal Rules and Regulations are of statewide application and have been adopted by the Oil Conservation Commission to conserve the natural geothermal resources of the State of New Mexico, to prevent waste, and to protect the correlative rights of all owners of geothermal resources. Special rules, regulations, and orders may be adopted from time to time when required for a particular geothermal resources area, and shall prevail over the Geothermal Rules and Regulations if in conflict therewith. However, when these Geothermal Rules and Regulations do not conflict with special rules hereafter adopted, these Geothermal Rules and Regulations will apply.

(b) The Commission may grant exceptions to these rules and regulations after notice and hearing, when the granting of such exceptions will not result in waste but will protect correlative rights or prevent waste.

RULE 2. ENFORCEMENT OF LAWS, RULES, AND REGULATIONS DEALING WITH CONSERVATION OF GEOTHERMAL RESOURCES

The Commission, its agents, representatives, and employees are charged with the duty and obligation of enforcing all statutes, rules, and regulations of the State of New Mexico relating to the conservation of geothermal resources. However, it shall be the responsibility of all geothermal resource owners or operators to obtain information pertaining to the regulation of geothermal resources before operations have begun. Minor deviations from the requirements of these rules as to field practices may be permitted by the Commission or its duly authorized representatives where such can be safely done without waste, and burdensome delay or expense to the operator avoided.

RULE 3. WASTE PROHIBITED

(a) The production or handling of geothermal resources of any type or in any form, or the handling of products thereof, in such a manner or under such conditions or in such an amount as to constitute or result in waste is hereby prohibited.

(b) All owners, operators, contractors, drillers, transporters, service companies, pipe pulling and salvage contractors, and other persons shall at all times conduct their operations in the drilling, equipping, operating, producing, and plugging and abandoning

of geothermal resource wells in a manner that will prevent waste of geothermal resources, and shall not wastefully utilize geothermal resources, or allow leakage of such resources from a geothermal reservoir, or from wells, tanks, containers, or pipe, or other storage, conduit, or operating equipment.

RULE 4. PROTECTION OF LIFE, HEALTH, AND THE ENVIRONMENT

All geothermal operations, exploratory, drilling, and producing, shall be conducted in a manner that will afford maximum reasonable protection to human life and health and to the environment.

RULE 5. OTHER DEPARTMENTS AND AGENCIES

Nothing in these rules shall be construed to supersede the authority which any state department or agency has with respect to the management, protection and utilization of the state lands and resources under its jurisdiction.

RULE 6. UNITED STATES GOVERNMENT LEASES

It is recognized by the Commission that all persons conducting geothermal operations on United States Government land shall comply with the United States government regulations. Such persons shall also comply with all applicable State rules and regulations which are not in conflict therewith.

RULE 7. UNITIZED AREAS

After notice and hearing, the Commission may grant approval for the combining of two or more contiguous leases into a unitized area for purposes of exploration for and production of geothermal resources.

RULE 8. CLASSIFYING AND DEFINING POOLS

The Commission will determine whether a particular well or field is a high-temperature geothermal well or field or a low-temperature thermal well or field, as the case may be, and will, from time to time, classify and reclassify wells and name pools accordingly, and will determine the limits of any field so designated and from time to time redetermine such limits.

RULE 9. FORMS UPON REQUEST

Forms for written notices, requests, and reports required by the Commission will be furnished upon request.

RULE 10. AUTHORITY TO COOPERATE WITH OTHER AGENCIES

The Commission may from time to time enter into arrangements with State and Federal governmental agencies, industrial committees, and other persons, with respect to special projects, services, and studies relating to conservation of geothermal resources.

C. DRILLING AND PRODUCTION

RULE 100. DESIGNATION OF AGENT

Any person who has drilled or is drilling or proposes to drill any geothermal well shall file a "Designation of Agent" (on a form approved by the Commission) with the Commission. The designated agent shall be a resident of this state and shall be the repository for all well records of wells drilled by the owner or operator for whom he is agent (See Rule 200 B). All changes of address of the agent shall be immediately reported to the Commission in writing. Upon termination of any agent's authority, a new Designation of Agent shall be filed with the Commission within ten days.

RULE 101. PLUGGING BOND

(a) Any person who has drilled or is drilling or proposes to drill any geothermal resources well shall post with the Commission, and obtain approval thereof, a bond, in a form approved by the Commission, 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. The bond shall be in the amount prescribed below:

(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) For the purposes of the Commission, 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 Commission. 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 Commission 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 Commission 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 Commission to the principal and to the surety company.

(c) The Secretary-Director of the Commission is vested with power to act for the Commission 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 for injection or disposal purposes, shall file Commission Form G-101, Application for Permit to Drill, Deepen, or Plug Back-Geothermal Resources Well, and obtain approval thereof from the Commission. 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 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 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 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 Wells and Low-Temperature Thermal Wells

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

C. NON-STANDARD LOCATIONS

(1) The Secretary-Director of the Commission 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 Secretary-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 Commission. If such objection is received, the matter will be set for hearing if the applicant so desires. If the Secretary-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 Commission 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 Commission 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 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. 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 107. SEALING OFF STRATA

(a) During the drilling of any well, all fresh water strata and salt water strata overlying the geothermal resources strata shall be sealed or separated to prevent the migration of fluids from one stratum to the other.

(b) All waters of present or probable future value for domestic, commercial, agricultural or stock purposes shall be confined to their respective strata and shall be adequately protected by methods approved by the Commission. Special precautions by methods satisfactory to the Commission shall be taken to guard against loss of artesian water from the strata in which it occurs, and to prevent the contamination of such artesian water strata by any objectionable geothermal fluids. Sealing off of strata, and migration prevention shall ordinarily be accomplished by cementing casing.

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. Geothermal observation wells shall be drilled, completed, and plugged in such a manner as to protect surface waters, if any, and useable ground waters.

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 Commission 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 Commission shall be installed on conductor pipe on exploratory wells and on development wells when deemed necessary by the Commission. Note: For low-temperature thermal wells the conductor pipe requirement may be reduced or waived by the Commission.

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 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 Commission after a careful study of geological conditions. The Commission 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 Commission 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 Commission 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 times (see Section H).

(3) Intermediate Casing. Intermediate casing shall be required for protection against anomalous pressure zones, cave-ins, 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).

(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 Commission-approved plugging program.

(7) Logging. All wells, except 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 Commission depending upon geological or engineering conditions.

RULE 109. DEVIATION TESTS AND DIRECTIONAL DRILLING

Any well which is deepened or drilled with rotary tools shall be tested at reasonably frequent intervals to determine the deviation from the vertical. Such tests shall be made at least each 500 feet or at the first bit change succeeding 500 feet. A tabulation of all deviation tests, sworn to and notarized, shall be filed with Form G-105, Geothermal Resources Well Log. When the deviation averages more than five degrees in any 500-foot interval, the Secretary-Director of the Commission may require that a directional survey be run to establish the location of the producing interval(s).

The Secretary-Director of the Commission, at the request of an offset operator, may require any operator to make a directional survey of any well. Said directional survey and all associated costs shall be at the expense of the requesting party and shall be secured in advance by a $5,000.00 indemnity bond posted with and approved by the Commission. The requesting party may designate the well survey company, and said survey shall be witnessed by a representative of the Commission.

No well shall be intentionally deviated except toward the vertical without prior permission from the Commission. Permission to deviate a well other than toward the vertical shall be obtained on Commission Form G-103 with copies of said Form G-103 being furnished to all other operators owning leases offsetting the drilling tract, if any there be. Upon request of the Secretary-Director of the Commission, any well which was intentionally deviated shall be directionally surveyed. The Commission may at its option witness such survey and the Santa Fe Office shall be notified of the date and hour all directional surveys are to be conducted. All directional surveys run on any well which was intentionally deviated in any manner for any reason must be filed with the Commission upon completion of the well. Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources, will not be approved until the operator has submitted an affidavit that all such directional surveys have been filed.

RULE 110. SHOOTING AND CHEMICAL TREATMENT OF WELLS

If injury results to the producing formation, casing, or casing seat from shooting or treating a well, the operator thereof shall proceed with diligence to use the appropriate method and means for rectifying such damage. If shooting or chemical treating results in irreparable injury to the well, the Commission may require the operator to properly plug and abandon the well.

RULE 111. RIGHT OF ENTRY

The Commission or its duly authorized representatives shall have the right of entry onto any geothermal resources 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.

RULE 112. NOISE ABATEMENT

Adequate noise abatement equipment shall be installed and maintained in good condition to reduce noise to a level approved by the Commission or its representative on any drilling or producing geothermal resources well located within 1500 feet of a habitation, school, or church.

RULE 113. SAFETY REGULATIONS

The well site around any drilling or producing well shall be kept clear of any rubbish or debris or fuel which may constitute a fire hazard. In any area where there is any likelihood of encountering unexpected hydrocarbons, the drilling mud and cuttings shall be stored in a pit a safe distance from the drilling rig. All waste shall be burned or disposed of in such a manner as to avoid creating a fire hazard.

RULE 114. WELL HEADS AND PRODUCTION EQUIPMENT

Well heads and all fittings appurtenant thereto shall be installed and maintained in good condition so that all necessary pressure tests may be readily made on flowing wells. The well head and related parts and fittings shall have a test pressure equivalent to at least 150 percent of the calculated or known pressure in the reservoir from which production is obtained or expected.

Valves shall be installed and maintained in good order to permit pressures to be obtained on the production casing and the annulus between the casing strings.

Flow lines shall be of adequate pressure rating and capacity and shall be sufficiently equipped with expansion bends to prevent leakage or rupture.

All separators, pumps, mufflers, manifolds, flowlines, and other equipment used for the production of geothermal resources shall be of adequate pressure rating and capacity and shall be maintained in good condition in order to prevent loss of or damage to human life and health or to property or natural resources.

RULE 115. CORROSION

All well head equipment, surface production equipment, flowlines and pipelines, and subsurface casing and tubing shall be subject to periodic surveillance to prevent leakage or rupture and to safeguard human life and health and property and natural resources.

RULE 116. DISPOSAL OF PRODUCED WATERS

The disposal of highly mineralized waters produced from geothermal resources wells shall be in such a manner as to not constitute a hazard to surface waters or underground supplies of useable water.

RULE 117. NOTIFICATION OF FIRE, BREAKS, LEAKS, SPILLS, AND BLOWOUTS

The Commission shall be notified of any fire, break, leak, spill, or blowout occurring at any geothermal drilling, producing, transporting, treating, disposal, or utilization facility in the State of New Mexico by the person operating or controlling such facility.

"Facility", for the purpose of this rule, shall include any geothermal drilling, producing, injection, or disposal well; any pipeline through which geothermal resources or the waste products thereof are gathered or transported; any tank or other storage unit into which geothermal products, waters, or wastes are produced, received, or stored; any treating plant in which geothermal resources are treated or processed; any electrical generating plant in which geothermal resources are utilized; and any drilling pit, slush pit, or storage pit or pond associated with geothermal drilling, producing, treating, or utilization processes in which hydrocarbons or hydrocarbon waste or residue, salt water, strong caustics or acids, or other deleterious chemicals or harmful substances are present.

Notification to the Commission of such fire, break, leak, spill, or blowout shall be in accordance with the provisions set forth below:

(1) Well Blowouts. Notification of well blowouts and/or fires shall be "immediate notification" described below.

(2) "Major" Breaks, Spills, or Leaks. Notification of breaks, spills, or leaks of wellheads, pipelines, or tanks, or drilling pits, slush pits, or storage pits or ponds, the result of which 50 barrels or more of liquids containing hydrocarbons or hydrocarbon wastes, salt water, strong caustics or strong acids, or other deleterious substances reach a water course or enter a

stream or lake, or in which noxious gases escape or any quantity of fluids are lost which may with reasonable probability endanger human health or result in substantial damage to property, shall be "immediate notification" described below.

(3) "Minor" Breaks, Spills, or Leaks. Notification of breaks, spills, or leaks of wellheads, pipelines, or tanks, or drilling pits, slush pits, or storage pits or ponds, the result of which 25 barrels or more but less than 50 barrels of liquids containing hydrocarbons or hydrocarbon wastes, salt water, strong caustics or strong acids, or other deleterious substances are lost or in which noxious gases escape, but in which there is no danger to human health nor of substantial damage to property shall be "subsequent notice" described below.

(4) Fires. Notification of fires at geothermal installations in which there is reasonable probability of danger to human health or substantial damage to adjoining properties or substantial loss of geothermal resources shall be "immediate notice" described below. Notification of fires of lesser magnitude but of $500.00 or more of property damage or $500.00 or more of geothermal resources loss shall be "subsequent notice" described below.

IMMEDIATE NOTIFICATION - "Immediate Notification" shall be as soon as possible after discovery and shall be in person or by telephone to the Santa Fe office or the nearest district office of the Commission if the incident occurs during business hours. If the incident occurs after business hours, notification shall be in accordance with the latest Commission memorandum on the subject. A complete written report of the incident shall be submitted to the Santa Fe office of the Commission within ten days after discovery of the incident.

SUBSEQUENT NOTIFICATION - "Subsequent Notification" shall be a complete written report of the incident and shall be submitted to the Santa Fe office of the Commission within ten days after discovery of the incident.

CONTENT OF NOTIFICATION - All reports of fires, breaks, spills, leaks, or blowouts, whether verbal or written, shall identify the location of the incident by quarter-quarter, section, township, and range, and by distance and direction from the nearest town or prominent landmark so that the exact site of the incident can be readily located on the ground. The report shall specify the nature and quantity of the loss and also the general conditions prevailing in the area, including precipitation, temperature, and soil conditions. The report shall also detail the measures that have been taken and are being taken to remedy the situation reported.

WATERCOURSE, for the purpose of this rule, is defined as any lake-bed or gully, draw, stream bed, wash, arroyo, or natural or man-made channel through which water flows or has flowed.

RULE 118. MEASUREMENT OF PRODUCTION

All production from a completed geothermal resources well shall be accounted for by continuous metering or by other method approved by the Commission.

RULE 119. UTILIZATION OF GEOTHERMAL RESOURCES

After the completion of a geothermal resources well, all production from said well shall be put to beneficial use. No production shall be permitted unless beneficial use is made thereof except for authorized periods of testing, in which case proper disposition of produced liquids shall be made.

D. RECORDS AND REPORTS

RULE 200. GENERAL

A. Books and Records

All producers, transporters, purchasers, or utilizers of geothermal resources within the State of New Mexico shall make and keep appropriate books and records for a period of not less than five years, covering their operations in this state, from which they may be able to substantiate the reports required by these rules.

B. Well Records

The owner or operator of any geothermal resources well shall keep, or cause to be kept, a careful and accurate well log and history of the drilling of any such well, including the lithologic characteristics and depths of formations encountered, and the depths, pressures, and temperatures of water-bearing and steam-bearing strata. These data, as well as such other tests, surveys, and logs which may be taken on the well including the temperatures, chemical compositions, and physical characteristics of fluids encountered in the well, deviation, directional, and temperature surveys, logs, including electrical logs, physical logs, and core logs, and tests, including potential tests, shall be placed in the custody of the Designated Agent (See Rule 100) of the owner or operator of the well and shall remain in such custody within the State of New Mexico until all required forms and attachments pertaining to the well have been filed with the Commission. These data shall be subject to inspection, during normal business hours, by the Commission or its representatives, and by the State Engineer or his representatives.

C. Where to File Reports

All forms and reports required by these rules shall be filed with the New Mexico Oil Conservation Commission, Geothermal Division, Post Office Box 2088, Santa Fe, New Mexico 87501.

D. Additional Data

These rules shall not be construed to limit or restrict the authority of the Commission to require the furnishing of such additional reports, data, or other information relative to the production, transportation, or utilization of geothermal resources in the State of New Mexico as may appear to be necessary or desirable, either generally or specifically, for the prevention of waste and the conservation of natural resources of the State of New Mexico.

RULE 201. APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK-GEOTHERMAL RESOURCES WELL (FORM G-101)

Before commencement of drilling or deepening operations of any geothermal resources well, or before plugging a well back to another zone, the operator of the well shall obtain a permit to do so. To obtain such a permit the operator shall submit to the Commission FOUR copies of Form G-101, Application for Permit to Drill, Deepen, or Plug Back-Geothermal Resources Well, completely filled in. If the operator has an approved bond in accordance with Rule 101 and has filed satisfactory "Designation of Agent" (Rule 100), and the proposed well meets the spacing and well location requirements (Rule 104), one copy of the Drilling Permit will be returned to him on which will be noted the Commission's approval, with any modification deemed advisable. If the proposal cannot be approved for any reason, the Forms G-101 will be returned with the cause for rejection stated thereon.

Each copy of Form G-101 must be accompanied by one copy of Form G-102, Geothermal Resources Well Location and Acreage Dedication Plat. (See Rule 202.)

If the well is to be drilled on state land, FIVE copies of Forms G-101 and G-102 shall be submitted, the extra copy being for the State Land Office.

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 Commission.

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 203. SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS (FORM G-103)

Form G-103 is a dual purpose form to be filed with the Santa Fe office of the Commission to obtain approval prior to commencing certain operations and also to report various completed operations.

A. Form G-103 as a Notice of Intention

Form G-103 shall be filed in DUPLICATE by the operator and approval obtained from the Commission prior to:

(1) Effecting a change of plans from those previously approved on Form G-101 or Form G-103.

(2) Altering a drilling well's casing program or pulling casing or otherwise altering an existing well's casing installation.

(3) Temporarily abandoning a well. (See Rule 303 B.)

(4) Plugging and abandoning a well. (See Rules 302 and 303 A.)

(5) Performing remedial work on a well which, when completed, will affect the original status of the well. (This shall include making new perforations in existing wells or squeezing old perforations in existing wells, but is not applicable to new wells in the process of being completed nor to old wells being deepened or plugged back to another zone when such recompletion has been authorized by an approved Form G-101, Application for Permit to Drill, Deepen, or Plug Back, nor to acidizing, fracturing, or cleaning out previously completed wells.)

In the case of well plugging operations, the Notice of Intention shall include a detailed statement of the proposed work, including plans for shooting and pulling casing, plans for mudding, including weight of mud, plans for cementing, including number of sacks of cement and depths of plugs, and the time and date of the proposed plugging operations. (See Rules 302 and 303 A.)

B. Form G-103 as a Subsequent Report

Form G-103 as a subsequent report of operations shall be filed in accordance with the section of this rule applicable to the particular operation being reported.

Form G-103 is to be used in reporting such completed operations as:

(1) Commencement of drilling operations

(2) Casing and cement test

(3) Altering a well's casing installation

(4) Temporary abandonment

(5) Plugging and Abandonment

(6) Plugging back or deepening

(7) Remedial work

(8) Change in ownership of a drilling well

(9) Such other operations which affect the original status of the well but which are not specifically covered herein

C. Filing Form G-103 as a Subsequent Report

Information to be entered on Form G-103, Subsequent Report, for a particular operation is as follows:

(1) Report of Commencement of Drilling Operations

Within ten days following the commencement of drilling operations, the operator of the well shall file a report thereof on Form G-103 in DUPLICATE. Such report shall indicate the hour and the date the well was spudded.

(2) Report of Results of Test of Casing and Cement Job; Report of Casing Alteration

A report of casing and cement test shall be filed by the operator of the well within ten days following the setting of each string of casing or liner. Said report shall be filed in DUPLICATE on Form G-103 and shall present a detailed description of the test method employed and the results obtained by such test, and any other pertinent information required by Rule 108 B(5). The report shall also indicate the top of the cement and the means by which such top was determined. It shall also indicate any changes from the casing program previously authorized for the well.

(3) Report of Temporary Abandonment

A report of temporary abandonment of a well shall be filed by the operator of the well within ten days following completion of the work. The report shall be filed in DUPLICATE and shall present a detailed account of the work done on the well, including

location and type of plugs used, if any, type and status of surface and downhole equipment, and any other pertinent information relative to the overall status of the well.

(4) Report on Plugging of Well

A report of plugging operations shall be filed by the operator of the well within 30 days following completion of plugging operations on any well. Said report shall be filed in TRIPLICATE on Form G-103 and shall include the date the plugging operations were begun and the date the work was completed, a detailed account of the manner in which the work was performed including the depths and lengths of the various plugs set, the nature and quantities of materials employed in the plugging operations including the weight of the mud used, the size and depth of all casing left in the hole, and any other pertinent information. (See Rules 301-303 regarding plugging operations.)

No plugging report will be approved by the Commission until all forms and reports on the well have been filed and the pits have been filled and the location levelled and cleared of junk. It shall be the responsibility of the operator to contact the Santa Fe office of the Commission when the location has been so restored in order to arrange for an inspection of the plugged well and the location by a Commission representative.

(5) Report of Remedial Work

A report of remedial work performed on a producing well or former producing well shall be filed by the operator of the well within 30 days following completion of such work. Said report shall be filed in DUPLICATE on Form G-103 and shall present a detailed account of the work done and the manner in which such work was performed; the daily production from the well both prior to and after the remedial operation; the size and depth of shots; the quantity of sand, acid, chemical or other materials employed in the operation, and any other pertinent information. Among the types of remedial work to be reported on Form G-103 are the following:

(a) Report on shooting, fluid fracturing, or chemical treatment of a previously completed well

(b) Report on squeeze job

(c) Report on setting of liner or packer

(d) Report of any other remedial operations which are not specifically covered herein

(e) Report on Deepening or Plugging Back

(6) Report of Change in Ownership of a Drilling Well

A report of change of ownership shall be filed by the new owner of any drilling well within ten days following actual transfer of ownership. Said report shall be filed in TRIPLICATE on Form G-103 and shall include the name and address of both the new owner and the previous owner, the effective date of the change of ownership, and any other pertinent information. No change in the ownership of a drilling well will be approved by the Commission unless the new owner has an approved bond in accordance with Rule 101 and has filed satisfactory "Designation of Agent" (Rule 100). The former owner of the well, to obtain release of his bond, shall follow the procedures set forth in Rule 101(b). (Form G-104 shall be used to report transfer of ownership of a completed well; see Rule 204.)

(7) Other Reports on Wells

Reports on any other operations which affect the original status of the well which are not specifically covered herein shall be submitted to the Commission on Form G-103, in TRIPLICATE, by the operator of the well within ten days following the completion of such operation.

RULE 204. CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO PRODUCE GEOTHERMAL RESOURCES (FORM G-104)

Prior to placing any geothermal resources well on production, injection, or disposal, the owner or operator of said well shall file (in QUINTUPLICATE) with the Commission and receive approval thereof Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources, outlining thereon the information required and certifying that all Commission Rules and Regulations pertaining to the well have been complied with. Production of or injection into any well in violation of this rule shall result in the well being shut in by the Commission subject to the penalties provided by law for violation of the Commission's Rules, Orders, and Regulations. (In addition to Form G-104 being approved, additional approval for injection or disposal must be obtained pursuant to Rules 501-505.) Forms G-104 must be accompanied by three copies of Form G-105, Geothermal Resources Well Log outlining the data required and with the attachments required by Rule 205 A, three copies of Form G-106, Geothermal Resources Well Summary Report (See Rule 206) completely filled in and three copies of Form G-107, Geothermal Resources Well History (See Rule 207) completely filled in.

Form G-104 shall also be filed in QUINTUPLICATE when there is a change in purchaser from a well or when there is a change of ownership of a producing well, injection well, or disposal well.

No change of ownership will be approved by the Commission unless the new owner has an approved bond in accordance with Rule 101 and has filed satisfactory "Designation of Agent" (Rule 100). The former owner of the well, to obtain release of his bond, shall follow the procedures set forth in Rule 101(b). (Form G-103 shall be used to report change of ownership of a drilling well; see Rule 203 C(6).)

After approval of Form G-104, distribution of Forms G-104, G-105, G-106, and G-107 shall be made by the Commission as follows:

(1) one approved copy of Form G-104 shall be returned to the operator;

(2) one approved copy of Form G-104 shall be forwarded to the purchaser from the well (except, of course, in the case of a disposal or injection well);

(3) one approved copy of Form G-104 and one copy each of Forms G-105, G-106, and G-107 shall be forwarded to the New Mexico Bureau of Mines;

(4) one approved copy of Form G-104 and one copy each of Forms G-105, G-106, and G-107 shall be forwarded to the United States Geological Survey; and

(5) one approved copy of Form G-104 and one copy each of Forms G-105, G-106, and G-107 shall be retained by the Commission

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 Commission.

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 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 Commission, 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 Commission.

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 plugged and abandoned 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 Commission.

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 Commission.

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 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 Commission. 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 in accordance with Rule 206-A above is required.

C. For Plugged and Abandoned Wells

Form G-106, Geothermal Resources Well Summary Report, completely filled in, shall be filed in TRIPLICATE for plugged and abandoned 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 Commission.

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 Commission.

B. For Non-Producing or Temporarily Abandoned 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 Commission, 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 Commission.

C. For Plugged and Abandoned 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 Commission.

RULE 208. MONTHLY GEOTHERMAL PRODUCTION REPORT (FORM G-108)

After placing any geothermal well on production, the owner or operator thereof shall file in DUPLICATE a monthly production report, Form G-108, which report shall be due in the Santa Fe office of the Commission by the 20th day of each month and shall show the production from each well and each lease during the preceding calendar month.

RULE 209. MONTHLY GEOTHERMAL PURCHASER'S REPORT (FORM G-109)

The purchaser of production from any geothermal resource well shall file in DUPLICATE a monthly purchaser's report, Form G-109, which report shall be due in the Santa Fe office of the Commission by the 15th day of each month and shall show the purchases made from all leases and wells connected to the purchaser's facilities during the preceding calendar month.

RULE 210. MONTHLY GEOTHERMAL INJECTION REPORT (FORM G-110)

After placing any well on injection or disposal in a geothermal resources field or area, the owner or operator thereof shall file in DUPLICATE a monthly injection report, Form G-110, which report shall be due in the Santa Fe office of the Commission by the 20th day of each month and shall show the zone or formation into which injection is being made, the volume injected, the average temperature of the injected fluid, and the average injection pressure at the wellhead.

RULE 211. ANNUAL GEOTHERMAL TEMPERATURE AND PRESSURE TESTS (FORM G-111)

Annual temperature and pressure tests shall be submitted by

the owner or operator of each geothermal resources producing well in accordance with the annual testing schedule published by the Commission. Flowing temperatures and flowing pressure tests at the wellhead shall be recorded after at least 72 hours of continuous flow at normal producing rates. The well shall then be shut in for 24 hours and shut-in pressure at the wellhead recorded. Results of these tests shall be submitted in DUPLICATE to the Santa Fe office of the Commission.

RULE 212. APPLICATION TO PLACE WELL ON INJECTION-GEOTHERMAL RESOURCES AREA (FORM G-112)

Before placing any well on injection in a geothermal resources area, whether for charge, recharge, or disposal purposes, authority to do so shall be obtained on Form G-112 which shall be filed in accordance with Rule 503.

E. ABANDONMENT, TEMPORARY ABANDONMENT, AND PLUGGING OF WELLS

RULE 301. LIABILITY

The owner of any 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 302. NOTICE

Prior to commencement of plugging operations, Notice of Intention to plug shall be filed with the Commission, and approval thereof obtained by the owner or operator of the well. This shall be accomplished by filing Form G-103, Sundry Notices and Reports on Geothermal Wells, which notice shall outline the casing and cementing program of the well, the casing which is to be pulled, the size of proposed cement plugs and their depth, and such other information as may be pertinent. In the case of newly drilled wells which are to be plugged, verbal authority and instructions may be given by the Commission to plug the well provided written notice to plug shall be subsequently filed within 30 days and approval thereof obtained. Written approval or verbal approval of a plugging program shall be contingent upon evidence being furnished that the plugging program for 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 Well Summary Report, with the request for approval of the plugging program. Filing of these forms may be delayed as provided in Rule 205 C and Rule 206 C if a Commission representative has had access to and has inspected the data and materials described in Rule 200 B. Also see Rule 203 A, Rule 203 C(4), and Rule 303 A.

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 Commission. 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, 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 Commission. Such permit shall be for a period not to exceed six months and shall be requested from the Santa Fe office of the Commission 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 Commission 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 Commission shall have authority to grant one 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 Commission 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 Commission unless a one-well plugging bond for the well, in an

amount satisfactory to the Commission, but not to exceed $10,000.00, is on file with the Commission to ensure future plugging of the well.

The requirements of the paragraph immediately above may be waived and additional extensions granted in those cases where it can be shown that a contract exists for the construction of electric power plants and such plants are being designed, on order, or under construction, 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.

RULE 304. WELLS TO BE USED FOR FRESH WATER

When the well to be plugged may safely be used as a fresh water well and such utilization is desired by the land owner, the well need not be filled above a sealing plug set below the fresh water formation, provided that written agreement for such use by the owner of the well and by the land owner is filed with the Commission. Upon acceptance of the well by the land owner, the well's bond may be released.

F. PURCHASE OF GEOTHERMAL RESOURCES

RULE 401. ILLEGAL SALE PROHIBITED

The sale or purchase or acquisition, or the transporting or utilization of geothermal resources produced in violation of the laws of this state, or of these rules, is prohibited.

RULE 402. RATABLE TAKE

Any person now or hereafter engaged in purchasing geothermal resources from one or more producers within a single geothermal reservoir shall be a common purchaser within that geothermal reservoir, and shall purchase geothermal resources of like quality, quantity, and pressure lawfully produced from that geothermal reservoir and tendered to such common purchaser at a reasonable point. Such purchase shall be made without unreasonable discrimination in favor of one producer against another in the price paid, quantities taken, the bases of measurement, or the facilities offered.

In the event such purchaser is also a producer, he is prohibited to the same extent from discriminating in favor of himself with respect to geothermal resource wells in which he has an interest, direct or indirect, as against other geothermal resource wells in the same geothermal reservoir.

For the purposes of this rule, reasonable differences in prices paid or facilities afforded, or both, shall not constitute unreasonable discrimination if such differences bear a fair relationship to difference in quality, quantity, or pressure of the geothermal resource available or to the relative lengths of time during which such geothermal resources will be available to the purchaser.

Any common purchaser taking geothermal resources produced from wells within a geothermal reservoir shall take ratably under such rules, regulations, and orders, concerning quantity, as may be promulgated by the Commission after due notice and public hearing. The Commission, in promulgating such rules, regulations, and orders may consider the quality and the quantity of the geothermal resources available, the pressure and temperature of the product at the point of delivery, acreage attributable to the well, market requirements, and other pertinent factors.

Nothing in this rule shall be construed or applied to require, directly or indirectly, any person to purchase geothermal resources of a quality or under a pressure or under any other condition by

reason of which such geothermal resource cannot be economically and satisfactorily used by such purchaser by means of his geothermal utilization facilities then in service.

RULE 403. REGULATION OF GEOTHERMAL RESOURCES PRODUCTION

Upon determination by the Commission that geothermal resources production in the State of New Mexico, or in a particular geothermal resources area, is causing waste, the Commission shall limit and allocate among the producing wells the total amount of geothermal resources which may be produced in the state, or in a particular geothermal area.

G. GEOTHERMAL INJECTION AND DISPOSAL WELLS

RULE 501. GEOTHERMAL INJECTION WELLS

Geothermal injection wells are those wells used for the purpose of injecting fluids into a dry geothermal formation, or into a geothermal reservoir for the purpose of augmenting the natural supply of fluids in the reservoir, pressure maintenance of the reservoir, or such other purpose as authorized by the Commission. No well shall be utilized as a geothermal injection well until authority for such use has been obtained on an approved Form G-112, Application to Place Well on Injection-Geothermal Resources Area. Form G-112 shall be filed in accordance with Rule 503 below.

RULE 502. GEOTHERMAL DISPOSAL WELLS

Geothermal disposal wells are those wells used for the purpose of disposing of waters produced from a geothermal reservoir when disposal is into a zone or formation not classified as a geothermal reservoir. No well shall be utilized as a geothermal disposal well until authority for such use has been obtained on an approved Form G-112, Application to Place Well on Injection-Geothermal Resources Area. Form G-112 shall be filed in accordance with Rule 503 below.

RULE 503. METHOD OF MAKING APPLICATION

Application for authority to inject fluids into a geothermal reservoir or to dispose of geothermal waters into a zone or formation not classified as a geothermal reservoir shall be made in DUPLICATE on Commission Form G-112, Application to Place Well on Injection-Geothermal Resources Area, and shall be accompanied by one copy of each of the following:

(1) A plat showing the location of the proposed injection/disposal well and the location of all other wells within a radius of one mile from said well, and indicating the perforated or open-hole interval in each of said wells. The plat shall also indicate the ownership of all geothermal leases within said one-mile radius;

(2) The log of the proposed injection well, if available;

(3) A diagrammatic sketch of the proposed injection well showing all casing strings, including

diameters and setting depths, quantities used and tops of cement, perforated or open-hole interval, tubing strings, including diameters and setting depths, and the type and location of packers, if any;

Copies of the Form G-112 (without the above attachments) shall be sent to all other geothermal lease owners, if any there be, within a one-half mile radius of the proposed injection/disposal well.

If no objection is received within 20 days from the date of receipt of the application, and the Secretary-Director of the Commission is satisfied that all of the above requirements have been complied with, that the proposal is in the interest of conservation and will prevent waste and protect correlative rights, and that the well is cased, cemented, and equipped in such a manner that there will be no danger to any natural resource, including geothermal resources, useable underground water supplies, and surface resources, Form G-112 will be approved. In the event the form is not approved because of objection from an affected geothermal lease owner or for other reason, the application will be set for public hearing, if the applicant so requests.

The Secretary-Director may dispense with the 20-day waiting period if waivers of objection are received from all geothermal lease owners within a one-half mile radius of the proposed injection/disposal well.

RULE 504. INJECTION REPORTS

Monthly injection reports shall be filed for injection/disposal wells in accordance with Rule 210 of these rules and regulations.

RULE 505. SURVEILLANCE

(a) Surveillance of waste water disposal or injection projects is necessary on a continuing basis in order to establish to the satisfaction of the Commission that all water is confined to the intended zone of injection.

(b) When an operator proposes to drill an injection well, convert a producing or inactive well to an injection well, or rework an injection well and return it to injection service, he shall be required to demonstrate to the Commission by means of such tests as the Commission may deem necessary the integrity of the well's casing.

(c) To establish the integrity of the annular cement above the shoe of the casing, the operator shall make sufficient surveys, within 30 days after injection is started into a well, to demonstrate that all the injected fluid is confined to the intended zone of injection. Thereafter, such surveys shall be made at least every two years, or more often if ordered by the Commission. All such surveys may be witnessed by a representative of the Commission.

(d) After the well has been placed on injection, a Commission representative shall visit the wellsite periodically. At these times, surface conditions shall be noted and if any unsatisfactory conditions exist, the operator shall be notified of needed remedial work. If this required work is not performed within 90 days, the approval issued by the Commission may be rescinded. If it is determined that damage is occurring at a rapid rate, the Commission may order that the repair work be done immediately.

Injection pressures shall be recorded by the Commission representative and compared with the pressure reported on the appropriate forms. Any discrepancies shall be rectified immediately by the operator. A graph of daily injection rates and pressures versus time shall be maintained by the operator. Reasons for anomalies shall be promptly ascertained. If these reasons are such that it appears damage is being done, approval by the Commission may be rescinded, and injection shall cease.

(e) When an injection well has been left idle for six months, the operator shall be informed by letter that approval for use of the well for injection purposes has been rescinded, and that he should proceed in accordance with the provisions of Rule 302 and Rule 303 A or Rule 303 B. In the event the operator intends to again use the well for injection purposes, he shall be required to demonstrate by means of surveys that the injected water will be confined to the intended zone of injection.

RULE 506. ABANDONMENT

Injection or disposal wells are required to be abandoned in the same manner as other wells. (See Sec. E, ABANDONMENT, TEMPORARY ABANDONMENT, AND PLUGGING OF WELLS.)

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 low-temperature thermal wells, geothermal observation wells, and seismic, core, or other exploratory wells less than 500 feet deep.

RULE 602. BLOWOUT PREVENTION EQUIPMENT (BOPE)

The following standards are not given as final blowout prevention equipment requirements for the drilling of any geothermal resources well but are given as guidelines for the preparation of a minimum blowout prevention program for certain categories of wells.

A. Using Mud as the Drilling Fluid

(1) API Class 2M-A or 2M-RR

For wells in geothermal resources areas known to contain geothermal fluids at a temperature greater than 212° F. at depths less than 2,000 feet, and geothermal exploratory wells in areas where subsurface temperatures and pressures are unknown and the proposed depth of the well is less than 2,000 feet.

(a) An annular BOPE and a spool, fitted with a low-pressure safety pop-off and blow-down line, installed on the conductor pipe may be required for wells in the above categories to ensure against possible gas blowouts during the drilling of the surface casing hole.

(b) Annular BOPE or pipe-ram/blind-ram BOPE with minimum working-pressure ratings of 2,000 psi shall be installed on the surface casing so that the well can be shut in at any time.

(c) Hydraulic actuating system.

(d) Kelly cock.

(e) A fill-up line installed above the BOPE.

(f) A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary.

(g) A blow-down line fitted with two valves installed below the BOPE. The blow-down line shall be directed in such a manner so as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(h) All lines and fittings shall be steel and have a minimum working-pressure rating of 1,000 psi.

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

(2) API Class 2M-RSRA or Equivalent

For wells in geothermal resources areas known to contain geothermal fluids at temperatures greater than 212° F. at depths more than 2,000 feet, and geothermal exploratory wells in areas where subsurface temperatures and pressures are unknown and the proposed depth of the well is more than 2,000 feet.

(a) An annular BOPE and a spool, fitted with a low-pressure safety pop-off and blow-down line, installed on the conductor pipe may be required to ensure against possible gas blow-outs during the drilling of the surface casing hole.

(b) Annular BOPE and pipe-ram/blind-ram BOPE with a minimum working-pressure rating of 2,000 psi shall be installed so that the well can be shut in at any time. The double-ram preventer shall have a mechanical locking device.

(c) A hydraulic actuating system utilizing an accumulator of sufficient capacity and a high pressure auxiliary backup system. This total system shall be equipped with dual controls: one at the driller's station and one at least 50 feet away from the wellhead.

(d) Kelly cock and standpipe valve.

(e) A fill-up line installed above the BOPE.

(f) A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary.

(g) A blow-down line fitted with two valves installed below the BOPE. The blow-down line shall be directed in such a manner so as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(h) All lines and fittings shall be steel and have a minimum working-pressure rating of at least that of the BOPE.

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

B. Using Air as the Drilling Fluid

(1) API Class 2M RSRdG (with Banjo Box)

For wells in geothermal resources areas where it is known that dry steam exists at depth and/or formation pressures are known to be less than hydrostatic.

(a) A rotating head installed at the top of the BOPE stack.

(b) A pipe-ram/blind-ram BOPE, with a minimum working-pressure rating of 2,000 psi installed below the rotating head so that the well can be shut in at any time.

(c) A banjo box steam diversion unit installed below the double-ram BOPE fitted with an approved muffler in good working condition.

(d) A blind-ram BOPE, with a minimum working-pressure rating of 2,000 psi installed below the banjo box so that the well can be shut in while removing the rotating head during bit changes.

(e) A gate valve, with a suitable minimum working-pressure rating installed below the blind ram so that the well can be shut in after the well has been completed, prior to removal of the BOPE stack.

(f) All ram-type BOPE shall have a hydraulic actuating system utilizing an accumulator of sufficient capacity and a high-pressure backup system.

(g) Dual control stations for hydraulic backup system: one at the driller's station and the other at least 50 feet away from the wellhead.

(h) Float and standpipe valves.

(i) A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary.

(j) All lines and fittings must be steel and have a minimum working-pressure rating of 1,000 psi. Note: If any portion of a well is drilled using mud, Class 2M BOPE shall be installed on the surface casing so that the well can be shut-in at any time.

RULE 603. AREAS WITH HISTORY OF BLOWOUTS

Notwithstanding any of the provisions of Rule 602 above, when drilling in any geothermal resources area which has a history of lost circulation and/or blowouts, the operator shall equip the well with adequate blowout prevention equipment to contain such pressures as may have previously been encountered in the other well(s).

RULE 604. TESTING OF BLOWOUT PREVENTION EQUIPMENT

Upon installation, ram-type blowout preventers, bag-type blowout preventers, valves, and manifolds shall be tested to a minimum of 750 psi pressure. Tests may be witnessed by a Commission representative on all wells prior to drilling out the shoe of the surface casing, and the Commission shall be notified of the date and hour any such test is to be conducted sufficiently in advance of the test to allow a Commission representative to travel to the well to witness the test.

Ram-type preventers shall be operated at least once each 24 hours and bag-type preventers closed on the drill pipe at least once each week, provided however, that an exception to this provision may be granted by the Commission's Geothermal Division to prevent undue wear and tear on the preventer rubbers when drilling dry-steam wells.

I. RULES ON PROCEDURE

RULE 701. NECESSITY FOR HEARING

Except as provided in some general rule herein, before any rule, regulation or order, including revocation, changes, renewal or extension thereof, shall be made by the Commission, a public hearing before the Commission or a legally appointed examiner shall be held at such time and place as may be prescribed by the Commission.

RULE 702. EMERGENCY ORDERS

Notwithstanding any other provision of these rules, in case an emergency is found to exist by the Commission, which, in its judgment, requires the making of a rule, regulation, or order without a hearing having first been had or concluded, such emergency rule, regulation, or order when made by the Commission shall have the same validity as if a hearing with respect to the same had been held before the Commission after due notice. Such emergency rule, regulation, or order shall remain in force no longer than 15 days from its effective date, and in any event, it shall expire when the rule, regulation, or order made after due notice and hearing with respect to the subject matter of such emergency rule, regulation, or order becomes effective.

RULE 703. METHOD OF INITIATING A HEARING

The Commission upon its own motion, the Attorney General on behalf of the State, and any operator or producer, or any other person having a property interest may institute proceedings for a hearing. If the hearing is sought by the Commission it shall be on motion of the Commission and if by any other person it shall be by application. The application shall be in triplicate and shall state (1) the name of the applicant, (2) the name or general description of the common source or sources of supply or the area affected by the order sought, (3) briefly the general nature of the order, rule, or regulation sought, and (4) any other matter required by a particular rule or rules, or order of the Commission. The application shall be signed by the person seeking the hearing or by his attorney.

When conditions are such as to require verbal application to place a matter for hearing on a given docket, the Commission will accept such verbal application in order to meet publishing deadlines. However, if written application, filed in accordance with the procedures outlined above, has not been received by the

Commission's Santa Fe office at least ten days before the date of the hearing, the case will be dismissed.

RULE 704. METHOD OF GIVING LEGAL NOTICE FOR HEARING

Notice of each hearing before the Commission and notice of each hearing before an Examiner shall be given by personal service on the person affected or by publication once in a newspaper of general circulation published at Santa Fe, New Mexico, and once in a newspaper of general circulation published in the county or each of the counties, if there be more than one, in which any geothermal resource or other property which may be affected is situated.

RULE 705. CONTENTS OF NOTICE OF HEARING

Such notice shall be issued in the name of "The State of New Mexico" and shall be signed by two members of the Commission or by the Secretary of the Commission, and the seal of the Commission shall be impressed thereon.

The notice shall specify whether the case is set for hearing before the Commission or before an Examiner and shall state the number and style of the case and the time and place of hearing and shall briefly state the general nature of the order or orders, rule or rules, regulation or regulations to be promulgated or effected. The notice shall also state the name of the petitioner or applicant, if any, and unless the contemplated order, rule, or regulation is intended to apply to and affect the entire state, it shall specify or generally describe the common source or sources of supply which may be affected by such order, rule, or regulation.

RULE 706. PERSONAL SERVICE OF NOTICE

Personal service of the notice of hearing may be made by any agent of the Commission or by any person over the age of 18 years in the same manner as is provided by law for the service of summons in civil actions in the district courts of this state. Such service shall be complete at the time of such personal service or on the date of publication, as the case may be. Proof of service shall be by the affidavit of the person making personal service or of the publisher of the newspaper in which publication is had. Service of the notice shall be made at least 10 days before the hearing.

RULE 707. PREPARATION OF NOTICES

After a motion or application is filed with the Commission, the notice or notices required shall be prepared by the Commission and service and publication thereof shall be taken care of by the Commission without cost to the applicant.

RULE 708. FILING PLEADINGS: COPY DELIVERED TO ADVERSE PARTY OR PARTIES

When any party to a hearing files any pleading, plea, or motion of any character (other than application for hearing) which is not by law or by these rules required to be served upon the adverse party or parties, he shall at the same time either deliver or mail to the adverse party or parties who have entered their appearance therein, or their respective attorneys of record, a copy of such pleading, plea, or motion. For the purposes of these rules, an appearance of any interested party shall be made either by letter addressed to the Commission, or in person at any proceeding before the Commission or before an Examiner, with notice of such appearance to the parties from whom such pleadings, pleas, or motions are desired.

RULE 709. CONTINUANCE OF HEARING WITHOUT NEW SERVICE

Any hearing before the Commission or an Examiner held after due notice may be continued by the person presiding at such hearing to a specified time and place without the necessity of notice of the same being again served or published. In the event of any continuance, a statement thereof shall be made in the record of the hearing which is continued.

RULE 710. CONDUCT OF HEARINGS

Hearings before the Commission or any Examiner shall be conducted without rigid formality. A transcript of testimony shall be taken and preserved as a part of the permanent record of the Commission. Any person testifying in response to a subpoena issued by the Commission and any person seeking to testify in support of an application or motion or in opposition thereto shall be required to do so under oath. However, relevant unsworn comments and observations by any interested party will be designated as such and included in the record. Comments and observations by representatives of operators' committees, the United States Geological Survey, the United States Bureau of Mines, the New Mexico Bureau of Mines, and other competent persons are welcomed. Any Examiner legally appointed by the Commission may

conduct such hearings as may be referred to such Examiner by the Commission or the Secretary thereof.

RULE 711. POWER OF COMMISSION TO REQUIRE ATTENDANCE OF WITNESSES AND PRODUCTION OF EVIDENCE

The Commission or any member thereof has statutory power to subpoena witnesses and to require the production of books, papers, and records in any proceeding before the Commission. A subpoena will be issued by the Commission for attendance at a hearing upon the written request of any person interested in the subject matter of the hearing. In case of the failure of a person to comply with the subpoena issued by the Commission, an attachment of the person may be issued by the district court of any district in the state, and such court has powers to punish for contempt. Any person found guilty of swearing falsely at any hearing may be punished for contempt.

RULE 712. RULES OF EVIDENCE

Full opportunity shall be afforded all interested parties at a hearing to present evidence and to cross-examine witnesses. In general, the rules of evidence applicable in a trial before a court without a jury shall be applicable, provided that such rules may be relaxed, where, by so doing, the ends of justice will be better served. No order shall be made which is not supported by competent legal evidence.

RULE 713. EXAMINERS' QUALIFICATIONS AND APPOINTMENT

The Commission shall, by ex parte order, designate and appoint not more than four individuals to be examiners. Each Examiner so appointed shall be a member of the staff of the Commission, but no Examiner need be a full time employee of the Commission. The Commission may, by ex parte order, designate and appoint a successor to any person whose status as an Examiner is terminated for any reason. Each individual designated and appointed as an Examiner must have at least six years practical experience as a geologist, petroleum engineer or licensed lawyer, or at least two years of such experience and a college degree in geology, engineering, or law; provided however, that nothing herein contained shall prevent any member of the Commission from being designated as, or serving as, an Examiner.

RULE 714. REFERRAL OF CASES TO EXAMINERS

Either the Commission or the Secretary thereof may refer any

matter or proceeding to any legally designated and appointed Examiner for hearing in accordance with these rules. The Examiner appointed to hear any specific case shall be designated by name.

RULE 715. EXAMINER'S POWER AND AUTHORITY

The Commission may, by ex parte order, limit the powers and duties of the Examiner in any particular case to such issues or to the performance of such acts as the Commission deems expedient; however, subject only to such limitations as may be ordered by the Commission, the Examiner to whom any matter or proceeding is referred under these rules shall have full authority to hold hearings on such matter or proceeding in accordance with and pursuant to these rules. The Examiner shall have the power to regulate all proceedings before him and to perform all acts and take all measures necessary or proper for the efficient and orderly conduct of such hearing, including the swearing of witnesses, receiving of testimony and exhibits offered in evidence, subject to such objections as may be imposed, and shall cause a complete record of the proceedings to be made and transcribed and shall certify same to the Commission as hereinafter provided.

RULE 716. HEARINGS WHICH MUST BE HELD BEFORE COMMISSION

Notwithstanding any other provisions of these rules, the hearing on any matter shall be held before the Commission (1) if it is a hearing de novo, or (2) if the Commission in its discretion desires to hear the matter.

RULE 717. EXAMINER'S MANNER OF CONDUCTING HEARING

An Examiner conducting a hearing under these rules shall conduct himself as a disinterested umpire.

RULE 718. REPORT AND RECOMMENDATIONS, EXAMINER'S HEARINGS

Upon the conclusion of any hearing before an Examiner, the Examiner shall promptly consider the proceedings in such hearing, and based upon the record of such hearing the Examiner shall prepare his written report and recommendations for the disposition of the matter of proceeding by the Commission. Such report and recommendations shall either be accompanied by a proposed order or shall be in the form of a proposed order, and shall be submitted to the Commission with the certified record of the hearing.

RULE 719. DISPOSITION OF CASES HEARD BY EXAMINERS

After receipt of the report and recommendations of the Examiner, the Commission shall either enter its order disposing of the matter or proceeding, or refer such matter or proceeding to the Examiner for further hearing.

RULE 720. DE NOVO HEARING BEFORE COMMISSION

When any order has been entered by the Commission pursuant to any hearing held by an Examiner, any party adversely affected by such order shall have the right to have such matter or proceeding heard de novo before the Commission, provided that within 30 days from the date such order is rendered such party files with the Commission a written application for such hearing before the Commission. If such application is filed, the matter or proceeding shall be set for hearing before the Commission at the next regular hearing date following the expiration of fifteen days from the date such application is filed with the Commission. Any person affected by the order or decision rendered by the Commission after hearing before the Commission may apply for rehearing pursuant to and in accordance with the provisions of Rule 722, and said Rule 722 together with the law applicable to rehearing and appeals in matters and proceedings before the Commission shall thereafter apply to such matter or proceeding.

RULE 721. NOTICE OF COMMISSION'S ORDERS

Within ten days after any order, including any order granting or refusing rehearing, or order following rehearing, has been rendered by the Commission, a copy of such order shall be mailed by the Commission to each person or his attorney of record who has entered his appearance of record in the matter of proceeding pursuant to which such order is rendered.

RULE 722. REHEARINGS

Within 20 days after entry of any order or decision of the Commission any person affected thereby may file with the Commission an application for rehearing in respect of any matter determined by such order or decision, setting forth the respect in which such order or decision is believed to be erroneous. The Commission shall grant or refuse any such application in whole or in part within 10 days after the same is filed and failure to act thereon within such period shall be deemed a refusal thereof and a final disposition of such application. In the event the rehearing is granted, the Commission may enter such new order or decision after rehearing as may be required under the circumstances.

RULE 723. CHANGES IN FORMS AND REPORTS

Any change in the forms and reports or rules relating to such forms and reports shall be made only by order of the Commission issued after due notice and hearing.

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N.M.B.M.		
U.S.G.S.		
Operator		
Land Office		

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-101
10-1-74

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK---GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease STATE [ ] FEE [ ]

5A. State Lease No.

1a. Type of Work: Drill [ ] Deepen [ ] Plug Back [ ]

b. Type of Well: Geothermal Producer [ ] Temp Observation [ ] Low-Temp Thermal [ ] Injection/Disposal [ ]

7. Unit Agreement Name

8. Farm or Lease Name

2. Name of Operator

9. Well No.

3. Address of Operator

10. Field and Pool, or Wildcat

4. Location of Well UNIT LETTER _____ LOCATED _____ FEET FROM THE _____ LINE AND _____ FEET FROM THE _____ LINE OF SEC. _____ TWP. _____ RGE. _____ NMPM

12. County

19. Proposed Depth | 19A. Formation | 20. Rotary or C.T.

21. Elevations (Show whether DF, RT, etc.) | 21A. Kind & Status Plug. Bond | 21B. Drilling Contractor | 22. Approx. Date Work will start

23.

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP

Order No. R-4860
Exhibit No. B

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed _____ Title _____ Date _____

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION

Form G-102
10-1-74

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator			Lease		Well No.
Unit Letter	Section	Township	Range	County	
Actual Footage Location of Well: feet from the line and feet from the line					
Ground Level Elev.	Producing Formation		Pool		Dedicated Acreage: Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

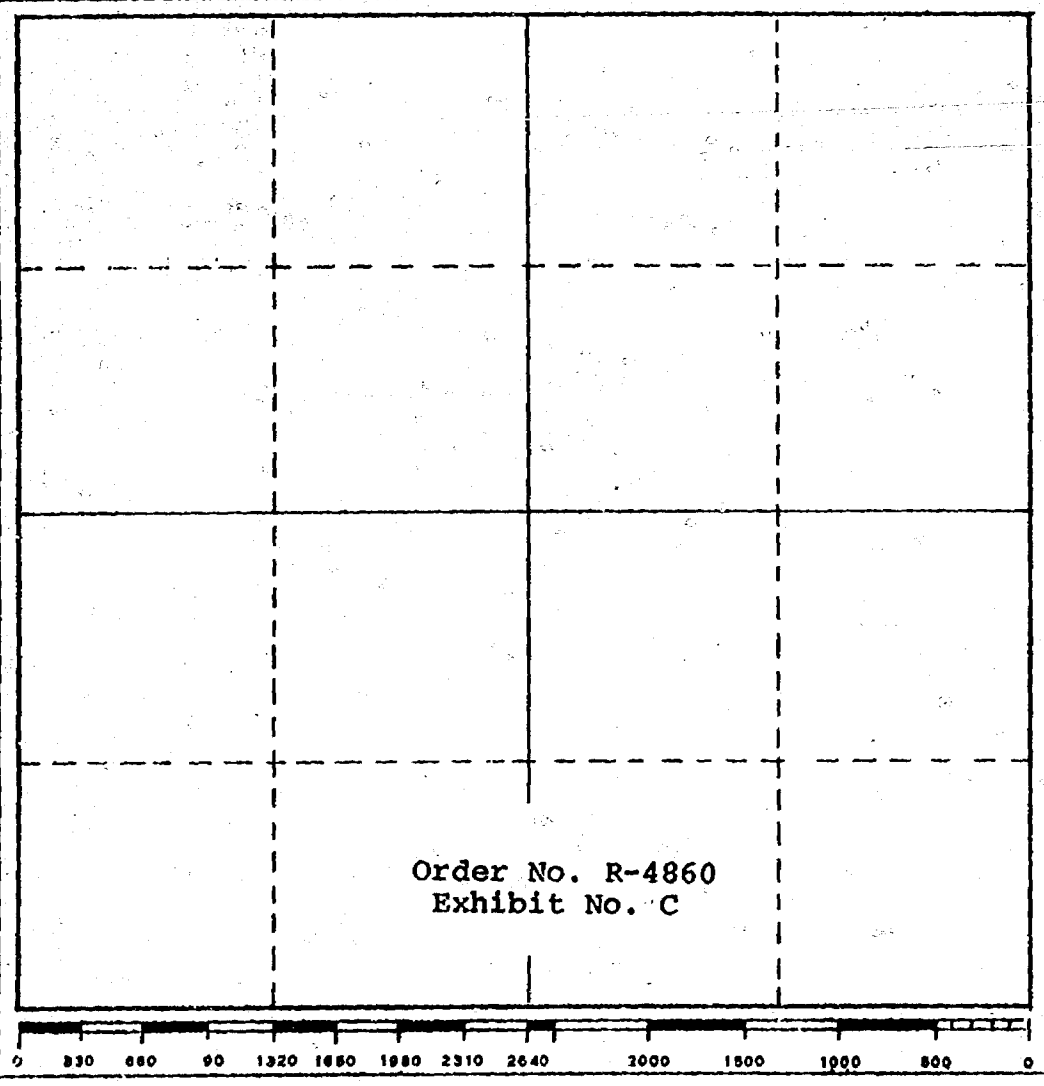
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name

Position

Company

Date

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

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DISTRIBUTION		
File		
N.M.B.M.		
U.S.G.S.		
Operator		
Land Office		

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-103
10-1-74

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease State ☐ Fee ☐

5A State Lease No.

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM G-101) FOR SUCH PROPOSALS.)

1. Type of Well — Geothermal Producer ☐ Temp Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐

7. Unit Agreement Name

2. Name of Operator

8. Farm or Lease Name

3. Address of Operator

9. Well No.

4. Location of Well

UNIT LETTER _____, _____ FEET FROM THE _____ LINE AND _____ FEET FROM THE _____ LINE, SECTION _____ TOWNSHIP _____ RANGE _____ NMPM.

10. Field and Pool, or Wildcat

15. Elevation (Show whether DF, RT, GR, etc.)

12. County

16.

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER _____ ☐		OTHER _____ ☐	

17. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 203.

Order No. R-4860
Exhibit No. D

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED _____ TITLE _____ DATE _____

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-104
10-1-74

CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO PRODUCE GEOTHERMAL RESOURCES

OWNER OR OPERATOR
Name_____
Address_____

TYPE OF WELL
Geothermal Producer [ ] Low-Temperature Thermal [ ] Injection/Disposal [ ]

REASON FOR FILING
New well [ ] Recompletion [ ]
Change in Ownership [ ] Designation of Purchaser [ ]
Other (Please Explain) [ ] _____

DESCRIPTION OF WELL
Lease Name_____ Well No. _____ Name of Reservoir_____
Kind of Lease (Fee, Fed. or State)_____ Lease Number_____

LOCATION
Unit Letter_____; _____feet from the_____line and _____feet from the_____line of
Section_____Township_____Range_____
County_____

TYPE OF PRODUCT
Dry Steam_____ Steam and Water _____ Low-Temp. Thermal Water_____

DESIGNATION OF PURCHASER OF PRODUCT
Name of Purchaser_____
Address of Purchaser _____
Product Will Be Used For_____

Order No. R-4860 _
Exhibit No. E

CERTIFICATE OF COMPLIANCE

I hereby certify that all rules and regulations concerning geothermal resources wells in the State of New Mexico, as promulgated by the Oil Conservation Commission of New Mexico, have been complied with, with respect to the subject well, and that the information given above is true and complete to the best of my knowledge and belief.

Signed_____Position_____Date_____

Approved_____Position_____Date_____

NEW MEXICO OIL CONSERVATION COMMISSION
P.O. Box 2088, Santa Fe 87501

Form G-105
10-1-74

GEOTHERMAL RESOURCES WELL LOG

Operator _____

Address _____

Reservoir _____

Lease Name _____ Well No. _____ Unit Letter ___

Location: _____ feet from the _____ line and _____ feet from the _____ line Section _____

Township _____ Range _____ County _____

FORMATIONS PENETRATED BY WELL

DEPTH TO		Thickness	Drilled or Cored	Recovery	DESCRIPTION
Top of Formation	Bottom of Formation				

Attach Additional Sheets if Necessary

This form must be accompanied by copies of electric logs, directional surveys, physical or chemical logs, water analyses, tests, including potential tests, and temperature surveys (See Rule 205).

Order No. R-4860
Exhibit No. F

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position _____ Date _____

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-106
10-1-74

GEOTHERMAL RESOURCES WELL SUMMARY REPORT

Operator _____ Address _____
Lease Name _____ Well No. _____
Unit Letter _____ Sec. _____ Twp. _____ Rge. _____
Reservoir _____ County _____

Commenced drilling _____ GEOLOGICAL MARKERS DEPTH

Completed drilling _____

Total depth _____ Plugged depth _____

Junk _____

Commenced producing _____ (Date) Geologic age at total depth: _____

Date	Static test Shut-in well head		Production Test Data								
			Total Mass Flow Data					Separator Data			
	Temp. °F	Pres. Psig	Lbs/Hr	Temp. °F	Pres. Psig.	Enthalpy	Orifice	Water cuft/Hr	Steam Lbs/Hr	Pres. Psig.	Temp. °F

CASING RECORD (Present Hole)

Size of Hole Drilled	Size of Casing (A. P. I.)	Weight of Casing	Grade of Casing	New or Second Hand	Seamless or Lapweld	Depth of Shoe	Top of Casing	Number of Sacks of Cement	Top of Cement	Method of Determining Top

PERFORATED CASING
(Size, top, bottom, perforated intervals, size and spacing of perforation and method.)

Was analysis of effluent made? _____ Electrical log depths _____ Temperature log depths _____

Order No. R-4860
Exhibit No. G

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position _____ Date _____

Form C-107
10-1-78

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL HISTORY

Operator _____ Address _____

Lease Name _____ Well No. _____

Unit Letter _____ Sec. _____ Twp. _____ Rge _____

Reservoir _____ County _____

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting, and initial production data and zone temperature.

Date

Order No. R-4860
Exhibit No. H

CERTIFICATION *(Attach additional sheets if necessary)*

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position _____ Date _____

Form G-108
10-1-74

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

MONTHLY GEOTHERMAL PRODUCTION REPORT

SUBMIT IN DUPLICATE

Month - Year

Operator | Address

Lease Name | Reservoir | County

NOTE: Report actual production (NOT SALES). Use Form G-109 for water injection wells.

Well No.	Unit Ltr	Sec.	Twp.	Rge	Total mass produced (Lbs x 10^6)	Dry steam produced (Lbs x 10^6)	Flow temp. (°F)	Flow pres. (psi)	Water produced (acre-feet)	Minerals produced (type and tons)	Method of Prod (F. or P.)	No. days well produced	If well not on production, state reason
TOTALS													

Order No. R-4860
Exhibit No. I

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

(Signature) (Title) (Date)

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

Form G-109
10-1-74

MONTHLY GEOTHERMAL PURCHASER'S REPORT

Month of

Purchaser's Name	Address
Place of Utilization	Purpose / Producer's Name
Lease	Field / County

WELL NO.	LOCATION UL	S	T	R	Product* Purchased	Total Mass, Lbs. x 10^6	Total Vol., Acre Feet	Total Vol., Gallons†	Temp. °F	Pres. psi

Order No. R-4860
Exhibit No. J

Totals			
Residual Water	Acre Feet	Gallons†	Disposition
Type and Weight of Minerals Extracted			Disposition of Minerals

*State type of product: Dry Steam, Geothermal Water, Low-Temp. Thermal Water, etc.
†Total Volume in Gallons for Low-Temp. Thermal Wells Only

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

Remarks: _____ Name _____

_____ Title _____ Date _____

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form C-110
10-1-74

MONTHLY GEOTHERMAL INJECTION REPORT

Month of

Operator | Address

Lease Name | Field | County

WELL NO.	LOCATION UL	S	T	R	P.M. or D.	ACRE FEET WATER INJ.	AVE. SURF. INJ. PRES.	AVE. TEMP. INJ. WTR.	CUMULATIVE WATER INJ.	NAME OF INJ. ZONE	SOURCE OF WATER
TOTALS											

Order No. R-4860
Exhibit No. K

P.M. is injection into a producing zone for the purpose of building up or maintaining pressure.
D. is injection into a zone other than a producing zone for disposal purposes.

I hereby certify that the above is true and complete to the best of my knowledge and belief.

Remarks: _____ Name _____

_____ Company _____

_____ Title _____ Date _____

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

Form G-111
10-1-74

ANNUAL GEOTHERMAL TEMPERATURE AND PRESSURE TESTS

Operator	Address	Field	County

LEASE	WELL NO.	LOCATION UL	S	T	R	Date & Hour Shut In	Production Last 24 Hrs.	Flowing Pres. psi	Flowing Temp. °F	Date & Hour of Tests	Time Shut-in Hrs., Mins.	SI Pres psig Dead-weight

Order No. R-4860
Exhibit No. L

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

Signature _____ Title _____ Date _____

NEW MEXICO OIL CONSERVATION COMMISSION

Form C-112
10-1-78

P. O. Box 2088, Santa Fe 87501

APPLICATION TO PLACE WELL ON INJECTION-GEOTHERMAL RESOURCES AREA

OPERATOR		ADDRESS	
LEASE NAME	WELL NO.	FIELD	COUNTY

LOCATION

UNIT LETTER _____; WELL IS LOCATED _____ FEET FROM THE _____ LINE AND _____ FEET FROM THE _____ LINE, SECTION _____ TOWNSHIP _____ RANGE _____, NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
CONDUCTOR PIPE					
SURFACE CASING					
LONG STRING					
TUBING			NAME, MODEL AND DEPTH OF TUBING PACKER		

NAME OF PROPOSED INJECTION FORMATION	TOP O. FORMATION	BOTTOM OF FORMATION

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION

IS THIS A NEW WELL DRILLED FOR INJECTION	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	IS THIS INJECTION FOR PURPOSE OF PRESSURE MAINTENANCE OR WATER DISPOSAL? (SEE RULES 501 AND 502)

ANTICIPATED DAILY INJECTION VOLUME	MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSI)

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE –	WATER TO BE INJECTED	NATURAL WATER IN INJECTION ZONE	ARE WATER ANALYSES ATTACHED?

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL

Order No. R-4860
Exhibit No. M

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL?			
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 503)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

(Signature)	(Title)	(Date)

NOTE: Should waivers from all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 20 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 20-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 503.

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

I. R. TRUJILLO
CHAIRMAN
LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER
STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

MEMORANDUM

TO: JIM BACA, GOVERNOR'S OFFICE

FROM: DAN NUTTER, CHIEF ENGINEER

The New Mexico Oil Conservation Commission has docketed a case to be heard June 11, 1974, at Morgan Hall, State Land Office Building, Santa Fe, to consider the adoption of rules and regulations governing the drilling for and production of geothermal resources in the state.

The Commission was given jurisdiction over these resources by the 1973 Legislature, due to the similarity of drilling operations for steam wells and oil and gas wells.

The Commission staff has prepared proposed rules which have been circulated to all known interested parties, and were also discussed at a recent San Francisco meeting of the Geothermal Resources Council, a national organization of geothermal producing companies and state geothermal regulatory agencies.

Although most geothermal activity in this nation has thus far been confined to the west coast, New Mexico is regarded as having a very substantial potential in this field.

Notice of this hearing was published in accordance with law in several state newspapers in May, 1974.

June 7, 1974

dr/

Tech Rept # 17

samples were analyzed by the Geological Survey at their laboratory in Albuquerque, although some analyses from private companies are included. A few samples of water were analyzed in the field, because it was desirable that the concentration of chloride be known immediately.

The concentration, in parts per million, of individual chemical constituents is determined as the quantity, by weight, of the given constituent in a million unit weights of water. The concentration in parts per million of the various constituents can be converted to equivalents per million in order to make certain comparisons and interpretations. For example, the concentration of the various constituents must be converted to equivalents per million in order to determine the SAR (sodium-adsorption-ratio) value of a water. The SAR value together with the specific conductance of the water may be used to calculate the alkali hazard to a soil. To convert parts per million to equivalents per million, the concentration of the individual constituent is multiplied by its factor as given in the following table.

Factors for Converting Parts per Million to Equivalents per Million

Constituent	Factor	Constituent	Factor
Calcium (Ca)	0.04990	Bicarbonate (HCO_3)	0.01639
Magnesium (Mg)	.08224	Carbonate (CO_3)	.03333
Sodium (Na)	.04350	Sulfate (SO_4)	.02082
Potassium (K)	.02558	Chloride (Cl)	.02820
		Fluoride (F)	.05263
		Nitrate (NO_3)	.01613

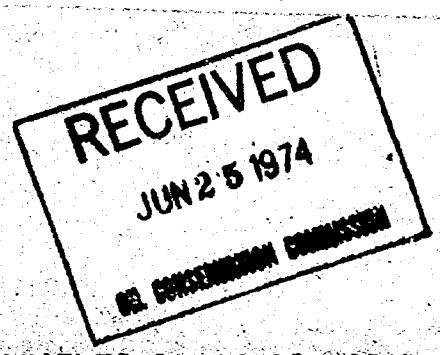
WSP # 1365

In this report, terms such as "slightly saline" or "moderately saline" refer to total dissolved solids, after the terminology used by Winslow and Kister (1956) as follows:

Description	Dissolved Solids, in Parts per Million
Slightly saline	1,000 to 3,000
Moderately saline	3,000 to 10,000
Very saline	10,000 to 35,000
Brine	more than 35,000

L. B. Haigler began the study in July 1952 with an inventory of several artesian wells, and he established a network of wells whose waters were sampled periodically. R. E. Smith continued the sampling program and collected other basic data from September 1952 to July 1953. J. W. Howard, Jr., was assigned to the project in August 1953. He supervised the construction of a test well in the saline area and collected water samples until September 1955. R. W. Mower was assigned to the project on a part-time basis from September 1955 to June 1956 to collect water samples periodically. M. J. Grogin was assigned to the project in June 1956.

western union Telegram



1974 JUN 25 PM 12:57

IPMFEKA SANA
2-025850E176 06/25/74
ICS IPMRNCZ CSP
2136246386 TDRN LOS ANGELES CA 06-25 0234P EDT
PMS NEW MEXICO OIL CONSERVATION COMMISSION, FONE , DLR
STATELAND OFFICE BUILDING
SANTA FE NM
GENTLEMEN THE WESTERN OIL AND GAS ASSOCIATION REPRESENTING MAJOR GEOTHERMAL PRODUCERS AND EXPLORERS OPERATING IN THE WESTERN STATES RESPCECFULLY REQUEST THAT YOUR COMMISSION SERIOUSLY CONSIDER DELETING RULE NUMBER 5 SINCE IT DOES NOT REFLECT EXISTING AND APPLICABLE STATUTES OF THE STATE OF NEW MEXICO. WE WOULD GREATLY APPRECIATE HAVING OUR SUGGESTION PLACED ON THE HEARING RECORD REGARDING PROPOSED RULE AND REGULATION FOR GEOTHERMAL RESOURCES. WE REGRET OUR INABILITY TO ATTEND YOUR RECENT HEARING BUT APPRECIATE YOUR KEEPING THE RECORD OPEN FOR OUR COMMENT.
HENRY W WRIGHT SEC GEOTHERMAL RESOURCES COMMITTEE

1436 EDTM

IPMFEKA SANA

OIL CONSERVATION COMMISSION

STATE OF NEW MEXICO
P. O. BOX 2088 - SANTA FE
87501

I. R. TRUJILLO
CHAIRMAN

LAND COMMISSIONER
ALEX J. ARMIJO
MEMBER

STATE GEOLOGIST
A. L. PORTER, JR.
SECRETARY - DIRECTOR

October 1, 1974

Re: CASE NO. 5255
ORDER NO. R-4860
Applicant:
OCC

Mr. Sumner G. Buell
Montgomery, Federici, Andrews, Hannahs
& Buell
Attorneys at Law
Post Office Box 2307
Santa Fe, New Mexico

Dear Sir:

Enclosed herewith are two copies of the above-referenced Commission order recently entered in the subject case.

Very truly yours,

A. L. Porter, Jr.

A. L. PORTER, JR.
Secretary-Director

ALP/ir

Copy of order also sent to:

Hobbs OCC x
Artesia OCC x
Aztec OCC x

Other Mr. Steve Reynolds, Mr. W. L. Cormier, Chevron, Denver, Gulf Oil Corporation, Denver, Colorado

Gulf Mineral Resources Co.

GEOTHERMAL EXPLORATION

Robert W. Maxwell
MANAGER

Gulf Building
1780 So. Bellaire St.
Denver, Colo. 80222

RECEIVED
JUL - 1 1974
OIL CONSERVATION COMM.
Santa Fe

June 26, 1974

New Mexico Oil Conservation Commission
Geothermal Division
P. O. Box 2088
Santa Fe, New Mexico 87501

Re: Rules and Regulations for
Geothermal Resources (Proposed)

Gentlemen:

Thank you for providing us with the opportunity to submit comments to you on your Proposed Rules and Regulations for Geothermal Resources. Gulf's comments are as follows:

Definitions

It is suggested that the definition of "Geothermal Observation Well" be modified by deleting the word "shallow" therefrom. In addition, an observation well should be able to be used for the purpose of obtaining geophysical and geological information. Therefore, the definition should be expanded to permit the well to be used for such purposes.

The definition of "Well" should either be deleted or the words "below fresh water" removed therefrom. As you know, it is entirely possible that fresh water may be found at great depths below the surface of the earth. It is submitted that it may be unrealistic for your Rules and Regulations to restrict geothermal wells to those that are below fresh water. It is also respectfully submitted that the different types of wells are adequately defined elsewhere in the definitions and that a separate definition of the term "Well" is not necessary.

Rule 5

Consideration should be given by the Commission to the deletion of Rule 5 in its entirety. While it may be appropriate for the Commission to provide that water from nongeothermal reservoir sources is subject to the New Mexico laws dealing with water rights and permits for the appropriation of water, is it correct to provide that geothermal reservoirs are subject to such laws? Gulf believes that geothermal resources should not be subject to the water laws of New Mexico, because the laws and cases on water rights were not written or decided with the intent that they would deal with geothermal resources. Any attempt to saddle geothermal exploration, development and production with the water laws of the State will only result in retarding or possibly prohibiting the development of the geothermal industry in New Mexico.

It is Gulf's opinion that one of the Commission's highest priorities should be the resolution of the question of whether State water law applies to geothermal resources. If it does, then we believe that the Commission should take such steps as are necessary to have geothermal resources treated separate and apart from such water laws.

Rule 117

Gulf suggests that the definition of the term "Watercourse" be changed so as to provide that a watercourse is an actual body of water, be it a lake, river, stream or canal. It is believed that immediate notification should not be required if the spill, break or leak occurs on dry ground. Gulf would have no objection to notifying the Commision within a reasonable time after such an event has occurred.

Rule 303

It is requested that the extension of the permit for temporary abandonment be increased from one year to five years, or in the alternative that a ground be added to the last paragraph of the Rule so as to allow a waiver and the granting of additional extensions if an owner is in good faith attempting to enter into a contract for the construction of power plants, or is conducting geothermal exploration to determine the field's potential and feasibility for further drilling operations. As you know, the geothermal industry is in its infancy and delays are likely to occur which in the oil and gas business may be unreasonable. Therefore, any flexibility that the State of New Mexico can give an owner will provide more incentive. Gulf believes that these types of incentives will be in the best interest of all parties.

Rule 402

Gulf believes that the "ratable take" concept is unrealistic when applied to geothermal resources. Oil and gas wells may lend themselves to such a concept, because usually the oil and gas produced therefrom can be readily sold. On the other hand, a number of geothermal wells are required in order to obtain a market for the geothermal resources. The market would, in most instances, be a power plant capable of producing electricity, and it would be manifestly unfair for an owner who has developed sufficient geothermal resources to justify a power plant to have to shut-in wells capable of production, or not drill at all, because the resources of another owner, which may be insufficient by themselves, must be purchased under the "ratable take" concept. We suggest that Rule 402 be deleted.

In Gulf's opinion the Proposed Rules and Regulations are well drafted, and with the exception of the comments set forth above, Gulf believes that their adoption will further geothermal development in New Mexico.

Very truly yours,

GULF MINERAL RESOURCES CO.

By _____
Robert W. Maxwell, Manager
Geothermal Exploration

RWM:JGZ:jaf

Chevron Oil Company
Western Division
1700 Broadway, P.O. Box 599, Denver, CO 80201

June 28, 1974

RECEIVED
JUL 1 - 1974
OIL CONSERVATION COMMISSION

Proposed Rules and Regulations
For Geothermal Resources
New Mexico Oil Conservation
Commission, Geothermal Division

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico 87501

Attention Mr. William F. Carr

Gentlemen:

Thank you for allowing us the opportunity to review the proposed Rules and Regulations for Geothermal Resources which were considered at the Hearing in Santa Fe on June 11, and the further privilege of submitting our comments thereon.

We respectfully request that the following comments and suggestions be included in the Hearing Record:

Definitions, Page A-1

A. It appears that the definition "Geothermal Observation Well" includes temperature gradient wells which are drilled to a depth of less than 500' and can be likened to a seismic hole. We submit that is unreasonable both from a time and cost standpoint:

(1) To require a permit to drill a temperature gradient well (Rule 201);

(2) To require the survey of the location of such a well as would be necessary to complete a Form G-102 (Rule 202);

(3) To require filing of a plugging and abandonment report (Rule 203B);

(4) To require the filing of a bond (Rule 101); and

(5) To require the filing of any reports with respect to such wells.

We, therefore, recommend the definition be amended to read: "GEOTHERMAL OBSERVATION WELL shall mean a shallow well drilled to a depth of 500' or less ~~more~~ solely for - - - - - - - - - ."

(talked to Mr. Carmier 8/6/74)

Further, it is recommended that the following be added to the definition of WELL: "A hole drilled to a depth of less than 500' for the purpose of determining temperature gradient shall not be considered a well."

B. We recognize that the definition of geothermal resources in the proposed rules follows the statutes; nevertheless, we would like to point out that such definition restricts by-products to those carried by naturally heated fluids. This precludes by-product recovery by injection and should be amended. An example would be the creation of steam by injecting water into a hot-rocks formation.

Rule 103, Page C-2

Said rule provides, in part, for a sign to be placed on each well designating the well location by quarter-quarter section, township and range. We know of several areas in New Mexico that are unsurveyed; therefore, we request that the said rule be amended to provide alternate methods of designating the well location in the event the well location is in an unsurveyed area.

Rule 104B (1), Page C-3

We suggest that there be no acreage restriction on the size lease or drilling parcel upon which an exploratory well can be drilled; that the only restriction be that the well be located at least 330' from the boundary of a legal subdivision or a projected legal subdivision (unsurveyed land or protracted survey) and 660' from another well. It is our experience within many potential geothermal areas the tracts are small and irregular. There should be no reason for creating unnecessary drilling parcels for an exploratory well. This can come in the event of a discovery and subsequent development. If an acreage restriction is to be retained, we strongly recommend that it be 10 acres rather than 40 acres.

Rule 107(a), Page C-5

The present language appears to include all types of water likely to be encountered in drilling for geothermal resources. We recommend this be limited to zones of fresh-salt water interface only.

Rule 108B (4), Page C-7

With reference to the second paragraph of this rule, it has been our experience that in lower temperature areas, binary heat exchange methods of production will have to be used. In such cases the normal procedure is to lap the production string into the surface casing so a large diameter pump can be used in the surface casing. We recommend deletion of this part of the rule.

Rule 200B, Page D-1

The second sentence of the first paragraph is not complete. Perhaps the following will clarify the intent:

(1) Delete the comma after "encountered" in the 6th line and insert "shall be recorded," and

(2) Delete the period after "surveys" in the 8th (last) line and add "shall be kept on file."

Also, in this connection with this rule, we assume that "geothermal resources well" does not include a geothermal observation well since observation wells are drilled during the prospecting stage and the operator is not likely to have an office or agent in the state on a permanent or semipermanent basis. To clarify this point, we suggest the following be added after "well" in the first line: "but not a geothermal observation well."

We concur with Mr. Reynolds' suggestion made at the Hearing and recommend that in the last paragraph, second line, that the word "statutory" be deleted and the word "designated" be substituted therefor.

Further, how long must an owner or operator have a local office or "designated" agent in the state? If his operations in the state are discontinued either on a temporary or permanent basis, he should be able to move the records to his headquarters in another state. In such event, he should be obligated to furnish copies of the data upon reasonable demand by the Commission.

Rule 201, Page D-1

This rule requires a separate permit for each "temperature observation well." For the sake of consistency, we believe this should be changed to "geothermal observation well."

Rule 205A, Page D-6

This rule requires the submission of copies of "electric logs, deviation and directional surveys, physical or chemical logs, water analyses, tests, including potential tests and temperature surveys." We believe the use of the word potential will result in problems. How will it be determined and by whom? We believe the matter would be clarified by striking that portion of the second sentence beginning with the word "including" and substituting therefor the words "and any other tests or temperature surveys that may be conducted."

Rule 206, Page D-7

To be consistent with Rules 205 and 207, we recommend that the report required by this rule be made subject to Rule 303-B also, since said report also includes proprietary data.

Rule 303B, Pages E-1 and E-2

We concur with Union's suggestion made at the Hearing and strongly recommend the addition of their suggested language at the end of the last paragraph of said rule: "or in the case of an ongoing exploration program of a geothermal reservoir to determine its commercial feasibility." The need to have an extended period of time in which a well may be carried as temporarily abandoned certainly exists and perhaps more so during the exploration phase in attempting to define a geothermal reservoir. Such need becomes especially important when considering remote areas where it will be more difficult to interest a power company in building a power facility. For example, within the time-frame presently allowed (1-1/2 years without notice and hearing), an operator may be able to prove up resources sufficient for only a 55-megawatt facility, and assuming that the reservoir is located in a remote mountainous area, may be unable to interest a utility company in building a plant for that amount; whereas, if the operator had more time and could prove up resources sufficient for 110 or more megawatts, he would stand a much better chance of getting a Utility Company to build a plant or plants. We further believe the addition of the suggested language would encourage development inasmuch as it would afford an owner (and/or operator) a means of protecting proprietary data so long as he can demonstrate that he is conducting a diligent exploration and development program in good faith. Under the prescribed periodic review system, the Commission will have ample opportunity to determine if an owner (and/or operator) is acting in good faith.

Rule 503(4) and (5), Pages G-1 and G-2

The information required by these rules is interpretive. We do not believe an operator should be required to furnish this information; that each interested party should make his own interpretation of information available to him.

In summation, may we again strongly emphasize the importance and necessity for making a distinction between temperature gradient holes less than 500' (which, based on our experience, is a very vital tool in any preliminary exploration program) and temperature observation wells deeper than 500'. We feel the failure to recognize this distinction and make provision therefor, will be seriously detrimental and impede exploration for geothermal resources in the State of New Mexico.

As a whole, we feel that the rules are well written and appreciate the effort that has been made to be fair to both the State of New Mexico and the industry.

Again, we would like to express our appreciation to the Commission for the courtesy extended in allowing us to submit our comments.

Respectfully submitted,

CHEVRON OIL COMPANY

By W. L. Cormier
W. L. Cormier, Landman

WLC:eh

J. O. SETH (1883-1963)

A. K. MONTGOMERY
WM. R. FEDERICI
FRANK ANDREWS
FRED C. HANNAHS
SUMNER G. BUELL
SETH D. MONTGOMERY
FRANK ANDREWS III
OWEN M. LOPEZ

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MONTGOMERY, FEDERICI, ANDREWS, HANNAHS & BUELL
ATTORNEYS AND COUNSELORS AT LAW
350 EAST PALACE AVENUE
SANTA FE, NEW MEXICO 87501

POST OFFICE BOX 2307
AREA CODE 505
TELEPHONE 982-3876

June 25, 1974

New Mexico Oil Conservation Commission
State Land Office Building
Santa Fe, New Mexico 87501

Attention: Mr. William F. Carr

Gentlemen:

At the hearing on the proposed Rules and Regulations for Geothermal Resources held June 11, 1974, the record was left open for additional comments. On behalf of the Union Oil Company of California we are submitting comments for inclusion within the record.

In the definition section, on page A3, the word "well" is defined. Basically, the definition includes certain wells "drilled below fresh water". A geothermal well, whether it be exploratory, development or injection, could well be drilled into fresh water and not below it. We submit that perhaps the language should be changed to read "drilled for geothermal purposes" and delete the language "below fresh water."

Rule 5, appearing at page B2, was the subject of considerable discussion at the hearings. Union Oil Company of California submits that clarifying language could be used in place of Rule 5 to clearly delineate the jurisdiction of both the Oil Conservation Commission and the State Engineer's Office. We submit the following proposed substitute for Rule 5:

> The Commission recognizes that the appropriation of water for geothermal development and production is subject to the laws of the State of New Mexico governing water rights.

Rule 5 as it is presently written, or as proposed to be amended by the State Engineer, appears to grant to the State Engineer, by regulation, some of the jurisdiction

placed in the Commission by the Legislature. Section 65-3-11.2 NMSA 1953 clearly vested the Commission with the authority and duty to regulate drilling, development and production of geothermal resources. It seems apparent that had the Legislature desired the State Engineer to regulate geothermal activities that it would have spoken clearly on the subject. The Legislature decided to place geothermal regulation with the Commission and the Commission should not now by rule assign a portion of that duty to another state agency. The legislative mandate seems quite clear in this regard.

Rule 103, at page C2 provides for a sign to be placed on the wells designating the well location by quarter-quarter section. There are many areas in this state that are unsurveyed and some alternative should be available. We request that the rule be amended to permit well locations to be designated by either a latitude-longitude designation or by using an approved coordinate system such as is available from the United States Geological Survey.

Rule 200(B) appearing at page D1 provides that records are to be kept by an owner or operator with his statutory agent in New Mexico. We feel that the use of the language "designated agent" would be more appropriate since many corporations have only the Secretary of State or a corporate service agency as statutory agents.

Rule 303, page E2 permits additional extensions or time during which a well can be carried in a temporarily abandoned status. However, the situation as presently provided by the rule arises only during the construction of power plants or as the power plant is being designed, on order or under construction. The need to have an extended period of time in which a well may be carried as temporarily abandoned also exists during the development phase for a geothermal reservoir. We submit that at the end of the last paragraph in this rule that the period be deleted and the following language added:

> . . . or in the case of an ongoing exploration program of a geothermal reservoir to determine its commercial feasibility.

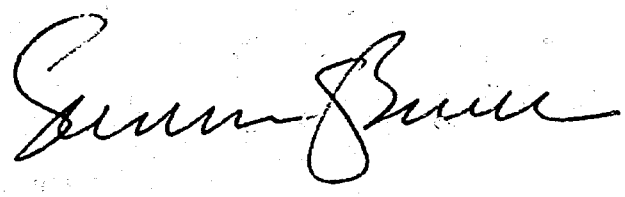
By the use of this additional language we think an owner-operator would be protected while conducting a good faith diligent exploration and development program. We do not

wish to provide protection for an owner-operator who is merely sitting on a single well with no plans of additional development. Of course, any person wishing to extend the status of the well would have to demonstrate their good faith to the Commission.

Union Oil Company of California would like to extend their appreciation to the Commission and its staff for being allowed to participate in the hearings and give their views. The Rules and Regulations represent a comprehensive regulatory scheme that should adequately protect the State of New Mexico, its citizens and its resources.

Respectfully submitted,

SGB:sbw



BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
June 11, 1974

COMMISSION HEARING

IN THE MATTER OF:

The hearing called by the Oil Conservation Commission of New Mexico upon its own motion to consider the adoption of general rules and regulations governing the drilling for and production of geothermal resources in the State of New Mexico. CASE 5255

BEFORE: A. L. Porter, Secretary-Director

I. R. Trujillo, Chairman

TRANSCRIPT OF HEARING

A P P E A R A N C E S

For the New Mexico Oil Conservation Commission: Thomas Derryberry, Esq.
Legal Counsel for the Commission
State Land Office Building
Santa Fe, New Mexico

For Union Oil Company: Sumner Buell, Esq.
MONTGOMERY, FEDERICI, ANDREWS, HANNAHS & BUELL
350 East Palace Avenue
Santa Fe, New Mexico

THE NYE REPORTING SERVICE
STATE-WIDE DEPOSITION NOTARIES
225 JOHNSON STREET
SANTA FE, NEW MEXICO 87501
TEL. (505) 982-0386

I N D E X

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S. E. REYNOLDS	82

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MR. PORTER: The Hearing will come to order, please. Let the record show that present for this particular Case is Chairman Trujillo and Commissioner Porter.

We will go on to Case 5255 and I would like to call for appearances in this Case.

MR. DERRYBERRY: I am Tom Derryberry representing the Oil Conservation Commission, and I have one witness.

MR. BUELL: Sumner Buell appearing on behalf of Union Oil Company of California and I will have one witness.

MR. REYNOLDS: Steve Reynolds appearing on behalf of the State Engineer Office.

MR. PORTER: Does anyone else have testimony to present in the case?

MR. CORMIER: Sir, I do not have testimony, but I would like to make a request. My name is W. L. Cormier with the Chevron Oil Company out of Denver.

MR. PORTER: Mr. Hanagan, do you intend to put on any testimony in this Case?

MR. HANAGAN: No, sir.

MR. PORTER: Well, I believe we will have three parties to put on testimony here, the Commission staff and Union and the State Engineer, and, of course, at the conclusion of the testimony anyone who would like to make a state-

ment may do so at that time, whether or not you have entered an appearance here, so I believe we are going to proceed with the testimony in the order that was indicated by the appearances. I'll call on Mr. Derryberry first and then I will ask Union to put on their testimony and then the State Engineer. Mr. Derryberry?

(Whereupon, the witness was sworn)

DAN NUTTER

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. DERRYBERRY:

Q Would you please state your name and position for the record?

A Dan Nutter, Chief Engineer for the New Mexico Oil Conservation Commission.

Q Would you give us a brief summary of your educational and experience background?

A Yes, sir. I graduated from the New Mexico School of Mines with a Bachelor of Science in Petroleum Engineering in January, 1952. Subsequent to that I immediately went to work for the Phillips Petroleum Company; I was employed by the Phillips Petroleum Company until August of 1954 when I

went to work for the Oil Conservation Commission as a staff engineer the first of September, 1954. I have been employed by the Commission since that date, and have been Chief Engineer for the Commission since 1958.

Q Have you been previously qualified, had your qualifications accepted as a matter of record by the Oil Conservation Commission?

A Yes, sir, I have.

MR. DERRYBERRY: We would like to tender Mr. Nutter as an expert witness in the field of geothermal energy production and related matters.

MR. PORTER: The Commission considers the witness qualified to testify.

BY MR. DERRYBERRY:

Q Were you delegated the primary responsibility by the Oil Conservation Commission for drafting the proposed regulations for geothermal energy resources development in the State of New Mexico?

A Yes, sir, the Commission gave me that assignment.

Q Would you briefly state the statutory background of State regulations in geothermal resources development?

A The New Mexico State legislature by Chapter 75, the Laws of 1973, enacted a Statute relating to the conserva-

tion, regulation and prevention of wasted geothermal resources, and giving the Oil Conservation Commission authority to regulate, conserve and prevent the waste of geothermal resources. I would like to read that Statute--it is very brief--into the record of this Hearing.

(Reading) Be it enacted by the Legislature of the State of New Mexico. Section 1. The Oil Conservation Commission is hereby vested with the authority and duty of regulating the drilling, development and production of geothermal resources and with the authority and duty of conserving and preventing waste of geothermal resources within this State in the same manner, insofar as is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas. "Geothermal Resources" as used herein 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. Nothing in this Section shall be construed to supersede the authority which any

State department or agency has with respect to the management, protection and utilization of the State lands and resources under its jurisdiction. (End of reading.) That is the entire Statute.

Q Would you briefly outline the steps you have taken to familiarize yourself with the geothermal energy resources production and development?

A Yes, sir. I'll be the first to admit that I'm an infant in the field of geothermal resources, but I have made an attempt to familiarize myself as much as possible since the enactment of this Statute and to acquaint myself with the drilling, production, and operation of geothermal resources, and with regulations and laws from other states concerning these resources. I have visited the only active geothermal resources development program in this State; I have also visited the geysers, which the only active commercial geothermal development of steam in the United States, in California; and I made every attempt that is possible to familiarize myself with this. I have also visited with state regulatory people on a number of occasions, who are concerned with geothermal development in their respective states.

(Whereupon, a discussion was held off the record.)

Q As a result of this study have you drafted proposed regulations for geothermal energy resources production and development in the State of New Mexico?

A Yes, sir, I have. I have drafted a copy of a set of rules and regulations for geothermal resources and I am proposing that these regulations be considered by the Commission.

Q Have these proposed regulations been circulated to the industry?

A Yes, sir. These proposed regulations have been circulated and sent to all of the known interested parties that we are aware of in the field of geothermal; they have been submitted to a recent meeting of the Geothermal Resources Council, which is a nation-wide organization of geothermal producing companies, and geothermal utilization companies, and various states which have geothermal interests in those states. This recent meeting was held in San Francisco, the meeting was attended by regulatory people in the field of geothermal from ten different western states, by the USGS, by the producing companies, and by the utility companies that utilize geothermal resources. The rules were presented in a panel, discussed at that meeting, there was discussion on them, as was there discussion on the rules and regulations

of other states. We obtained a mailing list of the attendance at that conference, which was highly representative of the geothermal industry today. Copies of these rules and regulations were mailed to that mailing list which we obtained, on May 31st, 1974 with a notation on the front cover that these proposed rules and regulations will be considered at public hearing by the New Mexico Oil Conservation Commission at 9:00 o'clock a.m., June 11, 1974, at Morgan Hall, State Land Office Building, Santa Fe, New Mexico. Copies of the proposed geothermal rules and regulations were also sent to the Water Quality Control Commission, the State Engineer Office, the Environmental Improvement Agency and the Attorney General's office, and I don't know if there are any other State agencies that they were mailed to or not.

MR. PORTER: The Bureau of Mines.

A (Continuing) The New Mexico Bureau of Mines received a copy, the USGS was sent copies of them, not only in the Roswell office, but also the Menlo Park, California office of the USGS which has jurisdiction of geothermal activity on Federal lands in the west.

Q Are these proposed regulations prepared in the form of an exhibit?

A They are prepared in the form of an Exhibit and

are marked Exhibit A, Case No. 5255.

Q Are copies of Exhibit A available for people attending the Commission?

A Yes, sir, there is an abundance of copies available here today for anyone who cares to pick one up.

Q Do you have any suggested revisions to the proposed regulations as presently set forth in Exhibit A?

A Yes, there are some proposed revisions to these rules and regulations that I would like to offer at this time.

We have been under quite a dead line as far as getting them prepared and the rules and regulations are in a state of flux and we were still editing them right up to the time of this hearing and we do have some corrections and some clarifications to offer at this hearing this morning.

Q Would you please refer to Exhibit A and review the proposed regulations, section by section, giving a short summary of each provision, including any changes in the present draft that you feel are necessary?

A Yes, sir. If you will notice first of all the table of contents, we have got 9 sections in these rules, being: Section A, Definitions; Section B, Miscellaneous Rules; Section C, Drilling and Production; Section D, Records

and Reports; E, Abandonment, Temporary Abandonment and Plugging of Wells; Section F, Ratable Take; Section G, Injection and Disposal Wells; Section H, Blowout Prevention; and Section I, Rules on Procedure.

I will start first with the Definitions. I think that these pretty well speak for themselves, I don't need to go into each one of them in detail. I would recommend that the definition of correlative rights, however, be changed in the next to the last line of that definition. The word "pool" should be stricken, and the word "reservoir" should be substituted for that.

On the next page, A-2, a low-temperature thermal well is defined as being a well drilled to produce low-temperature thermal water for the purpose of extracting heat for agricultural, industrial, municipal, or domestic use. This should also include the word "commercial".

You will note on the next page, A-3, that "waste" is defined, and it shall mean any physical waste including underground waste and surface waste. This is in conformance with the Statutes governing the drilling for and production of natural gas, natural or hydrocarbon gas, as we were required to do by the Statute, the Laws of 1973.

Now, if we refer to Section B, the Miscellaneous Rules.

Rule 1 there, if you come down to about the seventh line, the word "geothermal" should have a capital "G". This rule simply says that the rules are promulgated by the Commission to govern geothermal and that there may be special rules enacted for special pools.

Rule 2 is Enforcement of Laws, Rules and Regulations, giving the Commission jurisdiction to enforce this and permitting employees, or charging employees with the duty and obligation of enforcing the rules and regulations.

Rule 3 prohibits waste.

Rule 4 provides that all geothermal operations, exploratory, drilling, and producing shall be conducted in a manner that will afford maximum reasonable protection to human life and health and to the environment.

Rule 5 I have an amendment to. It is recognized by the Commission that the appropriation of water, in a liquid or gaseous state, from a geothermal reservoir, or the appropriation of water from any other source for the purpose of injection into a geothermal reservoir is subject to. Now, you can scratch the words, "such water rights and permits for water appropriation as may be required under." And, at the end of the sentence, "the laws of the State of New Mexico" add the following words: Concerning water rights

and permits for the appropriation of water. The rule would then read: It is recognized by the Commission that the appropriation of water, in a liquid or gaseous state, from a geothermal reservoir, or the appropriation of water from any other source for the purpose of injection into a geothermal reservoir is subject to the laws of the State of New Mexico concerning water rights and permits for the appropriation of water. This simply means that if the State laws require that you must have a water permit for the depletion of water from an underground reservoir or, I guess an underground reservoir, that the Commission recognizes that this permit would have to be obtained for this water right.

Rule 6 provides that we recognize that the United States Government will have regulations concerning geothermal development on its lands. However, these rules which are not in conflict with any Federal rules will apply to Federal lands.

Rule 7 permits the unitization of contiguous individual leases into unitized areas for the purpose of exploration and production of geothermal resources.

Rule 8 provides that the Commission will from time to time define pools and extend these pools.

Rule 9 says that we will print the forms that are required.

Rule 10 gives us the authority to cooperate with other agencies.

Now, Section C, Drilling and Production. Rule 101 is a plugging bond rule. We heard some discussion on plugging bonds this morning on oil and gas wells. We have taken Rule 101 in our Oil and Gas Section and done some revision to that; we think that perhaps this rule will better enable the Commission to keep up with the requirements for plugging wells. We will have more flexibility in the approval of bonds under this rule and it will make it possible for the Commission to have the funds available from these bonding companies for plugging wells in the event that there are a number of wells owned by a given operator which must be plugged. The $10,000 blanket bond which the Commission presently has in effect for oil and gas wells is inadequate for plugging more than two or three wells in many areas. In some cases it would only plug one well. So we have provided in this rule that the Commission will require a bond before drilling a well. One well would be a $5,000 bond for a geothermal exploratory development or injection well; that is outlined in Rule 101 (a) (1).

Now, if you will drop to Section (3). This one-well-geothermal bond in the amount of $5,000 could be replaced by a multiple well geothermal exploratory development or injection well bond in the amount of $10,000. However, not more than five wells could be drilled under any such bond. An additional $10,000 bond would be posted for each additional five wells or a fraction thereof, of course.

Now, if we come back up to Section (2) we will see that a low-temperature thermal well or a geothermal observation well, both of which would be relatively shallow, would have a one-well $2,000 bond. But, Section (4) provides that a multiple-well bond could be substituted for that one well, shallow-well bond in the amount of $10,000, but not more than 10 such wells could be drilled under that bond. An additional $10,000 bond would be posted for each additional 10 wells. The rest of the rule simply recites that the procedures for transfer of wells and for the release of the bond in the event that the wells are plugged or that they are transferred to another person.

Rule 102 says that a well shall not be drilled until you have a drilling permit, and on the third line there after the word "injection" I would also add "or disposal". So that a drilling permit would be required for a geothermal

production or for observation or for injection or disposal. Section (b) of that Rule is the same as we have in our Oil and Gas Rules that no permit would be approved for the drilling of a well within the corporate limits of any city, town or village unless notice of this had been given to the city council or the town council, and evidence of such notification is given to the Commission.

Rule 103 requires a sign on the wells so that our inspectors could tell which well they are looking at.

Rule 104 is Well Spacing. We first of all define an "exploratory"well and then a "development" well. An "exploratory" well is more than a mile from any defined geothermal reservoir. A "development" well is a well that is within the confines of a defined reservoir or within one mile thereof. The acreage requirements for exploration wells, now, this is the well that is out more than a mile away from any defined resource would be 40-surface acres minimum for the location of that well, and the well would have to be located at least 330 feet from the outer boundary of that drilling tract; no closer than 660 feet to another well capable of producing from or which is drilling to that same formation, and at least 100 feet from any public road, street or highway. Development wells in a pool, now once it has been designated

as a pool, would be located on a tract of 10 acres, and they would have to be at least 165 feet from the outer boundary of that 10-acre tract and at least 330 feet from another well drilling to or capable of producing from that formation, also 100 feet from a road or highway.

Injection wells don't have to have an acreage dedication, but they must be located at least 330 feet from the outer boundary of the lease that they are on, so that they are not too close to another man's property line. They also would have to be 100 feet from any road, street, or highway.

For geothermal observation wells and low-temperature thermal wells there is no restriction as to the placement of these, nor is there any acreage dedication requirement. I might get into the matter of these geothermal observation wells at this time. They are simply wells that are drilled at scientifically picked locations by the geologist to run probes into -- they drill the well down to maybe 500 feet and run probes in there and take measurements of the temperature and these are plotted over a period of time to see if there is a heat source under the ground there that is worth attempting to tap.

Section C of Rule 104 provides for administrative

approval of non-standard locations in the event that a location as described in Sections (1), (2), or (3) of Paragraph B is impossible or undesirable to drill. It requires notification to other operators in the event that you are crowding one.

In Section D is a provision that in the event a non-standard location is granted and you are permitted to crowd closer than the required distance to another operator that the Commission could take such action as may be necessary to offset any advantage that you gained by moving closer to that other operator. This would be done only after a hearing, however.

Section E provides that the Commission, after a hearing, could adopt special rules for pools. And in the fourth line there, if you will scratch the words "geothermal wells" and substitute "a particular geothermal reservoir", and then in the last full line where it says, "dedication requirements for", after the word "for" insert "a particular". It would be: dedication requirements for a particular low-temperature thermal. Then on the last line scratch the "s" after the word "fields". The rule would then say: In order to prevent waste and protect correlative rights, the Commission may after notice and hearing, adopt different well location

requirements and greater or lesser acreage dedication requirements than those contained in Rule 104 B (1), (2), and (3) for a particular geothermal reservoir and may adopt special well location and acreage dedication requirements for a particular low-temperature thermal field.

Rule 105 provides that you shall use rotary drilling equipment, except in the case of temperature-observation wells and low-temperature thermal wells and disposal wells which will not penetrate any high-pressure zone or formation, in which case you may use cable tools, otherwise rotary tools must be used.

Rule 106 requires that if you are drilling you must have a pit that is capable of containing the cuttings and the preventing of the spilling of these things on the surface of the ground. After the word "cuttings" on the fourth line, add the word "and". Then in the last line close the two words "water course" into one word.

Rule 107 provides that when you are drilllng a well, that you shall take the proper measurements to see that fresh water strata and brackish or briney water strata are sealed and there shall be no communication from one strata to the other. (b) provides that fresh waters shall be protected and special precautions by methods satisfactory to

the Commission shall be taken to guard against loss of artesian water in any strata in which it occurs, and to prevent the contamination of artesian water strata by objectionable thermal fluids. Normally the sealing off of these strata and the prevention of migration would be accomplished by casing and cement.

Rule 108 is Casing and Cementing Requirements. I have some changes in this particular Rule. If you will come down to the third line and after the words "disposal wells" scratch out the remainder of that line, "and geothermal observation wells if they penetrate fresh water". Then on the next line scratch out the words "bearing strata" so that the Rule would read: "All wells drilled for the production of geothermal resources, including low-temperature thermal wells, and all speciality wells, including injection and disposal wells shall be cased and cemented in such a manner as to protect surface waters, if any, usable ground waters, geothermal resources, and life, health, and property." Then we add another sentence: "Geothermal observation wells, if they penetrate fresh water bearing strata shall be completed and plugged in such a manner as to protect surface waters, if any, and usable ground waters.

The reason for this change is that you will note the

way the Rule was written a geothermal observation well if it penetrated fresh water, had to be cased and cemented in such a manner as to protect. A geothermal observation well is a temporary well and in some cases the running of casing into the well would prohibit the detection of the temperatures in a satisfactory manner, and particularly of metal casing. So the way a geothermal observation well is normally completed, it is about a four-inch hole drilled with a one-inch string of plastic pipe run in it and then this is filled in around there with cuttings. The one-inch plastic pipe then is filled with water to absorb the temperatures at the various levels and the probe run into the water to determine the temperature of the water. The use of casing, as such, is not advisable in these wells, so we have made the statement: "They shall be completed and plugged in such a manner as to protect the surface waters, if any, and usable ground waters." Now, it is contemplated that since they are of a temporary nature, that the completion and plugging would be done in a reasonable period of time, and that there would not be the migration of water. If they do penetrate fresh waters, normally they are not desirable as an observation well anyway, because the water, the inflow of water into the well will affect the temperatures that you are trying to

measure.

The next Section, B, provides that the pipe shall provide anchorage for blowout prevention equipment, and it also puts the operator on notice that while we do have specifications for casing programs outlined below, these specifications for a casing program will be determined on a well-to-well basis, and that these guides that are provided hereafter are simply guides to be used in submitting your Form G-101.

There is a good possibility in some cases that the officer of the Commission that approves the drilling permit will revise the submitted casing program. So these are simply guides for the operator to know about what to expect. It provides that conductor pipe shall be run, but that you can't wait too long before running your surface pipe. It sets a maximum limit of 150 feet on your conductor pipe. However, if you are just using a single joint of conductor pipe for keeping mud out of the cellar, the conductor pipe requirements are not applicable.

Surface casing is required on wells much in the same manner as surface pipe is required on oil and gas wells. We do prescribe some lengths of surface pipe here in Section (a) of Page C-6. (Reading) In areas where subsurface geological conditions are variable or unknown, surface casing in general

shall be set at a depth equaling or exceeding 10 percent of the proposed total depth of the well. (End of reading.) The word "the" should be inserted, and the words "drilled in such areas" scratched out.

(Reading) A minimum of 200 feet and a maximum of 1,300 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 Commission after a careful study of geological conditions. The Commission will make such a determination within 30 days. Drilling will not commence until such determination has been made and the drilling permit has been approved. (End of reading.) So this is going to enable the Commission to tailor the surface pipe program to the conditions that may be known to exist in a given area.

Within the confines of a designated geothermal field, once you have discovered it and know what the conditions are, the depth at which surface casing shall be set shall be determined by the Commission on the basis of known-field conditions and the requirements of (1) and (2) might be waived.

The cementing point for surface casing is outlined in Section (b) there. The first one requires that surface pipe

shall be set in a good solid lithologic unit so that you can get a good seat for your casing and your cement. It provides that if after setting your surface pipe, you are drilling out from under it and you start running into abnormally high pressures or temperatures that the Commission may require a second string of surface pipe be set. Chances are that when you start running into those conditions that this second string of casing could be the intermediate pipe then, and that the intermediate pipe which is required later would not be required to be run.

A correction there in (b) (1) on that second line where it says (a) (2), that should be (a) (1). In paragraph (2) there of section (b), on the second line where it says (a) (3), that should be (a) (2) above. And then on the fifth line after the words "ground water" insert the words, "and surface water".

Now I will read the last sentence of that particular Rule, Number (2), and add some words at the end. (Reading) A second string of surface casing may be required, before drilling into the known high pressure zone is permitted, if the first string of casing has not been cemented through a sufficient series of low-permeability, competent lithologic units, (End of reading) and either a rapidly increasing

thermal gradient or rapidly increasing formation pressures are encountered. This is the same provision that is up there in Section (1); it should be in Section (2) also, definitely in Section (2) because here we are drilling through known high-pressure areas.

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

Section (c) requires that the temperature of drilling mud be monitored as you are drilling the well and that the temperature be entered in a log book after every joint of pipe has been drilled down.

On page C-7 on the third line, change the words "Article 4" to"Section (h)". That Section (d) simply requires that blowout-prevention equipment is going to be required, and Section (h) which we will get to later details the use of blowout-prevention equipment.

Paragraph (3) there defines the intermediate casing, requires that an intermediate casing shall if possible be cemented solid to the surface, but the requirement to

circulate cement may be waived if the production casing is going to be cemented to the surface.

Section (4) on production casing states that the production casing shall be run either to the top of the pay or through the pay, that it shall be cemented solid to the surface or lapped into the intermediate casing, if intermediate casing was run. If the production casing is lapped into an intermediate string the casing overlap shall be at 50 feet, and a good solid-cemented joint obtained.

The next paragraph provides that in case of corrosive brine reservoirs you will have the same nominal design from the bottom of the hole -- same nominal inside diameter from the bottom of the hole to the top of the ground -- to prevent the formation of air bubbles and corrosion, to lessen the danger of that.

Section (5) provides that if there is any evidence that the casing is defective that it shall be repaired, and if they can't repair it the well should be plugged.

Section (6) provides that the well shall be logged, if possible, from total depth to the bottom of the conductor pipe prior to the running of the surface casing, but that this requirement is not necessary on observation wells or low-temperature thermal wells, and the requirement could be

(Reporter's note: Page 27 inadvertently skipped in transcription; text of deposition is intact.)

waived by the Commission if they know enough about the geologic conditions in the area.

Rule 109 is a rule concerning deviation tests and directional drilling, and it requires that at least every 500 feet that a Totco survey be made, and on line number 5, it says that will be submitted on Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources. "G-104"should be changed to "G-105", the Geothermal Resources Well Log. So that would come in with the G-105, the Deviation Survey.

The next paragraph provides that if an offset operator feels like a crooked hole is infringing on his property he can ask for a well survey, provided he posts a bond.

The next paragraph provides that no wells shall be intentionally deviated, except toward the vertical, without prior permission of the Commission. Our present Oil and Gas Rules require that this special permission from the Commission come after a hearing. That may be a little stringent in the Oil and Gas Rules, I don't know, but I am recommending for these geothermal rules that a hearing not be required but that a Form G-103,with copies to other operators owning leases offsetting the drilling tract, be filed, and that permission be given for the intentional deviation of a well

in a direction other than towards the vertical. However, it does provide that any well that is so deviated shall have a directional survey run on the well and filed with the Commission.

Rule 110 is a rule that provides that if you damage a well while you are working on it, you will repair the well or plug it.

Rule 111 gives the Commission or its duly authorized representatives the right of entry onto any geothermal resources lease for the purpose of inspecting wells and equipment, and determining whether compliance with or violation of these rules is occurring.

Rule 112 is a noise rule which requires that adequate noise abatement equipment shall be installed and maintained in good condition to reduce noise to a level approved by the Commission or its representatives on any drilling or producing geothermal well that is located within 1500 feet of a habitation, school or church.

Rule 113 is a safety rule which says that you won't keep fire hazards around the well.

Rule 114 concerns well heads and production equipment. It requires that the well head and the related parts and fittings shall have a test pressure equivalent at least to a

150 percent of the calculated or known pressure in the reservoir; and that valves shall be maintained in good order to permit pressures to be obtained on the production casing in the annulus between the casing strings to assure that you don't have leaks between the intermediate and the surface pipe. Flow lines shall be of adequate pressure rating and capacity to handle the product and shall be sufficiently equipped with expansion bands to prevent leakage and rupture; and all separators, pumps, mufflers, manifolds, flowlines, and other equipment used for the production of geothermal resources must be of adequate pressure rating and capacity and maintained in good order, in good condition to prevent loss of or damage to human life, and health, or to property or natural resources.

Rule 115 says that if you are in a corrosive area you will take measures to determine whether corrosion is occurring that might result in leakage or a rupture.

Rule 116 is a stringent rule, the disposal of highly mineralized waters produced from geothermal resources wells shall be in such a manner as to not constitute a hazard to fresh surface waters or underground supplies of fresh water. It is very short and to the point.

Rule 117 is a notification of fires, breaks, leaks,

spills and blowouts. At the end of that second line there on page C-9, after the word "treating" add"disposal" so that disposal wells are also included here. It requires that notification be given of a leak, fire, spill at a facility. Then on the next page, C-10,"facility"is described, and on the 7th line down, after the word "any" and before the word "drilling" insert the words "disposal or injection well, or" so that a "facility" then for the purpose of this Rule shall include any geothermal drilling or producing well, any pipeline through which geothermal resources or the waste products thereof are gathered or transported, any receiving tank into which geothermal waters or wastes are produced, received, or stored, any treating plant in which geothermal resources are treated or processed, any electrical generating plant in which geothermal resources are utilized and any disposal or injection well, or drilling pit or slush pit or storage pit or pond associated with geothermal drilling, producing, treating, or utilization processes in which hydrocarbons or hydrocarbon wastes or residue, salt water, strong caustics or acids, or other deleterious chemicals or harmful substances are present.

The next paragraph requires that immediate notification should be given to the Commission of well blowouts.

The next one requires that immediate notification be given of major breaks, spills, or leaks; and on the second line there before the word "pipelines" add the words "well heads", so that notification of breaks, spills or leaks of well heads, pipelines, tanks or drilling pits, slush pits, or storage pits or ponds, the result of which 50 or more barrels of liquids containing hydrocarbons or hydrocarbon wastes, salt water, strong caustics or strong acids, or other deleterious substances to reach a watercourse, which is one word, or enter a stream or lake, or in which noxious gases escape or any quantity of fluids are lost which may with reasonable probability endanger human health or result in substantial damage to property, shall be "immediate notification" required below.

The minor leak, the result of which is 25 barrels or more but less than 50 barrels of liquids are spilled, and in front of the word "pipelines" there on the second line, add the words "well heads" thereto.

For fires, notification at geothermal installations in which there is a reasonable probability of danger to human health or substantial damage to adjoining properties "or", after the word "properties", or substantial loss of geothermal resources shall be "immediate notification".

Notification of fires of lesser magnitude, but of $500 or more of property damage or $500 or more of geothermal resources loss shall be "subsequent notice".

"Immediate notification" is then defined as being to pick up the telephone immediately upon discovery and advise the Commission or a Commission representative. "Subsequent notice" shall be a written report of the incident, and shall be filed 10 days after discovery of the incident. "Subsequent notification" is required to be filed after "immediate notification", and also this would be the written followup report.

Then the content of the notification is defined there, and a watercourse is defined.

Rule 118 requires that production from geothermal wells shall be measured by continuous metering or by other methods approved by the Commission.

Rule 119 states that after the completion of a geothermal resources well all production from said well shall be put to beneficial use. No production shall be permitted unless beneficial use is made thereof except for limited periods of testing, in which -- this is an error here, a typographical error, that word "prior" should be "proper" -- in which proper disposition of produced liquids shall be made.

Getting on into Section D, Records and Reports. You will notice that in Section A all producers transporters, purchasers and utilizers of geothermal resources shall make and keep appropriate books and records over a period of not less than five years to substantiate the reports that are required under these rules.

Now Section B, Well Records, requires that the owner or operator of any geothermal resources well shall keep or cause to be kept a careful and accurate well log, core record and history of the drilling of any such well, including the lithologic characteristics and depths of formations encountered. The depths, pressures and temperatures of the water bearing and steam bearing strata, the temperatures, chemical compositions and physical characteristics of fluids encountered, and electrical logs, directional surveys, physical or chemical logs, tests, including potential tests, and surveys, including temperature surveys. Now this is the information that the operator must keep as he drills the well.

These data shall be kept in the local New Mexico office of the owner or operator of the well or in the office of his statutory agent in New Mexico and shall be subject to inspection during normal business hours by the Commission or

its representatives, and by the State Engineer or his representatives. We will come back to this after a little while. For the time being let it suffice to say that the complete detail of the well's operation and the drilling progress of that well and all tests that are conducted on the well, and the products from the well shall be maintained in an office in New Mexico where it can be inspected by the Commission or its representatives or the State Engineer or his representatives.

The next paragraph simply says where to file the reports to keep our nomenclature correct, the word "Department" there should be stricken and the word "Division" substituted. We are calling it Division throughout the rest of these rules. It gives our mailing address.

And Section D says that the Commission might come up with some more requirements for additional reports, data, and so forth, if it becomes necessary.

Now we are going to get into the forms themselves. Form G-101 is the application for a permit to drill, deepen or plug back, and is covered by Rule 201. It provides that the operator will file the form in quadruplicate, but if the well is to be drilled on state land, five copies of the form will be filed. Each copy of the form is to be accompanied

by a G-102 which is the Geothermal Resources Well Location and Acreage Dedication Plat. Now on this form the operator states his name, well, the form is in the back of the book, we can refer to the form. The operator gives his name, the location of the well, and the type of well he is proposing to drill, a geothermal producer, a temperature observation well, a low-temperature thermal well, or an injection disposal well. He files this form if he is going to drill, deepen or plug back a well. He also not only gives the location of the well, but he gives the elevation, the status of his plugging bond, the name of the drilling contractor, the proposed depth, the formation he is going to go to, the approximate date the well will be commenced. He also outlines his proposed casing and cementing program, which I said may be subject to revision by geothermal officer of the Commission when he receives this and approved it. Any changes in this will be noted on the form itself before it is approved by the Commission and returned to the operator.

Now Rule 202 concerns this acreage dedication plat; this is a dual-purpose form, it not only shows the location of the well, but acreage dedicated, and also shows the status of the lands. That Form G-102 is reproduced here in the back of the book. It shows a plat there that you can

note the location. The surveyed location must be approved by a professional engineer and/or land surveyor registered in the State of New Mexico or a surveyor approved by the Commission. This last statement is a takeoff from our Oil and Gas Rules. This is a little bit misleading; the New Mexico Oil Conservation Commission can't approve a surveyor, the surveyor has to be approved by the Board of Registration for Engineers and Surveyors. However, if a man is representing his own company, and is working only for that company, he would be approved by the Commission, of course, as well as he is already approved by the Board of Registration to do that work in the State of New Mexico for his own company.

The Rule goes on to say that the form shall be filed in quadruplicate or quintuplicate; the only time it is filed in quintuplicate is when it is on state land, and that extra copy goes to the Land Office.

Then we get into Rule 203 which is a multiple-purpose form, G-103. It is used to report as a notice a proposal to perform remedial work, temporarily abandon a well, pull or alter casing, plug and abandon, or change plans from those that were submitted on the G-101 when it was originally submitted. The form is also used as a subsequent report of miscellaneous actions on a well, including remedial work,

notification of commencement of drilling operations, casing test and cement, altering the casing, plugging and abandoning, and other operations. These are all covered in detail in Section A for the Form G-103 as a Notice of Intention. I do want to make a change here on Page D-3, Number (3) there, Temporarily abandoning a well, parenthesis, see Rule 303 B.

Number (4), plugging and abandoning a well, see Rules 302 and 303 A. These are rules in more detail on the filing of this form and the information that is required.

Section (5) then goes into the remedial work which would have to be reported on the well.

The next paragraph, in the case of well plugging operations, the Notice of Intention shall include a detailed statement of the proposed work including plans for shooting and pulling casing, plans for mudding, including weight of mud, plans for cementing, including the number of sacks of cement, and depths of plugs, and the time and date of the proposed plugging operations. Scratch off the rest of that, that will be taken care of somewhere else; and then add the words "see Rule 302" in parenthesis.

Section B covers the Form G-103 as a subsequent report, and items (1), (2), (3), (4), (5), (6), (7), (8), and (9) detail the different categories in which the form is filed

for these various operations.

Turning over to the top of Page D-4, let's call that Section capital C. It makes it a little easier to identify. It goes into the various reports, when the form is filed, and the number of forms that are required to be filed, and the details of filing the form as a subsequent report.

In Section (2) there on Page D-4, on the fifth line down where it refers to Rules 106 and 107, those should be Rules 107 and 108.

MR. PORTER: Before we get too far away, Mr. Nutter, back to Page D-3, should we change that to "plugging and abandonment" rather than just "plug and abandon"?

MR. NUTTER: It probably would sound better, yes, sir. So, Section (5) would be Plugging and abandonment.

Now, item number (4) on D-4, the first paragraph states that the report shall be filed within 30 days following completion of plugging operations on the well, and that the information that is required would be filled in, including the nature and quantities of the materials employed, the weight of the mud, the size of the cement plugs, and so forth.

Now, the next paragraph, no plugging report will be approved by the Commission until, now insert the words "all forms and reports on the well have been filed and", so we

have: No plugging report will be approved by the Commission until all forms and reports on the well have been filed and the pits have been filled and the location leveled and cleared of junk. It shall be the responsibility of the operator to contact the Santa Fe office of the Commission when the location has been so restored, in order to arrange for an inspection of the plugged well and the location by a Commission representative.

These other detailing of the report on various operations are pretty much self-explanatory.

We come down to Section (7), Change in Ownership of a Drilling Well, and in the next to the last line, after the words "Rule 101" I think it is proper to insert the words, "the former owner of the well, to obtain release of his bond, shall follow the procedures set forth in Rule 101 B". Just a cross reference telling the former owner of the well that he has got to follow the procedures in Rule 101 B if he wants his bond released.

Now, we get to Rule 204 which concerns the Certificate of Compliance and Authorization to Produce Geothermal Resources. Prior to placing any geothermal resources well on production or injection, the owner or operator of said well shall file in quadruplicate with the Commission and receive

approval thereof Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources, outlining thereon the information required and certifying that all Commission Rules and Regulations pertaining to the well have been complied with. Production of or injection into any well in violation of this rule shall result in the well being shut in by the Commission subject to the penalties provided by law for violation of the Commission's Rules, Orders, and Regulations. In addition to Form G-104 being approved, additional approval for injection or disposal must be obtained pursuant to Rules 501 and 505. Forms G-104, now this is for the producing wells, must be accompanied by two copies of Form G-105, the Geothermal Resources Well Log (see Rule 205), which we will come to, outlining the data required and with the attachments required by Rule 204, should be 205, and two copies of Form G-106, Geothermal Resources Well Summary Report (see Rule 206)completely filled in and two copies of Form G-107, Geothermal Resources Well History (See Rule 207) completely filled in.

You will notice that this states in just a few words that when a well goes on injection or goes on production, that the 104, the Certificate of Compliance and the Authorization to Produce must be filed and must be accompanied by

the G-105 which is the well log and requires numerous attachments by the Form G-106 which is the Geothermal Resources Well Summary Report, and by the history of the well, Form G-107; this is when the well goes on production or injection. After approval of the G-104, distributions of the G-104, the 105, the 106, and the 107 which accompany it shall be made as follows: It is going to be filed in quadruplicate and one copy will be returned to the operator approved. One copy will be forwarded to the purchaser from the well, so that he will know that the well is in compliance and that he can legally purchase the production from the well. One approved copy of the Form shall be forwarded to the New Mexico Bureau of Mines, and one approved copy with attachments will be retained by the Commission. I'm going to get into this a little bit more in a minute.

I want to add a paragraph right here which was inadvertently omitted regarding the Form G-104, because it must be filed on other circumstances than just putting the well on production.

I don't know if I need to read all of this slowly enough for you to write it down; I can read it quickly through and then summarize it.

Form G-104 shall also be filed in quadruplicate when

there is change in purchaser from a well, or when there is a change of ownership of a well, other than a drilling well. So the first G-104 designates who the purchaser is; later on if you change purchasers it would have to be filed again in quadruplicate, simply designating the new purchaser. Also if the owner of a producing well sells that well the Form G-104 designating the new operator would be filed. No change of ownership would be approved by the Commission unless the new owner has an approved bond in accordance with Rule 101. The former owner of the well to obtain release of his bond shall follow the procedure set forth in Rule 101 B. Then there is a notation that Form G-103 shall be used to report transfer of ownership of a drilling well; so this is simply a cross between those two forms.

Now we get into Rule 205, the Geothermal Resources Well Log (Form G-105). First of all Section A is for producing wells and after the word "producing" insert the words "or injection". So this Section is for producing or injection wells. Form G-105, Geothermal Resources Well Log, shall be filed in duplicate with the Form G-104 when it is desired to put any geothermal resources well on production or injection, insert. It shall be accompanied by copies of electric logs, directional surveys, physical or chemical

logs, water analyses, tests, including potential tests and surveys. Failure to include these data and materials with the Form G-105 will result in withholding approval of the Form G-104. Distribution of 105 for producing wells shall be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission.

Now, Section B for Non-Producing or Temporarily Abandoned Wells, I have changed the word "non-producing" to inactive, For Inactive or Temporarily Abandoned Wells.

Form G-105, Geothermal Resources Well Log, shall be filed in duplicate for every geothermal resources well not on active producing status, insert the word "active" before the word "producing". For every well not on active producing or injection 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. Now we know that in the development of geothermal resources that there is a tremendous lag time sometimes from the initiation of the first drilling until the drilling program is complete and an adequate supply of geothermal resource developed, the contract signed for the sale and purchase of steam or hot water, for the design,

ordering and construction of the power plant. And because of this lag there is a certain amount of information pertaining to the development of the area that the operator wants to keep to himself pending the completion of his drilling program. So we have got here in Section A that the well when it goes on production would require the filing of the G-104, accompanied by the G-105, 106 and 107 which is the complete history of the well; nothing remains of the well that hasn't been told when these four forms have been filed. But for the inactive or temporarily abandoned well, now that was for the producing well, everything is revealed when you go on production, but for the inactive or temporarily abandoned well that is sitting there pending completion of your development program and the commercial utilization of the product from those wells, requires that it shall be filed within six months, unless a permit for temporary abandonment shall have been obtained pursuant to the provisions of Rule 303 B. In no event, even in the case of prolonged temporary abandonment approved by the Commission, shall the filing of Form G-105 be delayed for more than five years after cessation of active drilling operations. This is the lag time I was talking about, and New Mexico has a Public Records law which provides that all records in the agencies'

hands, except as provided by law, are public record, and there is no excepted provided by law approved for the Oil Conservation Commission, so any record that has been filed pertaining to a well is public record. This denies the protection necessary for the well that is part of a prolonged drilling and development program; it denies the operator the right to keep this material which he must keep confidential in order to adequately develop his potential geothermal resource.

I think that in the interest of encouraging development of geothermal resources in this state that we have to make provision, at least pending legislation, granting us the authority to keep the information confidential; that we must make a provision here for the delay in filing of this confidential information.

Now when we get to Rule 303 B we will see that in order to obtain this permit for temporary abandonment, that the operator must have kept the information which we referred to back in 200 B, which is the complete history of the well with all the test analyses and everything available for inspection by the Commission or its representatives or the State Engineer or his representative.

So that before temporary abandonment permit is given

out, or before a well is plugged and abandoned, access must have been made to these datum for the Commission or State Engineer representative. But anyway it provides that in no event, even in the case of a prolonged temporary abandonment, shall the filing of these forms be delayed for more than five year, and once it is filed distribution shall be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission, then it becomes a complete public record to all sources.

I want to add a Section C here which was left out. We have got the G-105 required for producing or injection wells, for inactive or temporarily abandoned wells, now we need a section for plugged and abandoned wells. So I've got a Section C identified for plugged and abandoned wells, it simply says that Form G-105, Geothermal Resources Well Log, with the required attachments shall be filed in duplicate for plugged and abandoned wells within six months after abandonment, Form G-105 with attachments filed in duplicate for P&A wells within six months, distribution would be one copy to the Bureau of Mines and one copy retained by the Commission. The bond on the well will not be released until Form G-105 has been received.

We next get into the Geothermal Resources Well Summary

Report, and if you will refer to that form in the back of the book we will see that for producing wells the G-106 shall be filed in duplicate completely filled out; that means each column there for a well that is going on production. It shall be submitted with the Form G-104, and the G-104 would not be approved until the G-106 has come in, and distribution of it would be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission.

Now for the inactive or temporarily abandoned well, the G-106 would be filed in duplicate within 90 days after cessation of active drilling operations, and the owner or operator of the well shall state on the form the general result of the wells condition; that is whether the well is capable of production of geothermal resources and will be retained for such a purpose; whether the well would 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. The form would also report the well's casing and cementing program, and in the case the well is to be retained for production, and if you will refer to the form, we will see that in case it will be retained for production, injection or disposal purposes, if you will return to the form over here, we will see that the

total mass flow in pounds per hour, the flowing temperature in degrees fahrenheit, and the flowing pressure in pounds per square inch would be reported. That is over in the middle of the page on the left there, there are three columns, Total Mass Flow Data, Pounds per Hour, Temperature, and Pressure. This is not basic information that the operator must sit on while he is working on his program. The Enthalpy and the Energy in that geothermal resource is the rest of the data that would not be reported at this particular time. That data would be reported when the well went on production, but the Pounds per Hour, Temperature and Pressure would be reported here.

Distribution of this Form would be -- now that would be required within 90 days after cessation of active drilling operations -- and distribution of the Form would be to the Bureau of Mines and one copy to the Commission.

We would also add a Section C to Rule 206 which would be much the same as the C we added to Rule 205; it would be Section C for Plugged and Abandoned Wells requiring that the G-106 be completely filled in, shall be filed in duplicate for P&A wells within six months after abandonment. Distribution would be the same, a copy to the Bureau of Mines and one copy to the Commission.

Then we get into the Rule 207 which concerns the Form G-107, which is the Geothermal Resources Well History form. We will refer to that form in the back of the book. You will see that it just a blank form, it simply provides a space with attached sheets for a chronological history of the drilling of the well, a daily drilling report so to speak.

For a producing well it would be filed in duplicate with the Form G-104; for an inactive or temporarily abandoned well it would be filed in duplicate; for every well not on active producing or injection status within six months after cessation of drilling operations, unless a permit for temporary abandonment has been approved, and in that case the distribution would be to the New Mexico Bureau of Mines, one copy to the Commission.

Then add Section C again for P&A wells. Form G-107 Geothermal Resources Well History shall be filed in duplicate for Plugged and Abandoned wells within six months after abandonment and distribution would be to the Bureau of Mines and to the Commission, the same as the other.

Rule 208 is a rule referring to the Monthly Geothermal Production Report. We don't have a copy of that in the back of our book, I'm sorry to say. It would simply be a

report of the production from the well each month. For those who might be interested, it would be similar to the Monthly Producer's Report filed with the Division of Oil and Gas Geothermal Department, State of California.

MR. PORTER: Mr. Nutter, would it be your plan to attach a copy of that to any Order that is issued?

MR. NUTTER: Yes, sir.

Rule 209 concerns a report which the purchaser -- Excuse me.

MR. TRUJILLO: Mr. Nutter, that Rule 208 shows in the body of the Rule, it shows Form G-115.

MR. NUTTER: That is G-108.

(Whereupon, a discussion was held off the record.)

MR. NUTTER: Rule 209 is the Purchaser's Monthly Report where he reports the quantity of the take from the leases and the wells that he is connected to.

There is a Rule 210 concerning a Monthly Injection Report on which the operator who is operating an injection or disposal well would report the volume that he is injecting into a given zone, the average temperature of the injected fluid and the average injection pressure at the wellhead.

Rule 211 calls for annual temperature and pressure tests and a Form G-111 which would have room for the data described here: Flowing temperatures and flowing pressure tests at the wellhead shall be recorded after at least 72 hours of continuous flow at normal producing rates. The well shall then be shut in for 24 hours and shut-in pressure at the wellhead recorded. Results of these tests shall be filed in duplicate with the Santa Fe office of the Commission.

Then we have an application to place a well on injection, Form G-112, which is simply an application for approval for an injection or disposal well, and would be filed in accordance with the procedure as outlined in Rule 503, which we will get to.

Now we come to Section E, Abandonment, Temporary Abandonment, and Plugging of Wells.

Okay, starting with Rule 301, the owner of any well drilled for geothermal exploration or production or temperature observation, or any seismic, core, or other exploratory hole, now insert the words "drilled for geothermal purposes" shall be responsible for the plugging thereof.

Rule 302 concerns the Notice of Intention to plug. Notice of Intention to plug must be filed with the Commission and approval obtained by the owner or his agent prior to the

commencement of plugging operations on Form G-103, Sundry Notices and Reports on Geothermal Wells, which notice shall, now we want to insert some words, "which notice shall be filed in accordance with Rule 203 A, and shall", back to our text, outline the casing and cementing program of the well, the casing which is to be pulled, the size of cement plugs and their depth, and such other information as may be pertinent. In the case of newly completed, scratch the words "dry holes" and substitute the word "wells". In the case of newly completed wells. By the way it may be of interest to some of you old oil operators, they don't get dry holes in this business, they get cold holes. In the case of newly completed wells which are to be plugged, now scratch "upon verbal submission of adequate data to the Commission's Santa Fe office". Scratch those words. So we have: "In the case of newly completed wells which are to be plugged, verbal authority and instructions may be given to plug the well."

Now, I have got a rather lengthy insert here concerning verbal approval and so forth, which I will read rapidly and if there is any need for going through it slowly, then I will. Okay, we get back up here. In the case of newly completed wells which are to be plugged, verbal authority

and instructions may be given to plug the well, provided, now here is an insert: " Provided written notice to plug the well shall subsequently be filed within 30 days, and approval thereof obtained. Written approval or verbal approval of a plugging program shall be contingent upon evidence being furnished that the plugging program for the well is such as to prevent damage to any producing zone, migration of fluids from one zone to another, the contamination of fresh water or other natural resources, or the leakage of any substance at the surface, all as substantiated by Form G-105, Geothermal Well Log, and Form G-106, Geothermal Well Summary and Report". In other words, to get approval on a plugging program, this information, the approval shall be contingent upon information being furnished, that the plugging program is adequate to protect all of the resources and to prevent migration of fluids as substantiated by the information required on the Geothermal Well Log, the G-105, and the Geothermal Well Summary and Report, the G-106, unless a representative of the Commission has had access to and inspected the data and materials described back there in Rule 200 B. In other words, the same information for obtaining -- . The temporary abandonment of a well would apply to the plugging of a well; we have got to

have seen the information; we have either got to have the information in our hand or we have got to have seen the information to approve the plugging program for the well. And then after this insert, "See Rule 203 A, also Rule 203 C(4), and Rule 303 A."

Rule 303, Plugging and Temporary Abandonment, simply says that the well shall be plugged in a proper manner and that the marker installed, and seismic, core, temperature observation, or other exploratory wells drilled to or below fresh water shall be plugged in accordance with the applicable provisions recited above, but permanent markers wouldn't be required on shallow wells that did not penetrate fresh water.

Temporary Abandonment as shown there in Section B of Rule 303, and is much the same, except that at the end of the first paragraph on Page E-2, that"Rule 201 A" should be changed to"Rule 200 B". You will note that this Rule 303 B on Temporary Abandonment is very similar to the Rule that was discussed in Case 5217 earlier this morning, with the exception that there has been added one paragraph at the end of the Rule. The requirements of the paragraph immediately above, now that is the paragraph they were talking so much about this morning that would require the

one-well bond and the hearing on the temporarily abandoned well. The requirements of the paragraph immediately above may be waived and additional extensions granted in those cases where it can be shown that a contract exists for the construction of electric power plants, and such plants are being designed on order, or under construction.

Rule C simply says that when the drilling operations on a well have been suspended for 60 days, the well shall be P&A unless a permit for TA has been obtained, in accordance with Section B above.

Rule 304 provides that if the land owner where a well is drilled can use a well that is not productive for fresh water, the ownership of the well can be transferred to him, provided that a sealing plug is set below the fresh water.

Section F, Purchase of Geothermal Resources, is a ratable take section. The statute says that the Commission is hereby vested with the authority and duty of regulating the drilling, development, and production of geothermal resources in the same way insofar as is practicable, as it regulates, conserves, and prevents waste of natural or hydrocarbon gas. There is a ratable take provision in the natural gas statutes, and so we have included the provision

for ratable take enforcement in these Rules. Illegal sale is prohibited by Rule 401. Rule 402 provides that any person engaged in purchasing geothermal resourses from one or more producers within a single reservoir is a common purchaser in that reservoir, and that he shall not unreasonably discriminate in favor of one producer over another in that reservoir, either in the price paid, quantities taken, the bases for measurement, or the facilities offered. It also prohibits him from discriminating in favor of himself, if he is a producer also, as against other producers in the field. For the purpose of this rule, reasonable differences in prices paid or facilities afforded, or both, shall not constitute unreasonable discrimination if such differences bear a fair relationship to difference in quality, quantity, or pressure of the geothermal resource available or to the relative lengths of time during which such geothermal resources will be available to the purchaser.

Any common purchaser taking geothermal resources produced from wells within a geothermal reservoir shall take ratably under such rules, regulations, and orders, concerning quantity, as may be promulgated by the Commission after due notice and public hearing. The Commission in promulgating such rules, regulations and orders may consider the

quality and quantity of the geothermal resources available, the pressure and temperature of the product at the point of delivery, the acreage attributable to the well, market requirements, and other pertinent factors.

Nothing in this rule shall be construed or applied to require, directly or indirectly, any person to purchase geothermal resources of a quality or under a pressure or under any other condition by reason of which such geothermal resource cannot be economically and satisfactorily used by such purchaser by means of his geothermal utilization facilities then in service.

Rule 403 provides that the Commission can determine, or if the Commission determines that geothermal resources production in the state or in a particular geothermal resources area, is causing waste, the Commission shall limit and allocate among the producing wells the total amount of geothermal resources which could be produced in the state, or in a particular geothermal area. We would never expect it to apply to the state as a whole.

Now we get over here into Section G on geothermal injection and disposal wells.

MR. PORTER: Mr. Nutter, before we start on Rule 501, I believe we will recess the hearing until one o'clock.

(Whereupon, the hearing was recessed from 11:50 A.M. until 1:15 P.M.)

AFTERNOON SESSION

MR. PORTER: Mr. Nutter, I believe you were about to begin on Rule 501, Section G.

MR. NUTTER: Yes, sir, Section G of these Rules and Regulations is the geothermal injection disposal wells.

Rule 501 defines the geothermal injection well. Rule 502 defines the geothermal disposal well. Both rules prohibit injection unless a permit has been obtained on the approved Form G-112 which is the Application to Place a Well on Geothermal Injection in a Geothermal Resources Area. The Form shall be filed in accordance with Rule 503 which we will go into. The Application for approval is by administrative procedure, no hearing being necessary. The Application on the Form G-112 would be accompanied by a plat showing the location of the well and the location of other wells within a radius of two miles, and the ownership of geothermal leases within two miles. A log of the proposed geothermal well, or the proposed injection well, would be submitted if available; also a diagrammatic sketch of the well, with all the pertinent facts of the well's construction depicted thereon, and a structure map showing the

contours on a geologic marker at or near the intended zone of injection with at least one cross section showing the proposed injection or disposal zone from at least two offsetting wells in opposite directions. A copy of the Application would be sent to other geothermal lease owners, if any there be within a one-half mile radius of the proposed injection or disposal well. The Secretary-Director could approve the application after a twenty-day waiting period if no objections have been received, and if he was satisfied that the well is cased, cemented, and equipped in such a manner that there would be no danger to any natural resources, including geothermal resources, fresh water supplies, and surface resources.

Rule 504 requires that monthly injection reports would be filed, and Rule 505 is a surveillance rule in which competent surveillance of the well shall be made at all times to be sure that the water that is being disposed of, or injected, is going into the intended formation, and that there is no leakage into any other formation.

Rule 506 is simply an abandonment rule that says they must be plugged in a proper manner as are other wells.

Section H is on blowout prevention. Rule 602 provides standards for blowout prevention equipment, but it does say

that these standards are given simply as guidelines for the preparation of a minimum blowout prevention program for certain categories of wells. They are not final; they could certainly be amended or exceptions to these rules could be approved by the geothermal officer approving the drilling of the well, inasmuch as they are simply guidelines.

It breaks the wells down into three categories for blowout prevention equipment. The first is using mud as a drilling fluid in areas where geothermal resources are known to contain geothermal fluids at a temperature greater than 212 degrees, at depths less than 2,000 feet, and geothermal exploratory wells in temperatures where the subsurface temperatures and pressures are unknown, but the proposed depth of the well is less than 2,000 feet. The requirement is for an API Class 2M-A or a 2M-RR blowout preventer on these. The API, I have checked with them, the API according to a bulletin D-13 and my discussions with API engineers tell me that the lightest duty blowout prevention equipment the API has approved is Class 2M with a working pressure of 2,000 pounds; the service condition of this blowout prevention equipment is described as light duty.

Now, insofar as I have been able to ascertain there is

no geothermal resource well anywhere in the world with a higher surface pressure than 1,000 pounds. However, since the API does specify construction of equipment, and they have a minimum size on their blowout prevention equipment of a 2M or a 2,000-pound head, if we are going to stick with API standards, we must prescribe a 2M until the API comes up with a smaller size blowout preventer.

As we stated before geothermal development in this country and in the world, in fact, is in a state of infancy. The state of the art was mentioned the other day as being approximately the same as the oil and gas industry in the twenties or maybe the thirties; so I am sure that the API in the future years, if oil well drilling equipment is going to continue to be used for geothermal development, will come up with new standards for geothermal equipment, but for the time being, if we are going to stick with API equipment we must prescribe the minimum size, which would be a 2M.

We have down here in the Section(b), Rule 602 A, and we find here that it says the annular blowout preventer or pipe-ram/blind-ram BOPE with a minimum working-pressure rating 1,000, this should be changed to 2,000, shall be installed on a surface casing.

The next category for wells is on Page H-2, Section (2) up there near the top of the page. It is for wells in geothermal resources areas known to contain geothermal fluids at temperatures greater than 212 degrees, at depths of more than 2,000 feet, and geothermal exploratory wells in areas where subsurface temperatures and pressures are unknown and the proposed depth of the well is more than 2,000 feet. This would be the major category, I think, for most geothermal exploratory wells. This calls for an API Class 2M-RSRA, or equivalent blowout prevention stack, with the accompanying equipment that goes with it, kelly cock, fill-up line, kill line, blow-down line, and such.

The next category is using air as a drilling fluid for the wells drilled in geothermal resource areas where it is known that dry steam exists at depth and/or formation pressures are less than hydrostatic. Again, we have got to go to the minimum size, the 2M, which would be a RSRdG API set up. Frequently a banjo box is used in the geothermal drilling set up rather than the drilling spool down below the rams. So this particular specification here is an adaptation actually of an API 2M RSRdG stack, and it has the banjo box in place of the drilling spool.

And again down here in Section (d) the minimum working

pressure rating should be changed to 2,000 rather than 1,000 if we are going to stay with the blowout prevention equipment that is approved by the API. However, when we get down to item (j), all lines and fittings must be steel and have a minimum working-pressure rating of 1,000. The 1,000 is satisfactory there.

Rule 603 for areas with a history of blowouts provides that the operator shall provide adequate blowout prevention which may be contrary to the previous rules if they are drilling in an area where there is a history of blowouts and lost circulation.

Rule 604 prescribes testing of blowout prevention equipment. I have some amendments to make to this particular rule. Upon installation, ram-type blowout preventers, and insert the words "bag-type blowout preventers", valves, and manifolds shall be, now you can strike out "tested to 100 percent of the rated working pressure and bag-type blowout preventers shall be", strike those words. And then we have the words "tested to", strike the "1,000" and insert"a minimum of 750" psi pressure. So that the sentence would then read: Upon installation, ram-type blowout preventers, bag-type blowout preventers, valves, and manifolds shall be tested to a minimum of 750 psi pressure.

The next sentence, ram-type preventers shall be operated at least once every 24 hours and bag-type preventers closed on the drill pipe at least once each week. I have discussed this with some of the operators that drill for geothermal resources; I understand that in some cases, particularly where you are involved in drilling dry steam wells that the frequent operation of these, like on an every-day test, that the heat of the steam will bake the rubber in the rams and that the rubber will dry out from this dry steam. It may be advisable that provision should be made for an exception to this testing rule in areas where dry steam wells are being drilled. I believe that concludes my testimony on Section H.

We next get into Rules on Procedure which is taken from the Commission's present rules on procedure for: Applications for Hearings, for the Filing of Applications, Personal Service of Notice, Contents of Notice, Filing Pleadings, Continuance of Hearings Without New Service, Conduct of Hearings, Power of the Commission to Require Attendance of Witnesses, Rules of Evidence, Examiners' Qualifications and Appointment, Referral of Cases to Examiners, Examiner's Power and Authority, Hearings Which Must Be Held Before the Commission. Notwithstanding any other provisions

of these rules, the hearing on any matter shall be held before the Commission (1) if it is a hearing de novo, or (2) if the Commission in its discretion desires to hear the matter.

Rule 717 defines the Examiner's Manner of Conducting Hearings and the next Rule is his Report and Recommendations, Disposition of Cases Heard by Examiners, De Novo Hearing Before the Commission, Notice of Commission's Orders, Rehearings, and Changes in Forms and Reports.

That pretty much is the essence of that Section. I won't go into it; I think most of us are familiar with it. If anyone has any questions regarding that Section, I will be happy to try to answer them.

Then, of course, at the end of the Proposed Rules we do have attached copies of the forms through 107. We have five additional forms which are not attached here, they will all be relatively simple forms, and their purpose and their content has been stated in the Rule that is applicable to each of those forms, that would be Form 108 through 112.

Q In your opinion, will the adoption of the proposed Regulations, as presently drafted, and as amended by the corrections noted today, enable the Oil Conservation Com-

mission to fulfill its statutory mandate of conserving and preventing waste of geothermal resources within the state, in the same manner insofar as is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas?

A I think that it will. We naturally have a lot to learn; I'm sure that as years go by there will be amendments to these rules, but I think that these rules will be a good starting place at least. Our oil and gas rules were first adopted back in 1935 and they have been amended many times since then, and there had to be a starting point on those, and this is the starting point on these. I think that it will accomplish those purposes you have mentioned.

Q Do you have any recommendations that the Commission take with reference to these proposed rules?

A Yes, sir, I would recommend to the Commission that the proposed rules as amended here today be adopted.

Q Do you have anything further to add to your testimony?

A Well, I only want to say that geothermal development, as I mentioned before, is in its infancy in this country. This state has just barely gotten off the ground with it, but I think the State of New Mexico has a tremendous

potential in the field of geothermal. The tectonics of a good part of this state are such that we probably will see the development of this new resource in New Mexico. For this reason I urge that the Commission should adopt some set of rules and regulations so that we can get started on the development of this new resource.

MR. DERRYBERRY: Mr. Chairman, at this time I would like to offer into evidence Commission Exhibit A.

MR. PORTER: If there is no objection this Exhibit A will be admitted.

(Whereupon, Exhibit A was admitted into evidence.)

MR. PORTER: Any questions of the Witness? Mr. Buell?

MR. BUELL: I have a brief question for Mr. Nutter. Over on Page D-6 under Rule 205, it is called for there with Form G-105 to submit electric logs, directional surveys, physical or chemical logs, water analyses, tests, et cetera. It is my understanding that it is not always possible to have electric logs on these wells from surface to TD, does this mean as available?

MR. NUTTER: This would mean -- now,all of those tests would not have been conducted on every well; this

simply means that the stuff that has been run would be submitted.

MR. BUELL: As is available?

MR. NUTTER: Yes, sir.

MR. BUELL: I have nothing further.

MR. PORTER: Mr. Reynolds, do you have any questions?

MR. REYNOLDS: No, no questions.

MR. PORTER: Mr. Stamets?

MR. STAMETS: Mr. Nutter, I note on your Rule 104 B, you prescribed that the locations must be at least 100 feet from any road, street or highway; I wonder if similar restrictions should be on habitations, commercial buildings, schools, churchs?

MR. NUTTER: No. You mean the location of the well within a specified distance of a habitation, school or church?

MR. STAMETS: Right.

MR. NUTTER: It probably should be more than 100 feet from a school, if you are describing the distance from a school. I don't know just what the minimum distance that a well should be drilled from a habitation, school or church. If it is within 1500 feet it has got to have some

noise abatement equipment.

You must remember also, Mr. Stamets, that some of these wells are simply going to be hot water wells, and if a man is located over an aquifer that contains hot water and has his house there, here is going to want to drill that hot water well as close to his house as he can get it, so I think when you start specifying distance from buildings and things like this,you may be getting into areas that -- it would get awfully complicated if you started trying to distinguish between them.

MR. STAMETS: Do you feel that the Geothermal Division would have enough leeway under these Rules to prevent wells from being drilled too close.

MR. NUTTER: I question that; I don't know if the Commission could do that or not. It may be that the owner of the house wants the well drilled close to his house; we may be interfering with his rights. I think that is a matter between the owner and the driller.

MR. STAMETS: I have nothing further.

MR. PORTER: Any further questions?

MR. DERRYBERRY: Mr. Chairman, I would like to clarify one point. Mr. Nutter, does Exhibit A contain all these revisions that you have testified as to?

MR. NUTTER: Yes, sir, it does.

MR. PORTER: That is the Exhibit that will be filed with the reporter?

MR. NUTTER: Yes, sir, that is the Exhibit that will be entered into the records, and it does have all these changes and notations that I have mentioned.

MR. PORTER: Does anyone else have questions? The Witness may be excused.

Mr. Buell, would you like to call your witness?

MR. BUELL: Mr. Porter, we would like to call Mr. Wilson and ask that he be sworn.

(Whereupon, the Witness was sworn.)

JOSEPH L. WILSON

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BUELL:

Q Would you please state your name, by whom you are employed, in what capacity, and where?

A My name is Joseph L. Wilson, I am Manager of the Land Department of the Geothermal Division of Union Oil Company of California in Los Angeles.

Q Basically would you give the Commission some of

your educational background and work experience.

A Since graduating from the University of Oklahoma in 1948 I have been continuously employed in the oil business; first from '48 to '53 by the old Stanolind Oil and Gas Company, now Amoco, and since 1953 with Union Oil Company. I have been in their land management area, in the Oil and Gas Division up until 1971, at that time I was transferred to the Geothermal Division and I have been involved with geothermal operations, both locally and on an international level.

Q Is your employer, Union Oil Company of California, active in the geothermal area?

A Yes, sir, I think we are considered one of the leaders in the geothermal industry since we are the operator of the only commercial field, the geysers in California. We are currently exploring and developing what we think is going to be commercial here in your state; we have operations in all the western states as well as on the international scene. We are drilling and developing in an area in the Philippines, we are exploring in other areas of the Philippines. We have had requests from many foreign countries to consult with them on their geothermal potentials.

Q Mr. Wilson, referring you to what has been marked

and introduced into evidence as the Commission's Exhibit Number 1, the Proposed Regulations, have you had an opportunity to review thos Regulations?

A Yes, sir.

Q Referring you to Page D-1, and under Rule 200, subparagraph B, have you had a chance to review that particular paragraph?

A Yes, sir.

Q Do you have some comments on this Section of the proposed Rules, regarding the Well Records and confidentiality?

A Yes, sir, Mr. Nutter touched on it, and he did quite a good job; I feel now that I'm going to be somewhat redundant, but if the Commission will bear with me, I may be repetitious.

As you know, the industry is in its infancy, and we need all the encouragement we can get. The necessity for the confidentiality material basically involves around the long lag time between discovery, ultimate utilization or sale of the product. Just to give you an example, here in New Mexico we drilled our first well in 1971, and because of the drilling problems during the winter season, we have a rather limited drilling program for our exploratory wells. We drilled again in '72, again in '73, and we still have a

program in '74, and we haven't started talking contract yet; the reason behind that being -- departing from New Mexico and just generally speaking again -- that when you make a discovery, it takes some time to assess that discovery and when you are going to a utility company to make a sale, you have to have quite an extensive background on the size of the reservoir because obviously if you can demonstrate to them that you think you have an ultimate potential of a million or two million kilowatts, you can make a much better contract than you can if you can say, "Well, we feel like we only have 250 thousand as an ultimate." That takes a lot of time in assessing this; then after the assessment has been made and we have decided what we have, there is quite a period of time in negotiation with the utility or utilities because we hope we won't be limited to one, to consummate a contract may take another year or so. Following that comes the design, the ordering, and the construction of the plants, and it could very easily be five years from discovery until, in fact, I would say that would be a very optimistic period of five years from discovery to utilization of the product. If we can't keep this information confidential we have all the problems such as Federal lease sales, State competitive lease sales, as well as the

private sector that we might be having an on going problem with negotiations to try to tie these ends up. If we are able to keep this information confidential we can go out and drill these areas before we have solidified our lease block, and this would move up our period quite a bit. If we had to give this information up everybody would be trying to have a solid lease block and hopefully cover all the areas, and this could take quite a period of time, but if we feel we can keep this confidential we think we can drill maybe a tight hole and then go about the process; so we think it is very necessary for the confidentiality to be maintained during that period.

MR. BUELL: Mr. Porter, I would point out at this time in the second paragraph of subparagraph B, it says that the records can be kept in the local office of the owner or operator or his statutory agent. I would submit for the Commission's consideration, that it might be "designated" agent rather than "statutory" agent.

MR. PORTER: You are recommending to change that word "statutory" to "designated"?

MR. BUELL: Yes, sir.

MR. PORTER: Mr. Nutter, do you have any comment on that proposed change?

MR. NUTTER: No, sir, corporate agent, designated agent, as long as it is somebody we can go visit.

MR. PORTER: Mr. Carr just called my attention to the fact that statutory agent might be the secretary of state, then it would be a matter of public record.

MR. BUELL: Also the other problem is that there are several corporations in this state that act as professional statutory agents, and they may be statutory agents for 20 or 30 corporations, and they would have a storage problem on their hands.

BY MR. BUELL:

Q Mr. Wilson, referring you to Rule 302 and particularly Page E-2, the last paragraph of that rule states the requirements of the paragraph immediately above may be waived and additional extensions granted in those cases where it can be shown that a contract exists for the construction of electric power plants and such plants are being designed, on order, or under construction. This has to do with temporarily abandoned wells; do you have any comments on that?

A Yes, and this is just an on going bit of what I was just referring to. We could very readily find ourself like we have in New Mexico where we have had wells that have

been shut in for three years, and two years, and a year. This period of time between, as I mentioned earlier, discovery and the construction and completion of the plant can be five years and so this five-year period we would have to be continuously coming to the Commission for an extension for these temporarily abandoned wells, and if we could have some relief in the geothermal sector if this is going to be included in our rules to maybe prior to the contracts being consummated, possibly a five-year period or some period of time that we could have these wells standing without having to come back to the Commission.

MR. PORTER: In other words, you would like some modification that would make the necessity for reappearance to be less frequent?

MR. WILSON: Yes, sir.

MR. BUELL: Mr. Chairman, in that connection I would offer a suggestion that if the end of the sentence there, after the word "construction" period. Strike the period, insert a comma in lieu of it and add the following language which leaves a little bit to be desired grammatically: "Or in the case of exploration of a geothermal reservoir to determine its commercial feasibility."

MR. PORTER: Mr. Nutter, do you have a note of

of that change?

MR. NUTTER: To me this goes back to the problem we had with this same rule, or the similar rule in the Oil and Gas Rules and Regulations. If you take Mr. Buell's statement there, that means that an operator with just any old well just almost anywhere can sit there and say he is witing to evaluate the commercial feasibility; and he could have a cold hole and be telling us he has a potential geothermal reservoir.

MR. BUELL: I can appreciate Mr. Nutter's concern, and I certainly am not going to make an escape hatch there. How about qualifying an on going exploration program.

MR. NUTTER: If it is an on going program then it is a lot more worthy of consideration than a well that is sitting out there with a claim being made for it.

MR. BUELL: We are not trying to protect the one well that is sitting, but a program that is on going like I told you.

MR. NUTTER: Actually your on going program there could be referring to the development of geothermal fields that wouldn't necessarily be designed for or suitable for electrical power plants. Up in the Pacific Northwest they are using geothermal waters for food packing plants, for

green houses, nurseries, as well as heating units and things like that; so an on going program for the development of this resource would be more inclusive than just a field that is being developed for electric plants.

MR. BUELL: Well, I have added the final two words, "as a commercial" to determine if the field is commercial or the reservoir is commercial feasibility, it was limited to power plants.

BY MR. BUELL:

Q Mr. Wilson, referring you to Page F-1, it deals with Ratable Take. Down in the fourth paragraph, in charging the Commission with the duty of promulgating rules and regulations for Ratable Take, it says that the Commission may consider the quality and the quantity of geothermal resources; do you have any comment on that?

A Well, we would suggest that if you could change "may" to "shall" it would certainly be beneficial in our way of thinking in that we certainly are in favor of everyone getting their fair share of the production, but what we are concerned about is a well that might be hooked up that would be of a quality that would be a detriment to the generating facility, whereas they could put some dirty steam in your system and they could get some blades in the genera-

tor or the turbine and break it down and be out of service for some months while the equipment was being ordered and the turbines are being repaired.

Another problem would be, if my hands were an area that was being developed for a particular plant in the middle and somebody came up with a well on the extreme outside or what we call the perimeter of the producing area, by the time his well was -- his pipeline was linked to our system it would cool and he would really be putting a low-quality bit of thermal energy into our system. So if it was a matter that they shall consider these things then that would take any arbitrary possibility out of it, and I think that would relieve any kind of concern that we might have as to a poor quality well being entered into a system that could be a detriment to the system, or could be actually causing great damage to it.

MR. NUTTER: Mr. Porter, I might point out that this particular Rule was taken from the statute of the laws here in New Mexico, and the laws say that the Commission may consider this; it doesn't say shall.

BY MR. BUELL:

Q Do you have anything you would like to add to your testimony?

A No, sir.

MR. BUELL: I have no other questions; I do have a comment after the cross examination.

MR. PORTER: Does anyone have a question, any questions of Mr. Wilson? He may be excused.

MR. BUELL: Mr. Porter, I would like to direct the Commission's attention to Rule 5 over on Page B-2, and we have some concern over this Rule. We are aware that the statutory authority for geothermal activity for the production and drilling were given to the Commission; we also are aware that there is a clause in there reserving to other state agencies their regular powers. This Rule provides that the appropriation of water in liquid or gaseous state will be subject to the water laws of the State of New Mexico. Our concern is that as an operator in this state we don't know exactly where we stand. Certainly we understand if we appropriate surface water for injection purposes or use, we must go through the State Engineer; if we appropriate ground water, and particularly in a basin in which we are located, a declared basin, we must go through the State Engineer. We are confused about who we see to get our drilling permit. There are stringent rules for drilling and the granting of permits in these Rules. The State

Engineer has permits and rules for their permits for drilling. We are a little confused about that; we think that this Section, although I have no specific language to offer at this time, could be clarified as to where an operator in this state goes to deal with the proper agency and to avoid a risk of having dealt with the wrong agency to his detriment and be subject to litigations, and it would also help to eliminate any jurisdictional disputes between two agencies over a given program. We would like to see that clarified as to who has jurisdiction over what in the geothermal area.

Incidentally, I would point out in this regard that the Public Service Commission apparently has some color of interest in this since they are giving the duties for the power to regulate the production and sales steam. So it is a confused area and I think it could be clarified.

I have nothing else.

MR. PORTER: Thank you, Mr. Buell. Mr. Reynolds?

(Whereupon, the witness was sworn.)

S. E. REYNOLDS

called as a witness, having been first duly sworn, was examined and testified as follows:

MR. PORTER: Mr. Reynolds, will you proceed, and give us your testimony, please?

MR. REYNOLDS: Mr. Chairman, for the record I am S. E. Reynolds, State Engineer, appearing in that capacity.

Mr. Chairman, my comments are, I am afraid, largely editorial, but they do, at least to some extent, deal with substantive matters upon which testimony may be helpful to the Commission.

I invite your attention first, Mr. Chairman, to Page A-3, the definition of "well" in the last paragraph of that page. The first problem that I see, it occurs to me at this point and perhaps throughout, there should be some definition of "fresh water". Mr. Chairman, as one possible source, I refer you to Frank Irby's letter of April 13, 1967 to you. Furthermore, Mr. Chairman, I will refer the Commission to Page 6 of U. S. Geological Survey Water Supply Paper No. 1365 which gives definitions. It might be useful if I read them: (Reading) Slightly saline, 1000 to 3000 parts per million; moderately saline, 3000 to 10,000 parts per million; very saline, 10,000 to 35,000 parts; brine more than 35,000 parts. (End of reading.)

So fresh water according to those definitions would be water containing less than 1000 parts. The letter to which I refer you suggests the value of 10,000 parts per million.

MR. PORTER: That was in Mr. Irby's letter I

believe?

MR. REYNOLDS: Yes, sir.

MR. PORTER: What was the second reference you made to Mr. Irby?

MR. REYNOLDS: The second reference, Mr. Chairman, was to Water Supply Paper No. 1365 of the U. S. Geological Survey, which contains certain definitions.

I am further concerned, Mr. Chairman, with the wording of that particular definition. It would apparently exclude hot, dry holes from the definition of a well. It would seem also to exclude wells drilled only where brackish or saline waters are present, as it would seem to be necessary to have fresh water before you have anything that fits a definition of a well.

Mr. Chairman, then moving to Page B-2, Rule 5. Mr. Chairman, I believe that the amendments offered by Mr. Nutter do greatly improve that particular Rule. I would offer for your consideration a different amendment which I believe will further improve it, and perhaps answer, at least in part, Mr. Buell's concern. It would then read this way, Mr. Chairman: (Reading) It is recognized by the Commission that the appropriation of water in liquid or gaseous state from a geothermal reservoir, or the appropriation

of water from any other source for the purpose of injection into a geothermal reservoir is subject to, and at this point I will offer new language for the rest of the Rule. (Continue reading) The provisions of the New Mexico Constitution and Statutes, and the Rules and Regulations of the State Engineer governing the appropriation and use of the public waters of the State. (End of reading)

Then, Mr. Chairman, moving to Page C-2, I suggest Mr. Chairman, that under the heading of Rule 104 A, Classification of Wells, there may be some typographical errors in the first paragraph under that heading, and it appears to me that it would need to be considerably amended to be consistent with the definition given on Page A-1 for an exploratory well. Mr. Chairman, I don't necessarily suggest this as an amendment, but to make it consistent, and to make it clear, to me at least, it would be necessary, one, to delete the word "from" in the second line, and substitute for it the word "beyond", delete the (1), and then coming to the third line, after the word "field" delete the words "and (2) any well which is within one of such field". Then, Mr. Chairman, it would be consistent with the definition, and I believe clearer.

Then, Mr. Chairman, moving to Page C-5. Mr. Chairman,

here again in a very general way, let me suggest again the value of a definition of the term "fresh water" which occurs on this particular page in the second line of Paragraph (a), the first line of Paragraph (b), and in Paragraph A under Rule 108. I think that it causes troubles at each of those points that could be overcome by the adoption of a definition of the term "fresh water".

Then, Mr. Chairman, moving to Page C-10, in the paragraph numbered (2) at about the middle of the page. First, in the fourth line I suggest as Mr. Nutter pointed out at one or more points,"watercourse" should be one term, one word, and then to avoid ambiguity I would suggest the deletion of the words "or enter a stream or lake", and the very use of the term "watercourse" in view of the definition, seems to cover that, and it could lead to some ambiguity by repeating those words here.

I might point out in the third line of that paragraph, it would seem to me that the intent is, at the fourth word, the word "the" should probably read, "as a result" instead of "the result".

Mr. Chairman, I would recognize that the definition on Page C-11 of a watercourse is drawn from the existing OCC Regulations. However, I think the definition would be

improved by the deletion of the word "bed" in the first line and in the second line of that definition.

Then, Mr. Chairman, moving to Page D-2, it is strictly editorial. On the first paragraph under Rule 202, I suggest that in context, the Rule would be improved by the deletion of the Latin words "et al". It seems to be the intent is simply to designate the majority owner.

Moving on, Mr. Chairman, to Page E-1, and again, Mr. Chairman, the difficulty with the definition of the term "fresh water" . This is in the first paragraph under Rule 303 A, the third from last and last line.

Then, Mr. Chairman, G-1, here, Mr. Chairman, not having qualified myself as an expert in geothermal resources, you may find my remarks here gratuitous, and I offer them here only for what help they may be. I know the Commission will disregard them to whatever extent they find them inappropriate.

It appears to me that the first paragraph in Rule 501 should perhaps make provision for the situation in which it is necessary to inject fluids to recover the heat, and that appears not to be specifically addressed. Further, with respect to Rule 502, and subsection (5) of Rule 503, the Commission may find it useful to expressly establish

authority to require or permit reinjection to prevent or control subsidence, if in fact the basic statute provides such authority. I am aware that such problems have been encountered in California.

Then, Mr. Chairman, moving to Page I-3, the last paragraph on that page, I would be flattered, Mr. Chairman, if the Commission could include the State Engineer among those who may be represented by unsworn testimony at its hearings. You might do that by inserting the words "State Engineer" after"the Bureau of Mines" or after "competent persons".

Thank you, Mr. Chairman.

MR. PORTER: Does anyone have a question of Mr. Reynolds or anything you would like to discuss with him while he is on the stand?

Mr. Nutter?

MR. NUTTER: No, sir.

MR. PORTER: Do you feel you understand Mr. Reynold's proposals in each case?

MR. NUTTER: Yes, sir. Mr. Reynolds, with respect to that comment you made on Rule 501, I felt that the injection of water into dry, hot rocks would be augmenting the supply, the natural supply, the natural supply is zero. That is the reason I didn't mention that; it could very well

be mentioned, though. You will be in some cases, injecting water into rocks that don't have any natural waters in them.

MR. REYNOLDS: Mr. Chairman, if I may, it did occur to me that was your line of reasoning, but it occured to me since it is not the intent to augment the supply; the real intent, of course, is to heat it up and evaporate it if possible and bring it back up, rather than to augment the supply.

MR. NUTTER: By putting it in you augment a zero supply.

MR. REYNOLDS: Yes, but then you quickly remove it.

MR. PORTER: Any further questions? Thank you, Mr. Reynolds.

MR. REYNOLDS: Thank you, very much.

MR. PORTER: I might say that Mr. Reynolds and I serve on a board, a commission, together, and I accuse Mr. Reynolds of memorizing all of the proposed rules . It wouldn't be hard to see where I get the idea. We certainly appreciate your very thorough editing, and we will certainly take all of your recommendations into consideration.

MR. REYNOLDS: I appreciate your courtesy, Mr.

Chairman.

MR. PORTER: Does anyone else have any testimony they want to present in the case? Would anyone like to make a statement or comment on the case in any way.

Yes, sir?

MR. CORMIER: Mr. Chairman, I don't know if this is a comment or statement or not, but I would address this to the Commission that I represent Chevron Oil Company, I am a landman; Chevron is a wholly-owned subsidiary of Standard of California, but we are not prepared to submit comments at this time due to the fact that we did not receive copies of the proposed rules until yesterday, June the 10th, because of some mixup in the postal service. I have an envelope here that shows this first stamp May 7, and they weren't even mailed out to May 31, then it was stamped again on June 7th. For this reason Chevron Oil Company respectfully requests that the Commission grant a period of time within which written comments may be submitted, and we suggest a period of 15 days or until June 3rd to submit written comments.

MR. PORTER: Does anyone else have a statement they would like to make?

(Whereupon, a discussion was held off the record.)

MR. PORTER: In accordance with the gentleman's suggestion, the Commission will allow until June 30th for additional comments to be filed concerning the proposals that have been made here today.

Is there anything else anybody would like to request or would like to offer in this case?

At this time I certainly want to thank publicly Mr. Nutter for all of the time that he has devoted to the compilation of these Rules. He has made three trips to California; he has presented these Rules as he has previously advised you, to a symposium out there, and he has tried to get the benefit of the thinking of people who were more familiar in this area than we are. Mr. Ulvog accompanied him on one of those trips.

When the law was first passed, the first law that was proposed, went into rule making to quite a degree and we discouraged that, and we had a new bill written which simply gave us jurisdiction over geothermals because of the inflexibility of rules that are written into the law. Once they are in there it would take at least two years to get one changed, so we felt that the rule-making process should rest with this Commission. We gave expertise in this field.

I also want to thank the gentlemen from Union who have

participated and given us the benefit of their knowledge in the geothermal field.

I previously, I believe, expressed my appreciation to Mr. Reynolds for his help in the editing of the Rules.

Is there anything else? The Commission will take the Case under advisement and the Hearing is adjourned.

STATE OF NEW MEXICO)
) SS.
COUNTY OF SANTA FE)

I, RICHARD L. NYE, Court Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

RICHARD L. NYE, Court Reporter

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BEFORE THE
NEW MEXICO OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
June 11, 1974

COMMISSION HEARING

IN THE MATTER OF: The hearing called by the Oil Conservation Commission of New Mexico upon its own motion to consider the adoption of general rules and regulations governing the drilling for and production of geothermal resources in the State of New Mexico.	CASE 5255

BEFORE: A. L. Porter, Secretary-Director

I. R. Trujillo, Chairman

TRANSCRIPT OF HEARING

A P P E A R A N C E S

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MR. PORTER: The Hearing will come to order, please. Let the record show that present for this particular Case is Chairman Trujillo and Commissioner Porter.

We will go on to Case 5255 and I would like to call for appearances in this Case.

MR. DERRYBERRY: I am Tom Derryberry representing the Oil Conservation Commission, and I have one witness.

MR. BUELL: Sumner Buell appearing on behalf of Union Oil Company of California and I will have one witness.

MR. REYNOLDS: Steve Reynolds appearing on behalf of the State Engineer Office.

MR. PORTER: Does anyone else have testimony to present in the case?

MR. CORMIER: Sir, I do not have testimony, but I would like to make a request. My name is W. L. Cormier with the Chevron Oil Company out of Denver.

MR. PORTER: Mr. Hanagan, do you intend to put on any testimony in this Case?

MR. HANAGAN: No, sir.

MR. PORTER: Well, I believe we will have three parties to put on testimony here, the Commission staff and Union and the State Engineer, and, of course, at the conclusion of the testimony anyone who would like to make a state-

ment may do so at that time, whether or not you have entered an appearance here, so I believe we are going to proceed with the testimony in the order that was indicated by the appearances. I'll call on Mr. Derryberry first and then I will ask Union to put on their testimony and then the State Engineer. Mr. Derryberry?

(Whereupon, the witness was sworn)

DAN NUTTER

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. DERRYBERRY:

Q Would you please state your name and position for the record?

A Dan Nutter, Chief Engineer for the New Mexico Oil Conservation Commission.

Q Would you give us a brief summary of your educational and experience background?

A Yes, sir. I graduated from the New Mexico School of Mines with a Bachelor of Science in Petroleum Engineering in January, 1952. Subsequent to that I immediately went to work for the Phillips Petroleum Company; I was employed by the Phillips Petroleum Company until August of 1954 when I

went to work for the Oil Conservation Commission as a staff engineer the first of September, 1954. I have been employed by the Commission since that date, and have been Chief Engineer for the Commission since 1958.

Q Have you been previously qualified, had your qualifications accepted as a matter of record by the Oil Conservation Commission?

A Yes, sir, I have.

MR. DERRYBERRY: We would like to tender Mr. Nutter as an expert witness in the field of geothermal energy production and related matters.

MR. PORTER: The Commission considers the witness qualified to testify.

BY MR. DERRYBERRY:

Q Were you delegated the primary responsibility by the Oil Conservation Commission for drafting the proposed regulations for geothermal energy resources development in the State of New Mexico?

A Yes, sir, the Commission gave me that assignment.

Q Would you briefly state the statutory background of State regulations in geothermal resources development?

A The New Mexico State legislature by Chapter 75, the Laws of 1973, enacted a Statute relating to the conserva-

tion, regulation and prevention of wasted geothermal resources, and giving the Oil Conservation Commission authority to regulate, conserve and prevent the waste of geothermal resources. I would like to read that Statute--it is very brief--into the record of this Hearing.

(Reading) Be it enacted by the Legislature of the State of New Mexico. Section 1. The Oil Conservation Commission is hereby vested with the authority and duty of regulating the drilling, development and production of geothermal resources and with the authority and duty of conserving and preventing waste of geothermal resources within this State in the same manner, insofar as is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas. "Geothermal Resources" as used herein 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. Nothing in this Section shall be construed to supersede the authority which any

State department or agency has with respect to the management, protection and utilization of the State lands and resources under its jurisdiction. (End of reading.) That is the entire Statute.

Q Would you briefly outline the steps you have taken to familiarize yourself with the geothermal energy resources production and development?

A Yes, sir. I'll be the first to admit that I'm an infant in the field of geothermal resources, but I have made an attempt to familiarize myself as much as possible since the enactment of this Statute and to acquaint myself with the drilling, production, and operation of geothermal resources, and with regulations and laws from other states concerning these resources. I have visited the only active geothermal resources development program in this State; I have also visited the geysers, which the only active commercial geothermal development of steam in the United States, in California; and I made every attempt that is possible to familiarize myself with this. I have also visited with state regulatory people on a number of occasions, who are concerned with geothermal development in their respective states.

(Whereupon, a discussion was held off the record.)

Q As a result of this study have you drafted proposed regulations for geothermal energy resources production and development in the State of New Mexico?

A Yes, sir, I have. I have drafted a copy of a set of rules and regulations for geothermal resources and I am proposing that these regulations be considered by the Commission.

Q Have these proposed regulations been circulated to the industry?

A Yes, sir. These proposed regulations have been circulated and sent to all of the known interested parties that we are aware of in the field of geothermal; they have been submitted to a recent meeting of the Geothermal Resources Council, which is a nation-wide organization of geothermal producing companies, and geothermal utilization companies, and various states which have geothermal interests in those states. This recent meeting was held in San Francisco, the meeting was attended by regulatory people in the field of geothermal from ten different western states, by the USGS, by the producing companies, and by the utility companies that utilize geothermal resources. The rules were presented in a panel, discussed at that meeting, there was discussion on them, as was there discussion on the rules and regulations

of other states. We obtained a mailing list of the attendance at that conference, which was highly representative of the geothermal industry today. Copies of these rules and regulations were mailed to that mailing list which we obtained, on May 31st, 1974 with a notation on the front cover that these proposed rules and regulations will be considered at public hearing by the New Mexico Oil Conservation Commission at 9:00 o'clock a.m., June 11, 1974, at Morgan Hall, State Land Office Building, Santa Fe, New Mexico. Copies of the proposed geothermal rules and regulations were also sent to the Water Quality Control Commission, the State Engineer Office, the Environmental Improvement Agency and the Attorney General's office, and I don't know if there are any other State agencies that they were mailed to or not.

MR. PORTER: The Bureau of Mines.

A (Continuing) The New Mexico Bureau of Mines received a copy, the USGS was sent copies of them, not only in the Roswell office, but also the Menlo Park, California office of the USGS which has jurisdiction of geothermal activity on Federal lands in the west.

Q Are these proposed regulations prepared in the form of an exhibit?

A They are prepared in the form of an Exhibit and

are marked Exhibit A, Case No. 5255.

Q Are copies of Exhibit A available for people attending the Commission?

A Yes, sir, there is an abundance of copies available here today for anyone who cares to pick one up.

Q Do you have any suggested revisions to the proposed regulations as presently set forth in Exhibit A?

A Yes, there are some proposed revisions to these rules and regulations that I would like to offer at this time.

We have been under quite a dead line as far as getting them prepared and the rules and regulations are in a state of flux and we were still editing them right up to the time of this hearing and we do have some corrections and some clarifications to offer at this hearing this morning.

Q Would you please refer to Exhibit A and review the proposed regulations, section by section, giving a short summary of each provision, including any changes in the present draft that you feel are necessary?

A Yes, sir. If you will notice first of all the table of contents, we have got 9 sections in these rules, being: Section A, Definitions; Section B, Miscellaneous Rules; Section C, Drilling and Production; Section D, Records

and Reports; E, Abandonment, Temporary Abandonment and Plugging of Wells; Section F, Ratable Take; Section G, Injection and Disposal Wells; Section H, Blowout Prevention; and Section I, Rules on Procedure.

I will start first with the Definitions. I think that these pretty well speak for themselves, I don't need to go into each one of them in detail. I would recommend that the definition of correlative rights, however, be changed in the next to the last line of that definition. The word "pool" should be stricken, and the word "reservoir" should be substituted for that.

On the next page, A-2, a low-temperature thermal well is defined as being a well drilled to produce low-temperature thermal water for the purpose of extracting heat for agricultural, industrial, municipal, or domestic use. This should also include the word "commercial".

You will note on the next page, A-3, that "waste" is defined, and it shall mean any physical waste including underground waste and surface waste. This is in conformance with the Statutes governing the drilling for and production of natural gas, natural or hydrocarbon gas, as we were required to do by the Statute, the Laws of 1973.

Now, if we refer to Section B, the Miscellaneous Rules.

Rule 1 there, if you come down to about the seventh line, the word "geothermal" should have a capital "G". This rule simply says that the rules are promulgated by the Commission to govern geothermal and that there may be special rules enacted for special pools.

Rule 2 is Enforcement of Laws, Rules and Regulations, giving the Commission jurisdiction to enforce this and permitting employees, or charging employees with the duty and obligation of enforcing the rules and regulations.

Rule 3 prohibits waste.

Rule 4 provides that all geothermal operations, exploratory, drilling, and producing shall be conducted in a manner that will afford maximum reasonable protection to human life and health and to the environment.

Rule 5 I have an amendment to. It is recognized by the Commission that the appropriation of water, in a liquid or gaseous state, from a geothermal reservoir, or the appropriation of water from any other source for the purpose of injection into a geothermal reservoir is subject to. Now, you can scratch the words, "such water rights and permits for water appropriation as may be required under." And, at the end of the sentence, "the laws of the State of New Mexico" add the following words: Concerning water rights

and permits for the appropriation of water. The rule would then read: It is recognized by the Commission that the appropriation of water, in a liquid or gaseous state, from a geothermal reservoir, or the appropriation of water from any other source for the purpose of injection into a geothermal reservoir is subject to the laws of the State of New Mexico concerning water rights and permits for the appropriation of water. This simply means that if the State laws require that you must have a water permit for the depletion of water from an underground reservoir or, I guess an underground reservoir, that the Commission recognizes that this permit would have to be obtained for this water right.

Rule 6 provides that we recognize that the United States Government will have regulations concerning geothermal development on its lands. However, these rules which are not in conflict with any Federal rules will apply to Federal lands.

Rule 7 permits the unitization of contiguous individual leases into unitized areas for the purpose of exploration and production of geothermal resources.

Rule 8 provides that the Commission will from time to time define pools and extend these pools.

Rule 9 says that we will print the forms that are required.

Rule 10 gives us the authority to cooperate with other agencies.

Now, Section C, Drilling and Production. Rule 101 is a plugging bond rule. We heard some discussion on plugging bonds this morning on oil and gas wells. We have taken Rule 101 in our Oil and Gas Section and done some revision to that; we think that perhaps this rule will better enable the Commission to keep up with the requirements for plugging wells. We will have more flexibility in the approval of bonds under this rule and it will make it possible for the Commission to have the funds available from these bonding companies for plugging wells in the event that there are a number of wells owned by a given operator which must be plugged. The $10,000 blanket bond which the Commission presently has in effect for oil and gas wells is inadequate for plugging more than two or three wells in many areas. In some cases it would only plug one well. So we have provided in this rule that the Commission will require a bond before drilling a well. One well would be a $5,000 bond for a geothermal exploratory development or injection well; that is outlined in Rule 101 (a) (1).

Now, if you will drop to Section (3). This one-well-geothermal bond in the amount of $5,000 could be replaced by a multiple well geothermal exploratory development or injection well bond in the amount of $10,000. However, not more than five wells could be drilled under any such bond. An additional $10,000 bond would be posted for each additional five wells or a fraction thereof, of course.

Now, if we come back up to Section (2) we will see that a low-temperature thermal well or a geothermal observation well, both of which would be relatively shallow, would have a one-well $2,000 bond. But, Section (4) provides that a multiple-well bond could be substituted for that one well, shallow-well bond in the amount of $10,000, but not more than 10 such wells could be drilled under that bond. An additional $10,000 bond would be posted for each additional 10 wells. The rest of the rule simply recites that the procedures for transfer of wells and for the release of the bond in the event that the wells are plugged or that they are transferred to another person.

Rule 102 says that a well shall not be drilled until you have a drilling permit, and on the third line there after the word "injection" I would also add "or disposal". So that a drilling permit would be required for a geothermal

production or for observation or for injection or disposal. Section (b) of that Rule is the same as we have in our Oil and Gas Rules that no permit would be approved for the drilling of a well within the corporate limits of any city, town or village unless notice of this had been given to the city council or the town council, and evidence of such notification is given to the Commission.

Rule 103 requires a sign on the wells so that our inspectors could tell which well they are looking at.

Rule 104 is Well Spacing. We first of all define an 'exploratory"well and then a "development" well. An "exploratory" well is more than a mile from any defined geothermal reservoir. A "development" well is a well that is within the confines of a defined reservoir or within one mile thereof. The acreage requirements for exploration wells, now, this is the well that is out more than a mile away from any defined resource would be 40-surface acres minimum for the location of that well, and the well would have to be located at least 330 feet from the outer boundary of that drilling tract; no closer than 660 feet to another well capable of producing from or which is drilling to that same formation, and at least 100 feet from any public road, street or highway. Development wells in a pool, now once it has been designated

as a pool, would be located on a tract of 10 acres, and they would have to be at least 165 feet from the outer boundary of that 10-acre tract and at least 330 feet from another well drilling to or capable of producing from that formation, also 100 feet from a road or highway.

Injection wells don't have to have an acreage dedication, but they must be located at least 330 feet from the outer boundary of the lease that they are on, so that they are not too close to another man's property line. They also would have to be 100 feet from any road, street, or highway.

For geothermal observation wells and low-temperature thermal wells there is no restriction as to the placement of these, nor is there any acreage dedication requirement. I might get into the matter of these geothermal observation wells at this time. They are simply wells that are drilled at scientifically picked locations by the geologist to run probes into -- they drill the well down to maybe 500 feet and run probes in there and take measurements of the temperature and these are plotted over a period of time to see if there is a heat source under the ground there that is worth attempting to tap.

Section C of Rule 104 provides for administrative

approval of non-standard locations in the event that a location as described in Sections (1), (2), or (3) of Paragraph B is impossible or undesirable to drill. It requires notification to other operators in the event that you are crowding one.

In Section D is a provision that in the event a non-standard location is granted and you are permitted to crowd closer than the required distance to another operator that the Commission could take such action as may be necessary to offset any advantage that you gained by moving closer to that other operator. This would be done only after a hearing, however.

Section E provides that the Commission, after a hearing, could adopt special rules for pools. And in the fourth line there, if you will scratch the words "geothermal wells" and substitute "a particular geothermal reservoir", and then in the last full line where it says, "dedication requirements for", after the word "for" insert "a particular". It would be: dedication requirements for a particular low-temperature thermal. Then on the last line scratch the "s" after the word "fields". The rule would then say: In order to prevent waste and protect correlative rights, the Commission may after notice and hearing, adopt different well location

requirements and greater or lesser acreage dedication requirements than those contained in Rule 104 B (1), (2), and (3) for a particular geothermal reservoir and may adopt special well location and acreage dedication requirements for a particular low-temperature thermal field.

Rule 105 provides that you shall use rotary drilling equipment, except in the case of temperature-observation wells and low-temperature thermal wells and disposal wells which will not penetrate any high-pressure zone or formation, in which case you may use cable tools, otherwise rotary tools must be used.

Rule 106 requires that if you are drilling you must have a pit that is capable of containing the cuttings and the preventing of the spilling of these things on the surface of the ground. After the word "cuttings" on the fourth line, add the word "and". Then in the last line close the two words "water course" into one word.

Rule 107 provides that when you are drilllng a well, that you shall take the proper measurements to see that fresh water strata and brackish or briney water strata are sealed and there shall be no communication from one strata to the other. (b) provides that fresh waters shall be protected and special precautions by methods satisfactory to

the Commission shall be taken to guard against loss of artesian water in any strata in which it occurs, and to prevent the contamination of artesian water strata by objectionable thermal fluids. Normally the sealing off of these strata and the prevention of migration would be accomplished by casing and cement.

Rule 108 is Casing and Cementing Requirements. I have some changes in this particular Rule. If you will come down to the third line and after the words "disposal wells" scratch out the remainder of that line, "and geothermal observation wells if they penetrate fresh water". Then on the next line scratch out the words "bearing strata" so that the Rule would read: "All wells drilled for the production of geothermal resources, including low-temperature thermal wells, and all speciality wells, including injection and disposal wells shall be cased and cemented in such a manner as to protect surface waters, if any, usable ground waters, geothermal resources, and life, health, and property." Then we add another sentence: "Geothermal observation wells, if they penetrate fresh water bearing strata shall be completed and plugged in such a manner as to protect surface waters, if any, and usable ground waters.

The reason for this change is that you will note the

way the Rule was written a geothermal observation well if it penetrated fresh water, had to be cased and cemented in such a manner as to protect. A geothermal observation well is a temporary well and in some cases the running of casing into the well would prohibit the detection of the temperatures in a satisfactory manner, and particularly of metal casing. So the way a geothermal observation well is normally completed, it is about a four-inch hole drilled with a one-inch string of plastic pipe run in it and then this is filled in around there with cuttings. The one-inch plastic pipe then is filled with water to absorb the temperatures at the various levels and the probe run into the water to determine the temperature of the water. The use of casing, as such, is not advisable in these wells, so we have made the statement: "They shall be completed and plugged in such a manner as to protect the surface waters, if any, and usable ground waters." Now, it is contemplated that since they are of a temporary nature, that the completion and plugging would be done in a reasonable period of time, and that there would not be the migration of water. If they do penetrate fresh waters, normally they are not desirable as an observation well anyway, because the water, the inflow of water into the well will affect the temperatures that you are trying to

measure.

The next Section, B, provides that the pipe shall provide anchorage for blowout prevention equipment, and it also puts the operator on notice that while we do have specifications for casing programs outlined below, these specifications for a casing program will be determined on a well-to-well basis, and that these guides that are provided hereafter are simply guides to be used in submitting your Form G-101.

There is a good possibility in some cases that the officer of the Commission that approves the drilling permit will revise the submitted casing program. So these are simply guides for the operator to know about what to expect. It provides that conductor pipe shall be run, but that you can't wait too long before running your surface pipe. It sets a maximum limit of 150 feet on your conductor pipe. However, if you are just using a single joint of conductor pipe for keeping mud out of the cellar, the conductor pipe requirements are not applicable.

Surface casing is required on wells much in the same manner as surface pipe is required on oil and gas wells. We do prescribe some lengths of surface pipe here in Section (a) of Page C-6. (Reading) In areas where subsurface geological conditions are variable or unknown, surface casing in general

shall be set at a depth equaling or exceeding 10 percent of the proposed total depth of the well. (End of reading.) The word "the" should be inserted, and the words "drilled in such areas" scratched out.

(Reading) A minimum of 200 feet and a maximum of 1,300 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 Commission after a careful study of geological conditions. The Commission will make such a determination within 30 days. Drilling will not commence until such determination has been made and the drilling permit has been approved. (End of reading.) So this is going to enable the Commission to tailor the surface pipe program to the conditions that may be known to exist in a given area.

Within the confines of a designated geothermal field, once you have discovered it and know what the conditions are, the depth at which surface casing shall be set shall be determined by the Commission on the basis of known-field conditions and the requirements of (1) and (2) might be waived.

The cementing point for surface casing is outlined in Section (b) there. The first one requires that surface pipe

shall be set in a good solid lithologic unit so that you can get a good seat for your casing and your cement. It provides that if after setting your surface pipe, you are drilling out from under it and you start running into abnormally high pressures or temperatures that the Commission may require a second string of surface pipe be set. Chances are that when you start running into those conditions that this second string of casing could be the intermediate pipe then, and that the intermediate pipe which is required later would not be required to be run.

A correction there in (b) (1) on that second line where it says (a) (2), that should be (a) (1). In paragraph (2) there of section (b), on the second line where it says (a) (3), that should be (a) (2) above. And then on the fifth line after the words "ground water" insert the words, "and surface water".

Now I will read the last sentence of that particular Rule, Number (2), and add some words at the end. (Reading) A second string of surface casing may be required, before drilling into the known high pressure zone is permitted, if the first string of casing has not been cemented through a sufficient series of low-permeability, competent lithologic units, (End of reading) and either a rapidly increasing

thermal gradient or rapidly increasing formation pressures are encountered. This is the same provision that is up there in Section (1); it should be in Section (2) also, definitely in Section (2) because here we are drilling through known high-pressure areas.

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

Section (c) requires that the temperature of drilling mud be monitored as you are drilling the well and that the temperature be entered in a log book after every joint of pipe has been drilled down.

On page C-7 on the third line, change the words "Article 4" to"Section (h)". That Section (d) simply requires that blowout-prevention equipment is going to be required, and Section (h) which we will get to later details the use of blowout-prevention equipment.

Paragraph (3) there defines the intermediate casing, requires that an intermediate casing shall if possible be cemented solid to the surface, but the requirement to

circulate cement may be waived if the production casing is going to be cemented to the surface.

Section (4) on production casing states that the production casing shall be run either to the top of the pay or through the pay, that it shall be cemented solid to the surface or lapped into the intermediate casing, if intermediate casing was run. If the production casing is lapped into an intermediate string the casing overlap shall be at 50 feet, and a good solid-cemented joint obtained.

The next paragraph provides that in case of corrosive brine reservoirs you will have the same nominal design from the bottom of the hole -- same nominal inside diameter from the bottom of the hole to the top of the ground -- to prevent the formation of air bubbles and corrosion, to lessen the danger of that.

Section (5) provides that if there is any evidence that the casing is defective that it shall be repaired, and if they can't repair it the well should be plugged.

Section (6) provides that the well shall be logged, if possible, from total depth to the bottom of the conductor pipe prior to the running of the surface casing, but that this requirement is not necessary on observation wells or low-temperature thermal wells, and the requirement could be

(Reporter's note: Page 27 inadvertently skipped in transcription; text of deposition is intact.)

waived by the Commission if they know enough about the geologic conditions in the area.

Rule 109 is a rule concerning deviation tests and directional drilling, and it requires that at least every 500 feet that a Totco survey be made, and on line number 5, it says that will be submitted on Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources. "G-104"should be changed to "G-105", the Geothermal Resources Well Log. So that would come in with the G-105, the Deviation Survey.

The next paragraph provides that if an offset operator feels like a crooked hole is infringing on his property he can ask for a well survey, provided he posts a bond.

The next paragraph provides that no wells shall be intentionally deviated, except toward the vertical, without prior permission of the Commission. Our present Oil and Gas Rules require that this special permission from the Commission come after a hearing. That may be a little stringent in the Oil and Gas Rules, I don't know, but I am recommending for these geothermal rules that a hearing not be required but that a Form G-103,with copies to other operators owning leases offsetting the drilling tract, be filed, and that permission be given for the intentional deviation of a well

in a direction other than towards the vertical. However, it does provide that any well that is so deviated shall have a directional survey run on the well and filed with the Commission.

Rule 110 is a rule that provides that if you damage a well while you are working on it, you will repair the well or plug it.

Rule 111 gives the Commission or its duly authorized representatives the right of entry onto any geothermal resources lease for the purpose of inspecting wells and equipment, and determining whether compliance with or violation of these rules is occurring.

Rule 112 is a noise rule which requires that adequate noise abatement equipment shall be installed and maintained in good condition to reduce noise to a level approved by the Commission or its representatives on any drilling or producing geothermal well that is located within 1500 feet of a habitation, school or church.

Rule 113 is a safety rule which says that you won't keep fire hazards around the well.

Rule 114 concerns well heads and production equipment. It requires that the well head and the related parts and fittings shall have a test pressure equivalent at least to a

150 percent of the calculated or known pressure in the reservoir; and that valves shall be maintained in good order to permit pressures to be obtained on the production casing in the annulus between the casing strings to assure that you don't have leaks between the intermediate and the surface pipe. Flow lines shall be of adequate pressure rating and capacity to handle the product and shall be sufficiently equipped with expansion bands to prevent leakage and rupture; and all separators, pumps, mufflers, manifolds, flowlines, and other equipment used for the production of geothermal resources must be of adequate pressure rating and capacity and maintained in good order, in good condition to prevent loss of or damage to human life, and health, or to property or natural resources.

Rule 115 says that if you are in a corrosive area you will take measures to determine whether corrosion is occurring that might result in leakage or a rupture.

Rule 116 is a stringent rule, the disposal of highly mineralized waters produced from geothermal resources wells shall be in such a manner as to not constitute a hazard to fresh surface waters or underground supplies of fresh water. It is very short and to the point.

Rule 117 is a notification of fires, breaks, leaks,

spills and blowouts. At the end of that second line there on page C-9, after the word "treating" add"disposal" so that disposal wells are also included here. It requires that notification be given of a leak, fire, spill at a facility. Then on the next page, C-10,"facility"is described, and on the 7th line down, after the word "any" and before the word "drilling" insert the words "disposal or injection well, or" so that a "facility" then for the purpose of this Rule shall include any geothermal drilling or producing well, any pipeline through which geothermal resources or the waste products thereof are gathered or transported, any receiving tank into which geothermal waters or wastes are produced, received, or stored, any treating plant in which geothermal resources are treated or processed, any electrical generating plant in which geothermal resources are utilized and any disposal or injection well, or drilling pit or slush pit or storage pit or pond associated with geothermal drilling, producing, treating, or utilization processes in which hydrocarbons or hydrocarbon wastes or residue, salt water, strong caustics or acids, or other deleterious chemicals or harmful substances are present.

The next paragraph requires that immediate notification should be given to the Commission of well blowouts.

The next one requires that immediate notification be given of major breaks, spills, or leaks; and on the second line there before the word "pipelines" add the words "well heads", so that notification of breaks, spills or leaks of well heads, pipelines, tanks or drilling pits, slush pits, or storage pits or ponds, the result of which 50 or more barrels of liquids containing hydrocarbons or hydrocarbon wastes, salt water, strong caustics or strong acids, or other deleterious substances to reach a watercourse, which is one word, or enter a stream or lake, or in which noxious gases escape or any quantity of fluids are lost which may with reasonable probability endanger human health or result in substantial damage to property, shall be "immediate notification" required below.

The minor leak, the result of which is 25 barrels or more but less than 50 barrels of liquids are spilled, and in front of the word "pipelines" there on the second line, add the words "well heads" thereto.

For fires, notification at geothermal installations in which there is a reasonable probability of danger to human health or substantial damage to adjoining properties "or", after the word "properties", or substantial loss of geothermal resources shall be "immediate notification".

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Notification of fires of lesser magnitude, but of $500 or more of property damage or $500 or more of geothermal resources loss shall be "subsequent notice".

"Immediate notification" is then defined as being to pick up the telephone immediately upon discovery and advise the Commission or a Commission representative. "Subsequent notice" shall be a written report of the incident, and shall be filed 10 days after discovery of the incident. "Subsequent notification" is required to be filed after "immediate notification", and also this would be the written followup report.

Then the content of the notification is defined there, and a watercourse is defined.

Rule 118 requires that production from geothermal wells shall be measured by continuous metering or by other methods approved by the Commission.

Rule 119 states that after the completion of a geothermal resources well all production from said well shall be put to beneficial use. No production shall be permitted unless beneficial use is made thereof except for limited periods of testing, in which -- this is an error here, a typographical error, that word "prior" should be "proper" -- in which proper disposition of produced liquids shall be made.

Getting on into Section D, Records and Reports. You will notice that in Section A all producers transporters, purchasers and utilizers of geothermal resources shall make and keep appropriate books and records over a period of not less than five years to substantiate the reports that are required under these rules.

Now Section B, Well Records, requires that the owner or operator of any geothermal resources well shall keep or cause to be kept a careful and accurate well log, core record and history of the drilling of any such well, including the lithologic characteristics and depths of formations encountered. The depths, pressures and temperatures of the water bearing and steam bearing strata, the temperatures, chemical compositions and physical characteristics of fluids encountered, and electrical logs, directional surveys, physical or chemical logs, tests, including potential tests, and surveys, including temperature surveys. Now this is the information that the operator must keep as he drills the well.

These data shall be kept in the local New Mexico office of the owner or operator of the well or in the office of his statutory agent in New Mexico and shall be subject to inspection during normal business hours by the Commission or

its representatives, and by the State Engineer or his representatives. We will come back to this after a little while. For the time being let it suffice to say that the complete detail of the well's operation and the drilling progress of that well and all tests that are conducted on the well, and the products from the well shall be maintained in an office in New Mexico where it can be inspected by the Commission or its representatives or the State Engineer or his representatives.

The next paragraph simply says where to file the reports to keep our nomenclature correct, the word "Department" there should be stricken and the word "Division" substituted. We are calling it Division throughout the rest of these rules. It gives our mailing address.

And Section D says that the Commission might come up with some more requirements for additional reports, data, and so forth, if it becomes necessary.

Now we are going to get into the forms themselves. Form G-101 is the application for a permit to drill, deepen or plug back, and is covered by Rule 201. It provides that the operator will file the form in quadruplicate, but if the well is to be drilled on state land, five copies of the form will be filed. Each copy of the form is to be accompanied

by a G-102 which is the Geothermal Resources Well Location and Acreage Dedication Plat. Now on this form the operator states his name, well, the form is in the back of the book, we can refer to the form. The operator gives his name, the location of the well, and the type of well he is proposing to drill, a geothermal producer, a temperature observation well, a low-temperature thermal well, or an injection disposal well. He files this form if he is going to drill, deepen or plug back a well. He also not only gives the location of the well, but he gives the elevation, the status of his plugging bond, the name of the drilling contractor, the proposed depth, the formation he is going to go to, the approximate date the well will be commenced. He also outlines his proposed casing and cementing program, which I said may be subject to revision by geothermal officer of the Commission when he receives this and approved it. Any changes in this will be noted on the form itself before it is approved by the Commission and returned to the operator.

Now Rule 202 concerns this acreage dedication plat; this is a dual-purpose form, it not only shows the location of the well, but acreage dedicated, and also shows the status of the lands. That Form G-102 is reproduced here in the back of the book. It shows a plat there that you can

note the location. The surveyed location must be approved by a professional engineer and/or land surveyor registered in the State of New Mexico or a surveyor approved by the Commission. This last statement is a takeoff from our Oil and Gas Rules. This is a little bit misleading; the New Mexico Oil Conservation Commission can't approve a surveyor, the surveyor has to be approved by the Board of Registration for Engineers and Surveyors. However, if a man is representing his own company, and is working only for that company, he would be approved by the Commission, of course, as well as he is already approved by the Board of Registration to do that work in the State of New Mexico for his own company.

The Rule goes on to say that the form shall be filed in quadruplicate or quintuplicate; the only time it is filed in quintuplicate is when it is on state land, and that extra copy goes to the Land Office.

Then we get into Rule 203 which is a multiple-purpose form, G-103. It is used to report as a notice a proposal to perform remedial work, temporarily abandon a well, pull or alter casing, plug and abandon, or change plans from those that were submitted on the G-101 when it was originally submitted. The form is also used as a subsequent report of miscellaneous actions on a well, including remedial work,

notification of commencement of drilling operations, casing test and cement, altering the casing, plugging and abandoning, and other operations. These are all covered in detail in Section A for the Form G-103 as a Notice of Intention. I do want to make a change here on Page D-3, Number (3) there, Temporarily abandoning a well, parenthesis, see Rule 303 B.

Number (4), plugging and abandoning a well, see Rules 302 and 303 A. These are rules in more detail on the filing of this form and the information that is required.

Section (5) then goes into the remedial work which would have to be reported on the well.

The next paragraph, in the case of well plugging operations, the Notice of Intention shall include a detailed statement of the proposed work including plans for shooting and pulling casing, plans for mudding, including weight of mud, plans for cementing, including the number of sacks of cement, and depths of plugs, and the time and date of the proposed plugging operations. Scratch off the rest of that, that will be taken care of somewhere else; and then add the words "see Rule 302" in parenthesis.

Section B covers the Form G-103 as a subsequent report, and items (1), (2), (3), (4), (5), (6), (7), (8), and (9) detail the different categories in which the form is filed

for these various operations.

Turning over to the top of Page D-4, let's call that Section capital C. It makes it a little easier to identify. It goes into the various reports, when the form is filed, and the number of forms that are required to be filed, and the details of filing the form as a subsequent report.

In Section (2) there on Page D-4, on the fifth line down where it refers to Rules 106 and 107, those should be Rules 107 and 108.

MR. PORTER: Before we get too far away, Mr. Nutter, back to Page D-3, should we change that to "plugging and abandonment" rather than just "plug and abandon"?

MR. NUTTER: It probably would sound better, yes, sir. So, Section (5) would be Plugging and abandonment.

Now, item number (4) on D-4, the first paragraph states that the report shall be filed within 30 days following completion of plugging operations on the well, and that the information that is required would be filled in, including the nature and quantities of the materials employed, the weight of the mud, the size of the cement plugs, and so forth.

Now, the next paragraph, no plugging report will be approved by the Commission until, now insert the words "all forms and reports on the well have been filed and", so we

have: No plugging report will be approved by the Commission until all forms and reports on the well have been filed and the pits have been filled and the location leveled and cleared of junk. It shall be the responsibility of the operator to contact the Santa Fe office of the Commission when the location has been so restored, in order to arrange for an inspection of the plugged well and the location by a Commission representative.

These other detailing of the report on various operations are pretty much self-explanatory.

We come down to Section (7), Change in Ownership of a Drilling Well, and in the next to the last line, after the words "Rule 101" I think it is proper to insert the words, "the former owner of the well, to obtain release of his bond, shall follow the procedures set forth in Rule 101 B". Just a cross reference telling the former owner of the well that he has got to follow the procedures in Rule 101 B if he wants his bond released.

Now, we get to Rule 204 which concerns the Certificate of Compliance and Authorization to Produce Geothermal Resources. Prior to placing any geothermal resources well on production or injection, the owner or operator of said well shall file in quadruplicate with the Commission and receive

approval thereof Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources, outlining thereon the information required and certifying that all Commission Rules and Regulations pertaining to the well have been complied with. Production of or injection into any well in violation of this rule shall result in the well being shut in by the Commission subject to the penalties provided by law for violation of the Commission's Rules, Orders, and Regulations. In addition to Form G-104 being approved, additional approval for injection or disposal must be obtained pursuant to Rules 501 and 505. Forms G-104, now this is for the producing wells, must be accompanied by two copies of Form G-105, the Geothermal Resources Well Log (see Rule 205), which we will come to, outlining the data required and with the attachments required by Rule 204, should be 205, and two copies of Form G-106, Geothermal Resources Well Summary Report (see Rule 206)completely filled in and two copies of Form G-107, Geothermal Resources Well History (See Rule 207) completely filled in.

You will notice that this states in just a few words that when a well goes on injection or goes on production, that the 104, the Certificate of Compliance and the Authorization to Produce must be filed and must be accompanied by

the G-105 which is the well log and requires numerous attachments by the Form G-106 which is the Geothermal Resources Well Summary Report, and by the history of the well, Form G-107; this is when the well goes on production or injection. After approval of the G-104, distributions of the G-104, the 105, the 106, and the 107 which accompany it shall be made as follows: It is going to be filed in quadruplicate and one copy will be returned to the operator approved. One copy will be forwarded to the purchaser from the well, so that he will know that the well is in compliance and that he can legally purchase the production from the well. One approved copy of the Form shall be forwarded to the New Mexico Bureau of Mines, and one approved copy with attachments will be retained by the Commission. I'm going to get into this a little bit more in a minute.

I want to add a paragraph right here which was inadvertently omitted regarding the Form G-104, because it must be filed on other circumstances than just putting the well on production.

I don't know if I need to read all of this slowly enough for you to write it down; I can read it quickly through and then summarize it.

Form G-104 shall also be filed in quadruplicate when

there is change in purchaser from a well, or when there is a change of ownership of a well, other than a drilling well. So the first G-104 designates who the purchaser is; later on if you change purchasers it would have to be filed again in quadruplicate, simply designating the new purchaser. Also if the owner of a producing well sells that well the Form G-104 designating the new operator would be filed. No change of ownership would be approved by the Commission unless the new owner has an approved bond in accordance with Rule 101. The former owner of the well to obtain release of his bond shall follow the procedure set forth in Rule 101 B. Then there is a notation that Form G-103 shall be used to report transfer of ownership of a drilling well; so this is simply a cross between those two forms.

Now we get into Rule 205, the Geothermal Resources Well Log (Form G-105). First of all Section A is for producing wells and after the word "producing" insert the words "or injection". So this Section is for producing or injection wells. Form G-105, Geothermal Resources Well Log, shall be filed in duplicate with the Form G-104 when it is desired to put any geothermal resources well on production or injection, insert. It shall be accompanied by copies of electric logs, directional surveys, physical or chemical

logs, water analyses, tests, including potential tests and surveys. Failure to include these data and materials with the Form G-105 will result in withholding approval of the Form G-104. Distribution of 105 for producing wells shall be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission.

Now, Section B for Non-Producing or Temporarily Abandoned Wells, I have changed the word "non-producing" to inactive, For Inactive or Temporarily Abandoned Wells.

Form G-105, Geothermal Resources Well Log, shall be filed in duplicate for every geothermal resources well not on active producing status, insert the word "active" before the word "producing". For every well not on active producing or injection 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. Now we know that in the development of geothermal resources that there is a tremendous lag time sometimes from the initiation of the first drilling until the drilling program is complete and an adequate supply of geothermal resource developed, the contract signed for the sale and purchase of steam or hot water, for the design,

ordering and construction of the power plant. And because of this lag there is a certain amount of information pertaining to the development of the area that the operator wants to keep to himself pending the completion of his drilling program. So we have got here in Section A that the well when it goes on production would require the filing of the G-104, accompanied by the G-105, 106 and 107 which is the complete history of the well; nothing remains of the well that hasn't been told when these four forms have been filed. But for the inactive or temporarily abandoned well, now that was for the producing well, everything is revealed when you go on production, but for the inactive or temporarily abandoned well that is sitting there pending completion of your development program and the commercial utilization of the product from those wells, requires that it shall be filed within six months, unless a permit for temporary abandonment shall have been obtained pursuant to the provisions of Rule 303 B. In no event, even in the case of prolonged temporary abandonment approved by the Commission, shall the filing of Form G-105 be delayed for more than five years after cessation of active drilling operations. This is the lag time I was talking about, and New Mexico has a Public Records law which provides that all records in the agencies'

hands, except as provided by law, are public record, and there is no excepted provided by law approved for the Oil Conservation Commission, so any record that has been filed pertaining to a well is public record. This denies the protection necessary for the well that is part of a prolonged drilling and development program; it denies the operator the right to keep this material which he must keep confidential in order to adequately develop his potential geothermal resource.

I think that in the interest of encouraging development of geothermal resources in this state that we have to make provision, at least pending legislation, granting us the authority to keep the information confidential; that we must make a provision here for the delay in filing of this confidential information.

Now when we get to Rule 303 B we will see that in order to obtain this permit for temporary abandonment, that the operator must have kept the information which we referred to back in 200 B, which is the complete history of the well with all the test analyses and everything available for inspection by the Commission or its representatives or the State Engineer or his representative.

So that before temporary abandonment permit is given

out, or before a well is plugged and abandoned, access must have been made to these datum for the Commission or State Engineer representative. But anyway it provides that in no event, even in the case of a prolonged temporary abandonment, shall the filing of these forms be delayed for more than five year, and once it is filed distribution shall be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission, then it becomes a complete public record to all sources.

I want to add a Section C here which was left out. We have got the G-105 required for producing or injection wells, for inactive or temporarily abandoned wells, now we need a section for plugged and abandoned wells. So I've got a Section C identified for plugged and abandoned wells, it simply says that Form G-105, Geothermal Resources Well Log, with the required attachments shall be filed in duplicate for plugged and abandoned wells within six months after abandonment, Form G-105 with attachments filed in duplicate for P&A wells within six months, distribution would be one copy to the Bureau of Mines and one copy retained by the Commission. The bond on the well will not be released until Form G-105 has been received.

We next get into the Geothermal Resources Well Summary

Report, and if you will refer to that form in the back of the book we will see that for producing wells the G-106 shall be filed in duplicate completely filled out; that means each column there for a well that is going on production. It shall be submitted with the Form G-104, and the G-104 would not be approved until the G-106 has come in, and distribution of it would be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission.

Now for the inactive or temporarily abandoned well, the G-106 would be filed in duplicate within 90 days after cessation of active drilling operations, and the owner or operator of the well shall state on the form the general result of the wells condition; that is whether the well is capable of production of geothermal resources and will be retained for such a purpose; whether the well would 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. The form would also report the well's casing and cementing program, and in the case the well is to be retained for production, and if you will refer to the form, we will see that in case it will be retained for production, injection or disposal purposes, if you will return to the form over here, we will see that the

total mass flow in pounds per hour, the flowing temperature in degrees fahrenheit, and the flowing pressure in pounds per square inch would be reported. That is over in the middle of the page on the left there, there are three columns, Total Mass Flow Data, Pounds per Hour, Temperature, and Pressure. This is not basic information that the operator must sit on while he is working on his program. The Enthalpy and the Energy in that geothermal resource is the rest of the data that would not be reported at this particular time. That data would be reported when the well went on production, but the Pounds per Hour, Temperature and Pressure would be reported here.

Distribution of this Form would be -- now that would be required within 90 days after cessation of active drilling operations -- and distribution of the Form would be to the Bureau of Mines and one copy to the Commission.

We would also add a Section C to Rule 206 which would be much the same as the C we added to Rule 205; it would be Section C for Plugged and Abandoned Wells requiring that the G-106 be completely filled in, shall be filed in duplicate for P&A wells within six months after abandonment. Distribution would be the same, a copy to the Bureau of Mines and one copy to the Commission.

Then we get into the Rule 207 which concerns the Form G-107, which is the Geothermal Resources Well History form. We will refer to that form in the back of the book. You will see that it just a blank form, it simply provides a space with attached sheets for a chronological history of the drilling of the well, a daily drilling report so to speak.

For a producing well it would be filed in duplicate with the Form G-104; for an inactive or temporarily abandoned well it would be filed in duplicate; for every well not on active producing or injection status within six months after cessation of drilling operations, unless a permit for temporary abandonment has been approved, and in that case the distribution would be to the New Mexico Bureau of Mines, one copy to the Commission.

Then add Section C again for P&A wells. Form G-107 Geothermal Resources Well History shall be filed in duplicate for Plugged and Abandoned wells within six months after abandonment and distribution would be to the Bureau of Mines and to the Commission, the same as the other.

Rule 208 is a rule referring to the Monthly Geothermal Production Report. We don't have a copy of that in the back of our book. I'm sorry to say. It would simply be a

report of the production from the well each month. For those who might be interested, it would be similar to the Monthly Producer's Report filed with the Division of Oil and Gas Geothermal Department, State of California.

MR. PORTER: Mr. Nutter, would it be your plan to attach a copy of that to any Order that is issued?

MR. NUTTER: Yes, sir.

Rule 209 concerns a report which the purchaser -- Excuse me.

MR. TRUJILLO: Mr. Nutter, that Rule 208 shows in the body of the Rule, it shows Form G-115.

MR. NUTTER: That is G-108.

(Whereupon, a discussion was held off the record.)

MR. NUTTER: Rule 209 is the Purchaser's Monthly Report where he reports the quantity of the take from the leases and the wells that he is connected to.

There is a Rule 210 concerning a Monthly Injection Report on which the operator who is operating an injection or disposal well would report the volume that he is injecting into a given zone, the average temperature of the injected fluid and the average injection pressure at the wellhead.

Rule 211 calls for annual temperature and pressure tests and a Form G-111 which would have room for the data described here: Flowing temperatures and flowing pressure tests at the wellhead shall be recorded after at least 72 hours of continuous flow at normal producing rates. The well shall then be shut in for 24 hours and shut-in pressure at the wellhead recorded. Results of these tests shall be filed in duplicate with the Santa Fe office of the Commission.

Then we have an application to place a well on injection, Form G-112, which is simply an application for approval for an injection or disposal well, and would be filed in accordance with the procedure as outlined in Rule 503, which we will get to.

Now we come to Section E, Abandonment, Temporary Abandonment, and Plugging of Wells.

Okay, starting with Rule 301, the owner of any well drilled for geothermal exploration or production or temperature observation, or any seismic, core, or other exploratory hole, now insert the words "drilled for geothermal purposes", shall be responsible for the plugging thereof.

Rule 302 concerns the Notice of Intention to plug. Notice of Intention to plug must be filed with the Commission and approval obtained by the owner or his agent prior to the

commencement of plugging operations on Form G-103, Sundry Notices and Reports on Geothermal Wells, which notice shall, now we want to insert some words, "which notice shall be filed in accordance with Rule 203 A, and shall", back to our text, outline the casing and cementing program of the well, the casing which is to be pulled, the size of cement plugs and their depth, and such other information as may be pertinent. In the case of newly completed, scratch the words "dry holes" and substitute the word "wells". In the case of newly completed wells. By the way it may be of interest to some of you old oil operators, they don't get dry holes in this business, they get cold holes. In the case of newly completed wells which are to be plugged, now scratch "upon verbal submission of adequate data to the Commission's Santa Fe office". Scratch those words. So we have: "In the case of newly completed wells which are to be plugged, verbal authority and instructions may be given to plug the well."

Now, I have got a rather lengthy insert here concerning verbal approval and so forth, which I will read rapidly and if there is any need for going through it slowly, then I will. Okay, we get back up here.. In the case of newly completed wells which are to be plugged, verbal authority

and instructions may be given to plug the well, provided, now here is an insert: " Provided written notice to plug the well shall subsequently be filed within 30 days, and approval thereof obtained. Written approval or verbal approval of a plugging program shall be contingent upon evidence being furnished that the plugging program for the well is such as to prevent damage to any producing zone, migration of fluids from one zone to another, the contamination of fresh water or other natural resources, or the leakage of any substance at the surface, all as substantiated by Form G-105, Geothermal Well Log, and Form G-106, Geothermal Well Summary and Report". In other words, to get approval on a plugging program, this information, the approval shall be contingent upon information being furnished, that the plugging program is adequate to protect all of the resources and to prevent migration of fluids as substantiated by the information required on the Geothermal Well Log, the G-105, and the Geothermal Well Summary and Report, the G-106, unless a representative of the Commission has had access to and inspected the data and materials described back there in Rule 200 B. In other words, the same information for obtaining -- . The temporary abandonment of a well would apply to the plugging of a well; we have got to

have seen the information; we have either got to have the information in our hand or we have got to have seen the information to approve the plugging program for the well. And then after this insert, "See Rule 203 A, also Rule 203 C(4), and Rule 303 A".

Rule 303, Plugging and Temporary Abandonment, simply says that the well shall be plugged in a proper manner and that the marker installed, and seismic, core, temperature observation, or other exploratory wells drilled to or below fresh water shall be plugged in accordance with the applicable provisions recited above, but permanent markers wouldn't be required on shallow wells that did not penetrate fresh water.

Temporary Abandonment as shown there in Section B of Rule 303, and is much the same, except that at the end of the first paragraph on Page E-2, that"Rule 201 A" should be changed to"Rule 200 B". You will note that this Rule 303 B on Temporary Abandonment is very similar to the Rule that was discussed in Case 5217 earlier this morning, with the exception that there has been added one paragraph at the end of the Rule. The requirements of the paragraph immediately above, now that is the paragraph they were talking so much about this morning that would require the

one-well bond and the hearing on the temporarily abandoned well. The requirements of the paragraph immediately above may be waived and additional extensions granted in those cases where it can be shown that a contract exists for the construction of electric power plants, and such plants are being designed on order, or under construction.

Rule C simply says that when the drilling operations on a well have been suspended for 60 days, the well shall be P&A unless a permit for TA has been obtained, in accordance with Section B above.

Rule 304 provides that if the land owner where a well is drilled can use a well that is not productive for fresh water, the ownership of the well can be transferred to him, provided that a sealing plug is set below the fresh water.

Section F, Purchase of Geothermal Resources, is a ratable take section. The statute says that the Commission is hereby vested with the authority and duty of regulating the drilling, development, and production of geothermal resources in the same way insofar as is practicable, as it regulates, conserves, and prevents waste of natural or hydrocarbon gas. There is a ratable take provision in the natural gas statutes, and so we have included the provision

for ratable take enforcement in these Rules. Illegal sale is prohibited by Rule 401. Rule 402 provides that any person engaged in purchasing geothermal resourses from one or more producers within a single reservoir is a common purchaser in that reservoir, and that he shall not unreasonably discriminate in favor of one producer over another in that reservoir, either in the price paid, quantities taken, the bases for measurement, or the facilities offered. It also prohibits him from discriminating in favor of himself, if he is a producer also, as against other producers in the field. For the purpose of this rule, reasonable differences in prices paid or facilities afforded, or both, shall not constitute unreasonable discrimination if such differences bear a fair relationship to difference in quality, quantity, or pressure of the geothermal resource available or to the relative lengths of time during which such geothermal resources will be available to the purchaser.

Any common purchaser taking geothermal resources produced from wells within a geothermal reservoir shall take ratably under such rules, regulations, and orders, concerning quantity, as may be promulgated by the Commission after due notice and public hearing. The Commission in promulgating such rules, regulations and orders may consider the

quality and quantity of the geothermal resources available, the pressure and temperature of the product at the point of delivery, the acreage attributable to the well, market requirements, and other pertinent factors.

Nothing in this rule shall be construed or applied to require, directly or indirectly, any person to purchase geothermal resources of a quality or under a pressure or under any other condition by reason of which such geothermal resource cannot be economically and satisfactorily used by such purchaser by means of his geothermal utilization facilities then in service.

Rule 403 provides that the Commission can determine, or if the Commission determines that geothermal resources production in the state or in a particular geothermal resources area, is causing waste, the Commission shall limit and allocate among the producing wells the total amount of geothermal resources which could be produced in the state, or in a particular geothermal area. We would never expect it to apply to the state as a whole.

Now we get over here into Section G on geothermal injection and disposal wells.

MR. PORTER: Mr. Nutter, before we start on Rule 501, I believe we will recess the hearing until one o'clock.

(Whereupon, the hearing was recessed from 11:50 A.M. until 1:15 P.M.)

AFTERNOON SESSION

MR. PORTER: Mr. Nutter, I believe you were about to begin on Rule 501, Section G.

MR. NUTTER: Yes, sir, Section G of these Rules and Regulations, is the geothermal injection disposal wells.

Rule 501 defines the geothermal injection well. Rule 502 defines the geothermal disposal well. Both rules prohibit injection unless a permit has been obtained on the approved Form G-112 which is the Application to Place a Well on Geothermal Injection in a Geothermal Resources Area. The Form shall be filed in accordance with Rule 503 which we will go into. The Application for approval is by administrative procedure, no hearing being necessary. The Application on the Form G-112 would be accompanied by a plat showing the location of the well and the location of other wells within a radius of two miles, and the ownership of geothermal leases within two miles. A log of the proposed geothermal well, or the proposed injection well, would be submitted if available; also a diagrammatic sketch of the well, with all the pertinent facts of the well's construction depicted thereon, and a structure map showing the

contours on a geologic marker at or near the intended zone of injection with at least one cross section showing the proposed injection or disposal zone from at least two offsetting wells in opposite directions. A copy of the Application would be sent to other geothermal lease owners, if any there be within a one-half mile radius of the proposed injection or disposal well. The Secretary-Director could approve the application after a twenty-day waiting period if no objections have been received, and if he was satisfied that the well is cased, cemented, and equipped in such a manner that there would be no danger to any natural resources, including geothermal resources, fresh water supplies, and surface resources.

Rule 504 requires that monthly injection reports would be filed, and Rule 505 is a surveillance rule in which competent surveillance of the well shall be made at all times to be sure that the water that is being disposed of, or injected, is going into the intended formation, and that there is no leakage into any other formation.

Rule 506 is simply an abandonment rule that says they must be plugged in a proper manner as are other wells.

Section H is on blowout prevention. Rule 602 provides standards for blowout prevention equipment, but it does say

that these standards are given simply as guidelines for the preparation of a minimum blowout prevention program for certain categories of wells. They are not final; they could certainly be amended or exceptions to these rules could be approved by the geothermal officer approving the drilling of the well, inasmuch as they are simply guidelines.

It breaks the wells down into three categories for blowout prevention equipment. The first is using mud as a drilling fluid in areas where geothermal resources are known to contain geothermal fluids at a temperature greater than 212 degrees, at depths less than 2,000 feet, and geothermal exploratory wells in temperatures where the subsurface temperatures and pressures are unknown, but the proposed depth of the well is less than 2,000 feet. The requirement is for an API Class 2M-A or a 2M-RR blowout preventer on these. The API, I have checked with them, the API according to a bulletin D-13 and my discussions with API engineers tell me that the lightest duty blowout prevention equipment the API has approved is Class 2M with a working pressure of 2,000 pounds; the service condition of this blowout prevention equipment is described as light duty.

Now, insofar as I have been able to ascertain there is

no geothermal resource well anywhere in the world with a higher surface pressure than 1,000 pounds. However, since the API does specify construction of equipment, and they have a minimum size on their blowout prevention equipment of a 2M or a 2,000-pound head, if we are going to stick with API standards,we must prescribe a 2M until the API comes up with a smaller size blowout preventer.

As we stated before geothermal development in this country and in the world, in fact, is in a state of infancy. The state of the art was mentioned the other day as being approximately the same as the oil and gas industry in the twenties or maybe the thirties; so I am sure that the API in the future years, if oil well drilling equipment is going to continue to be used for geothermal development, will come up with new standards for geothermal equipment, but for the time being, if we are going to stick with API equipment we must prescribe the minimum size, which would be a 2M.

We have down here in the Section(b),Rule 602 A, and we find here that it says the annular blowout preventer or pipe-ram/blind-ram BOPE with a minimum working-pressure rating 1,000, this should be changed to 2,000, shall be installed on a surface casing.

The next category for wells is on Page H-2, Section (2) up there near the top of the page. It is for wells in geothermal resources areas known to contain geothermal fluids at temperatures greater than 212 degrees, at depths of more than 2,000 feet, and geothermal exploratory wells in areas where subsurface temperatures and pressures are unknown and the proposed depth of the well is more than 2,000 feet. This would be the major category, I think, for most geothermal exploratory wells. This calls for an API Class 2M-RSRA, or equivalent blowout prevention stack, with the accompanying equipment that goes with it, kelly cock, fill-up line, kill line, blow-down line, and such.

The next category is using air as a drilling fluid for the wells drilled in geothermal resource areas where it is known that dry steam exists at depth and/or formation pressures are less than hydrostatic. Again, we have got to go to the minimum size, the 2M, which would be a RSRdG API set up. Frequently a banjo box is used in the geothermal drilling set up rather than the drilling spool down below the rams. So this particular specification here is an adaptation actually of an API 2M RSRdG stack, and it has the banjo box in place of the drilling spool.

And again down here in Section (d) the minimum working-

pressure rating should be changed to 2,000 rather than 1,000 if we are going to stay with the blowout prevention equipment that is approved by the API. However, when we get down to item (j), all lines and fittings must be steel and have a minimum working-pressure rating of 1,000. The 1,000 is satisfactory there.

Rule 603 for areas with a history of blowouts provides that the operator shall provide adequate blowout prevention which may be contrary to the previous rules if they are drilling in an area where there is a history of blowouts and lost circulation.

Rule 604 prescribes testing of blowout prevention equipment. I have some amendments to make to this particular rule. Upon installation, ram-type blowout preventers, and insert the words "bag-type blowout preventers", valves, and manifolds shall be, now you can strike out "tested to 100 percent of the rated working pressure and bag-type blowout preventers shall be", strike those words. And then we have the words "tested to", strike the "1,000" and insert"a minimum of 750" psi pressure. So that the sentence would then read: Upon installation, ram-type blowout preventers, bag-type blowout preventers, valves, and manifolds shall be tested to a minimum of 750 psi pressure.

The next sentence, ram-type preventers shall be operated at least once every 24 hours and bag-type preventers closed on the drill pipe at least once each week. I have discussed this with some of the operators that drill for geothermal resources; I understand that in some cases, particularly where you are involved in drilling dry steam wells that the frequent operation of these, like on an every-day test, that the heat of the steam will bake the rubber in the rams and that the rubber will dry out from this dry steam. It may be advisable that provision should be made for an exception to this testing rule in areas where dry steam wells are being drilled. I believe that concludes my testimony on Section H.

We next get into Rules on Procedure which is taken from the Commission's present rules on procedure for: Applications for Hearings, for the Filing of Applications, Personal Service of Notice, Contents of Notice, Filing Pleadings, Continuance of Hearings Without New Service, Conduct of Hearings, Power of the Commission to Require Attendance of Witnesses, Rules of Evidence, Examiners' Qualifications and Appointment, Referral of Cases to Examiners, Examiner's Power and Authority, Hearings Which Must Be Held Before the Commission. Notwithstanding any other provisions

of these rules, the hearing on any matter shall be held before the Commission (1) if it is a hearing de novo, or (2) if the Commission in its discretion desires to hear the matter.

Rule 717 defines the Examiner's Manner of Conducting Hearings and the next Rule is his Report and Recommendations, Disposition of Cases Heard by Examiners, De Novo Hearing Before the Commission, Notice of Commission's Orders, Rehearings, and Changes in Forms and Reports.

That pretty much is the essence of that Section. I won't go into it; I think most of us are familiar with it. If anyone has any questions regarding that Section, I will be happy to try to answer them.

Then, of course, at the end of the Proposed Rules we do have attached copies of the forms through 107. We have five additional forms which are not attached here, they will all be relatively simple forms, and their purpose and their content has been stated in the Rule that is applicable to each of those forms, that would be Form 108 through 112.

Q In your opinion, will the adoption of the proposed Regulations, as presently drafted, and as amended by the corrections noted today, enable the Oil Conservation Com-

mission to fulfill its statutory mandate of conserving and preventing waste of geothermal resources within the state, in the same manner insofar as is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas?

A I think that it will. We naturally have a lot to learn; I'm sure that as years go by there will be amendments to these rules, but I think that these rules will be a good starting place at least. Our oil and gas rules were first adopted back in 1935 and they have been amended many times since then, and there had to be a starting point on those, and this is the starting point on these. I think that it will accomplish those purposes you have mentioned.

Q Do you have any recommendations that the Commission take with reference to these proposed rules?

A Yes, sir, I would recommend to the Commission that the proposed rules as amended here today be adopted.

Q Do you have anything further to add to your testimony?

A Well, I only want to say that geothermal development, as I mentioned before, is in its infancy in this country. This state has just barely gotten off the ground with it, but I think the State of New Mexico has a tremendous

potential in the field of geothermal. The tectonics of a good part of this state are such that we probably will see the development of this new resource in New Mexico. For this reason I urge that the Commission should adopt some set of rules and regulations so that we can get started on the development of this new resource.

MR. DERRYBERRY: Mr. Chairman, at this time I would like to offer into evidence Commission Exhibit A.

MR. PORTER: If there is no objection this Exhibit A will be admitted.

(Whereupon, Exhibit A was admitted into evidence.)

MR. PORTER: Any questions of the Witness? Mr. Buell?

MR. BUELL: I have a brief question for Mr. Nutter. Over on Page D-6 under Rule 205, it is called for there with Form G-105 to submit electric logs, directional surveys, physical or chemical logs, water analyses, tests, et cetera. It is my understanding that it is not always possible to have electric logs on these wells from surface to TD, does this mean as available?

MR. NUTTER: This would mean -- now,all of those tests would not have been conducted on every well; this

simply means that the stuff that has been run would be submitted.

MR. BUELL: As is available?

MR. NUTTER: Yes, sir.

MR. BUELL: I have nothing further.

MR. PORTER: Mr. Reynolds, do you have any questions?

MR. REYNOLDS: No, no questions.

MR. PORTER: Mr. Stamets?

MR. STAMETS: Mr. Nutter, I note on your Rule 104 B, you prescribed that the locations must be at least 100 feet from any road, street or highway; I wonder if similar restrictions should be on habitations, commercial buildings, schools, churchs?

MR. NUTTER: No. You mean the location of the well within a specified distance of a habitation, school or church?

MR. STAMETS: Right.

MR. NUTTER: It probably should be more than 100 feet from a school, if you are describing the distance from a school. I don't know just what the minimum distance that a well should be drilled from a habitation, school or church. If it is within 1500 feet it has got to have some

noise abatement equipment.

You must remember also, Mr. Stamets, that some of these wells are simply going to be hot water wells, and if a man is located over an aquifer that contains hot water and has his house there, here is going to want to drill that hot water well as close to his house as he can get it, so I think when you start specifying distance from buildings and things like this,you may be getting into areas that -- it would get awfully complicated if you started trying to distinguish between them.

MR. STAMETS: Do you feel that the Geothermal Division would have enough leeway under these Rules to prevent wells from being drilled too close.

MR. NUTTER: I question that; I don't know if the Commission could do that or not. It may be that the owner of the house wants the well drilled close to his house; we may be interfering with his rights. I think that is a matter between the owner and the driller.

MR. STAMETS: I have nothing further.

MR. PORTER: Any further questions?

MR. DERRYBERRY: Mr. Chairman, I would like to clarify one point. Mr. Nutter, does Exhibit A contain all these revisions that you have testified as to?

MR. NUTTER: Yes, sir, it does.

MR. PORTER: That is the Exhibit that will be filed with the reporter?

MR. NUTTER: Yes, sir, that is the Exhibit that will be entered into the records, and it does have all these changes and notations that I have mentioned.

MR. PORTER: Does anyone else have questions? The Witness may be excused.

Mr. Buell, would you like to call your witness?

MR. BUELL: Mr. Porter, we would like to call Mr. Wilson and ask that he be sworn.

(Whereupon, the Witness was sworn.)

JOSEPH L. WILSON

called as a witness, having been first duly sworn, was examined and testified as follows:

DIRECT EXAMINATION

BY MR. BUELL:

Q Would you please state your name, by whom you are employed, in what capacity, and where?

A My name is Joseph L. Wilson, I am Manager of the Land Department of the Geothermal Division of Union Oil Company of California in Los Angeles.

Q Basically would you give the Commission some of

your educational background and work experience.

A Since graduating from the University of Oklahoma in 1948 I have been continuously employed in the oil business; first from '48 to '53 by the old Stanolind Oil and Gas Company, now Amoco, and since 1953 with Union Oil Company. I have been in their land management area, in the Oil and Gas Division up until 1971, at that time I was transferred to the Geothermal Division and I have been involved with geothermal operations, both locally and on an international level.

Q Is your employer, Union Oil Company of California, active in the geothermal area?

A Yes, sir, I think we are considered one of the leaders in the geothermal industry since we are the operator of the only commercial field, the geysers in California. We are currently exploring and developing what we think is going to be commercial here in your state; we have operations in all the western states as well as on the international scene. We are drilling and developing in an area in the Philippines, we are exploring in other areas of the Philippines. We have had requests from many foreign countries to consult with them on their geothermal potentials.

Q Mr. Wilson, referring you to what has been marked

and introduced into evidence as the Commission's Exhibit Number 1, the Proposed Regulations, have you had an opportunity to review thos Regulations?

A Yes, sir.

Q Referring you to Page D-1, and under Rule 200, subparagraph B, have you had a chance to review that particular paragraph?

A Yes, sir.

Q Do you have some comments on this Section of the proposed Rules, regarding the Well Records and confidentiality?

A Yes, sir, Mr. Nutter touched on it, and he did quite a good job; I feel now that I'm going to be somewhat redundant, but if the Commission will bear with me, I may be repetitious.

As you know, the industry is in its infancy, and we need all the encouragement we can get. The necessity for the confidentiality material basically involves around the long lag time between discovery, ultimate utilization or sale of the product. Just to give you an example, here in New Mexico we drilled our first well in 1971, and because of the drilling problems during the winter season, we have a rather limited drilling program for our exploratory wells. We drilled again in '72, again in '73, and we still have a

program in '74, and we haven't started talking contract yet; the reason behind that being -- departing from New Mexico and just generally speaking again -- that when you make a discovery, it takes some time to assess that discovery and when you are going to a utility company to make a sale, you have to have quite an extensive background on the size of the reservoir because obviously if you can demonstrate to them that you think you have an ultimate potential of a million or two million kilowatts, you can make a much better contract than you can if you can say, "Well, we feel like we only have 250 thousand as an ultimate." That takes a lot of time in assessing this; then after the assessment has been made and we have decided what we have, there is quite a period of time in negotiation with the utility or utilities because we hope we won't be limited to one, to consummate a contract may take another year or so. Following that comes the design, the ordering, and the construction of the plants, and it could very easily be five years from discovery until, in fact, I would say that would be a very optimistic period of five years from discovery to utilization of the product. If we can't keep this information confidential we have all the problems such as Federal lease sales, State competitive lease sales, as well as the

private sector that we might be having an on going problem with negotiations to try to tie these ends up. If we are able to keep this information confidential we can go out and drill these areas before we have solidified our lease block, and this would move up our period quite a bit. If we had to give this information up everybody would be trying to have a solid lease block and hopefully cover all the areas, and this could take quite a period of time, but if we feel we can keep this confidential we think we can drill maybe a tight hole and then go about the process; so we think it is very necessary for the confidentiality to be maintained during that period.

MR. BUELL: Mr. Porter, I would point out at this time in the second paragraph of subparagraph B, it says that the records can be kept in the local office of the owner or operator or his statutory agent. I would submit for the Commission's consideration, that it might be "designated" agent rather than "statutory" agent.

MR. PORTER: You are recommending to change that word "statutory" to "designated"?

MR. BUELL: Yes, sir.

MR. PORTER: Mr. Nutter, do you have any comment on that proposed change?

MR. NUTTER: No, sir, corporate agent, designated agent, as long as it is somebody we can go visit.

MR. PORTER: Mr. Carr just called my attention to the fact that statutory agent might be the secretary of state, then it would be a matter of public record.

MR. BUELL: Also the other problem is that there are several corporations in this state that act as professional statutory agents, and they may be statutory agents for 20 or 30 corporations, and they would have a storage problem on their hands.

BY MR. BUELL:

Q Mr. Wilson, referring you to Rule 302 and particularly Page E-2, the last paragraph of that rule states the requirements of the paragraph immediately above may be waived and additional extensions granted in those cases where it can be shown that a contract exists for the construction of electric power plants and such plants are being designed, on order, or under construction. This has to do with temporarily abandoned wells; do you have any comments on that?

A Yes, and this is just an on going bit of what I was just referring to. We could very readily find ourself like we have in New Mexico where we have had wells that have

been shut in for three years, and two years, and a year. This period of time between, as I mentioned earlier, discovery and the construction and completion of the plant can be five years and so this five-year period we would have to be continuously coming to the Commission for an extension for these temporarily abandoned wells, and if we could have some relief in the geothermal sector if this is going to be included in our rules to maybe prior to the contracts being consummated, possibly a five-year period or some period of time that we could have these wells standing without having to come back to the Commission.

MR. PORTER: In other words, you would like some modification that would make the necessity for reappearance to be less frequent?

MR. WILSON: Yes, sir.

MR. BUELL: Mr. Chairman, in that connection I would offer a suggestion that if the end of the sentence there, after the word "construction" period. Strike the period, insert a comma in lieu of it and add the following language which leaves a little bit to be desired grammatically: "Or in the case of exploration of a geothermal reservoir to determine its commercial feasibility."

MR. PORTER: Mr. Nutter, do you have a note of

of that change?

MR. NUTTER: To me this goes back to the problem we had with this same rule, or the similar rule in the Oil and Gas Rules and Regulations. If you take Mr. Buell's statement there, that means that an operator with just any old well just almost anywhere can sit there and say he is witing to evaluate the commercial feasibility; and he could have a cold hole and be telling us he has a potential geothermal reservoir.

MR. BUELL: I can appreciate Mr. Nutter's concern, and I certainly am not going to make an escape hatch there. How about qualifying an on going exploration program.

MR. NUTTER: If it is an on going program then it is a lot more worthy of consideration than a well that is sitting out there with a claim being made for it.

MR. BUELL: We are not trying to protect the one well that is sitting, but a program that is on going like I told you.

MR. NUTTER: Actually your on going program there could be referring to the development of geothermal fields that wouldn't necessarily be designed for or suitable for electrical power plants. Up in the Pacific Northwest they are using geothermal waters for food packing plants, for

green houses, nurseries, as well as heating units and things like that; so an on going program for the development of this resource would be more inclusive than just a field that is being developed for electric plants.

MR. BUELL: Well, I have added the final two words, "as a commercial" to determine if the field is commercial or the reservoir is commercial feasibility, it was limited to power plants.

BY MR. BUELL:

Q Mr. Wilson, referring you to Page F-1, it deals with Ratable Take. Down in the fourth paragraph, in charging the Commission with the duty of promulgating rules and regulations for Ratable Take, it says that the Commission may consider the quality and the quantity of geothermal resources; do you have any comment on that?

A Well, we would suggest that if you could change "may" to "shall" it would certainly be beneficial in our way of thinking in that we certainly are in favor of every-one getting their fair share of the production, but what we are concerned about is a well that might be hooked up that would be of a quality that would be a detriment to the generating facility, whereas they could put some dirty steam in your system and they could get some blades in the genera-

tor or the turbine and break it down and be out of service for some months while the equipment was being ordered and the turbines are being repaired.

Another problem would be, if my hands were an area that was being developed for a particular plant in the middle and somebody came up with a well on the extreme outside or what we call the perimeter of the producing area, by the time his well was -- his pipeline was linked to our system it would cool and he would really be putting a low-quality bit of thermal energy into our system. So if it was a matter that they shall consider these things then that would take any arbitrary possibility out of it, and I think that would relieve any kind of concern that we might have as to a poor quality well being entered into a system that could be a detriment to the system, or could be actually causing great damage to it.

MR. NUTTER: Mr. Porter, I might point out that this particular Rule was taken from the statute of the laws here in New Mexico, and the laws say that the Commission may consider this; it doesn't say shall.

BY MR. BUELL:

Q Do you have anything you would like to add to your testimony?

A No, sir.

MR. BUELL: I have no other questions; I do have a comment after the cross examination.

MR. PORTER: Does anyone have a question, any questions of Mr. Wilson? He may be excused.

MR. BUELL: Mr. Porter, I would like to direct the Commission's attention to Rule 5 over on Page B-2, and we have some concern over this Rule. We are aware that the statutory authority for geothermal activity for the production and drilling were given to the Commission; we also are aware that there is a clause in there reserving to other state agencies their regular powers. This Rule provides that the appropriation of water in liquid or gaseous state will be subject to the water laws of the State of New Mexico. Our concern is that as an operator in this state we don't know exactly where we stand. Certainly we understand if we appropriate surface water for injection purposes or use, we must go through the State Engineer; if we appropriate ground water, and particularly in a basin in which we are located, a declared basin, we must go through the State Engineer. We are confused about who we see to get our drilling permit. There are stringent rules for drilling and the granting of permits in these Rules. The State

Engineer has permits and rules for their permits for drilling. We are a little confused about that; we think that this Section, although I have no specific language to offer at this time, could be clarified as to where an operator in this state goes to deal with the proper agency and to avoid a risk of having dealt with the wrong agency to his detriment and be subject to litigations, and it would also help to eliminate any jurisdictional disputes between two agencies over a given program. We would like to see that clarified as to who has jurisdiction over what in the geothermal area.

Incidentally, I would point out in this regard that the Public Service Commission apparently has some color of interest in this since they are giving the duties for the power to regulate the production and sales steam. So it is a confused area and I think it could be clarified.

I have nothing else.

MR. PORTER: Thank you, Mr. Buell. Mr. Reynolds?

(Whereupon, the witness was sworn.)

S. E. REYNOLDS

called as a witness, having been first duly sworn, was examined and testified as follows:

MR. PORTER: Mr. Reynolds, will you proceed, and give us your testimony, please?

MR. REYNOLDS: Mr. Chairman, for the record I am S. E. Reynolds, State Engineer, appearing in that capacity.

Mr. Chairman, my comments are, I am afraid, largely editorial, but they do, at least to some extent, deal with substantive matters upon which testimony may be helpful to the Commission.

I invite your attention first, Mr. Chairman, to Page A-3, the definition of "well" in the last paragraph of that page. The first problem that I see, it occurs to me at this point and perhaps throughout, there should be some definition of "fresh water". Mr. Chairman, as one possible source, I refer you to Frank Irby's letter of April 13, 1967 to you. Furthermore, Mr. Chairman, I will refer the Commission to Page 6 of U. S. Geological Survey Water Supply Paper No. 1365 which gives definitions. It might be useful if I read them: (Reading) Slightly saline, 1000 to 3000 parts per million; moderately saline, 3000 to 10,000 parts per million; very saline, 10,000 to 35,000 parts; brine more than 35,000 parts. (End of reading.)

So fresh water according to those definitions would be water containing less than 1000 parts. The letter to which I refer you suggests the value of 10,000 parts per million.

MR. PORTER: That was in Mr. Irby's letter I

believe?

MR. REYNOLDS: Yes, sir.

MR. PORTER: What was the second reference you made to Mr. Irby?

MR. REYNOLDS: The second reference, Mr. Chairman, was to Water Supply Paper No. 1365 of the U. S. Geological Survey, which contains certain definitions.

I am further concerned, Mr. Chairman, with the wording of that particular definition. It would apparently exclude hot, dry holes from the definition of a well. It would seem also to exclude wells drilled only where brackish or saline waters are present, as it would seem to be necessary to have fresh water before you have anything that fits a definition of a well.

Mr. Chairman, then moving to Page B-2, Rule 5. Mr. Chairman, I believe that the amendments offered by Mr. Nutter do greatly improve that particular Rule. I would offer for your consideration a different amendment which I believe will further improve it, and perhaps answer, at least in part, Mr. Buell's concern. It would then read this way, Mr. Chairman: (Reading) It is recognized by the Commission that the appropriation of water in liquid or gaseous state from a geothermal reservoir, or the appropriation

of water from any other source for the purpose of injection into a geothermal reservoir is subject to, and at this point I will offer new language for the rest of the Rule. (Continue reading) The provisions of the New Mexico Constitution and Statutes, and the Rules and Regulations of the State Engineer governing the appropriation and use of the public waters of the State. (End of reading)

Then, Mr. Chairman, moving to Page C-2, I suggest Mr. Chairman, that under the heading of Rule 104 A, Classification of Wells, there may be some typographical errors in the first paragraph under that heading, and it appears to me that it would need to be considerably amended to be consistent with the definition given on Page A-1 for an exploratory well. Mr. Chairman, I don't necessarily suggest this as an amendment, but to make it consistent, and to make it clear, to me at least, it would be necessary, one, to delete the word "from" in the second line, and substitute for it the word "beyond", delete the (1), and then coming to the third line, after the word "field" delete the words "and (2) any well which is within one of such field". Then, Mr. Chairman, it would be consistent with the definition, and I believe clearer.

Then, Mr. Chairman, moving to Page C-5. Mr. Chairman,

here again in a very general way, let me suggest again the value of a definition of the term "fresh water" which occurs on this particular page in the second line of Paragraph (a), the first line of Paragraph (b), and in Paragraph A under Rule 108. I think that it causes troubles at each of those points that could be overcome by the adoption of a definition of the term "fresh water".

Then, Mr. Chairman, moving to Page C-10, in the paragraph numbered (2) at about the middle of the page. First, in the fourth line I suggest as Mr. Nutter pointed out at one or more points,"watercourse" should be one term, one word, and then to avoid ambiguity I would suggest the deletion of the words "or enter a stream or lake", and the very use of the term "watercourse" in view of the definition, seems to cover that, and it could lead to some ambiguity by repeating those words here.

I might point out in the third line of that paragraph, it would seem to me that the intent is, at the fourth word, the word "the" should probably read, "as a result" instead of "the result".

Mr. Chairman, I would recognize that the definition on Page C-11 of a watercourse is drawn from the existing OCC Regulations. However, I think the definition would be

improved by the deletion of the word "bed" in the first line and in the second line of that definition.

Then, Mr. Chairman, moving to Page D-2, it is strictly editorial. On the first paragraph under Rule 202, I suggest that in context, the Rule would be improved by the deletion of the Latin words "et al". It seems to be the intent is simply to designate the majority owner.

Moving on, Mr. Chairman, to Page E-1, and again, Mr. Chairman, the difficulty with the definition of the term "fresh water" . This is in the first paragraph under Rule 303 A, the third from last and last line.

Then, Mr. Chairman, G-1, here, Mr. Chairman, not having qualified myself as an expert in geothermal resources, you may find my remarks here gratuitous, and I offer them here only for what help they may be. I know the Commission will disregard them to whatever extent they find them inappropriate.

It appears to me that the first paragraph in Rule 501 should perhaps make provision for the situation in which it is necessary to inject fluids to recover the heat, and that appears not to be specifically addressed. Further, with respect to Rule 502, and subsection (5) of Rule 503, the Commission may find it useful to expressly establish

authority to require or permit reinjection to prevent or control subsidence, if in fact the basic statute provides such authority. I am aware that such problems have been encountered in California.

Then, Mr. Chairman, moving to Page I-3, the last paragraph on that page, I would be flattered, Mr. Chairman, if the Commission could include the State Engineer among those who may be represented by unsworn testimony at its hearings. You might do that by inserting the words "State Engineer" after"the Bureau of Mines" or after "competent persons".

Thank you, Mr. Chairman.

MR. PORTER: Does anyone have a question of Mr. Reynolds or anything you would like to discuss with him while he is on the stand?

Mr. Nutter?

MR. NUTTER: No, sir.

MR. PORTER: Do you feel you understand Mr. Reynold's proposals in each case?

MR. NUTTER: Yes, sir. Mr. Reynolds, with respect to that comment you made on Rule 501, I felt that the injection of water into dry, hot rocks would be augmenting the supply, the natural supply, the natural supply is zero. That is the reason I didn't mention that; it could very well

be mentioned, though. You will be in some cases, injecting water into rocks that don't have any natural waters in them.

MR. REYNOLDS: Mr. Chairman, if I may, it did occur to me that was your line of reasoning, but it occured to me since it is not the intent to augment the supply; the real intent, of course, is to heat it up and evaporate it if possible and bring it back up, rather than to augment the supply.

MR. NUTTER: By putting it in you augment a zero supply.

MR. REYNOLDS: Yes, but then you quickly remove it.

MR. PORTER: Any further questions? Thank you, Mr. Reynolds.

MR. REYNOLDS: Thank you, very much.

MR. PORTER: I might say that Mr. Reynolds and I serve on a board, a commission,together, and I accuse Mr. Reynolds of memorizing all of the proposed rules . It wouldn't be hard to see where I get the idea. We certainly appreciate your very thorough editing, and we will certainly take all of your recommendations into consideration.

MR. REYNOLDS: I appreciate your courtesy, Mr.

Chairman.

MR. PORTER: Does anyone else have any testimony they want to present in the case? Would anyone like to make a statement or comment on the case in any way.

Yes, sir?

MR. CORMIER: Mr. Chairman, I don't know if this is a comment or statement or not, but I would address this to the Commission that I represent Chevron Oil Company, I am a landman; Chevron is a wholly-owned subsidiary of Standard of California, but we are not prepared to submit comments at this time due to the fact that we did not receive copies of the proposed rules until yesterday, June the 10th, because of some mixup in the postal service. I have an envelope here that shows this first stamp May 7, and they weren't even mailed out to May 31, then it was stamped again on June 7th. For this reason Chevron Oil Company respectfully requests that the Commission grant a period of time within which written comments may be submitted, and we suggest a period of 15 days or until June 3rd to submit written comments.

MR. PORTER: Does anyone else have a statement they would like to make?

(Whereupon, a discussion was held off the record.)

MR. PORTER: In accordance with the gentleman's suggestion, the Commission will allow until June 30th for additional comments to be filed concerning the proposals that have been made here today.

Is there anything else anybody would like to request or would like to offer in this case?

At this time I certainly want to thank publicly Mr. Nutter for all of the time that he has devoted to the compilation of these Rules. He has made three trips to California; he has presented these Rules as he has previously advised you, to a symposium out there, and he has tried to get the benefit of the thinking of people who were more familiar in this area than we are. Mr. Ulvog accompanied him on one of those trips.

When the law was first passed, the first law that was proposed, went into rule making to quite a degree and we discouraged that, and we had a new bill written which simply gave us jurisdiction over geothermals because of the inflexibility of rules that are written into the law. Once they are in there it would take at least two years to get one changed, so we felt that the rule-making process should rest with this Commission. We gave expertise in this field.

I also want to thank the gentlemen from Union who have

participated and given us the benefit of their knowledge in the geothermal field.

I previously, I believe, expressed my appreciation to Mr. Reynolds for his help in the editing of the Rules.

Is there anything else? The Commission will take the Case under advisement and the Hearing is adjourned.

STATE OF NEW MEXICO)
) SS.
COUNTY OF SANTA FE)

I, RICHARD L. NYE, Court Reporter, do hereby certify that the foregoing and attached Transcript of Hearing before the New Mexico Oil Conservation Commission was reported by me, and the same is a true and correct record of the said proceedings, to the best of my knowledge, skill and ability.

RICHARD L. NYE, Court Reporter

THE NYE REPORTING SERVICE
STATE-WIDE DEPOSITION NOTARIES
225 JOHNSON STREET
SANTA FE, NEW MEXICO 87501
TEL. (505) 982-0386

Docket No. 16-74

Dockets Nos. 19-74 and 20-74 are tentatively set for hearing on July 16 and July 24. Application for hearing must be filed at least 22 days in advance of hearing date.

DOCKET: COMMISSION HEARING - TUESDAY - JUNE 11, 1974

OIL CONSERVATION COMMISSION - 9 A.M. - MORGAN HALL, STATE LAND OFFICE BUILDING, SANTA FE, NEW MEXICO

ALLOWABLE: (1) Consideration of the allowable production of gas from seventeen prorated pools in Lea, Eddy, Roosevelt, and Chaves County, New Mexico, for July, 1974;

(2) Consideration of the allowable production of gas from five prorated pools in San Juan, Rio Arriba, and Sandoval Counties, New Mexico, for July, 1974.

CASE 5217: (Continued from the April 23, 1974, Commission Hearing)

In the matter of the hearing called by the Oil Conservation Commission upon its own motion to consider the adoption of a Commission definition for "Temporary Abandonment" of wells, and further to consider the amendment of Rule 202 of the Commission Rules and Regulations to adopt an administrative procedure for abandonment of wells in this state for a limited period of time only, and for the adoption of a requirement for an individual one-well plugging bond for the continued temporary abandonment of any well after the expiration of the administrative period of time in which such well could be temporarily abandoned.

CASE 5255: In the matter of the hearing called by the Oil Conservation Commission of New Mexico upon its own motion to consider the adoption of general rules and regulations governing the drilling for and production of geothermal resources in the State of New Mexico.

Before the
NEW MEXICO OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

CASE NO. 5255
Order No. R- 4860

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO UPON ITS OWN MOTION TO CONSIDER THE ADOPTION OF GENERAL RULES AND REGULATIONS GOVERNING THE DRILLING FOR AND PRODUCTION OF GEOTHERMAL RESOURCES IN THE STATE OF NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 11, 1974, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 1st day of October, 1974, 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 Legislature of the State of New Mexico, by House Bill No. 156, enacted Chapter 75, Laws of 1973, an Act... "Relating to the conservation, regulation, and prevention of waste of geothermal resources; giving the Oil Conservation Commission authority to regulate, conserve and prevent waste of geothermal resources."

(3) That said Act was signed into law by the Governor of the State of New Mexico on the 15th day of March, 1973.

(4) That said Act reads as follows:

Section 1. The oil conservation commission is hereby vested with the authority and duty of regulating the drilling, development and production of geothermal resources and with the authority and duty of conserving and preventing waste of geothermal resources

within this state in the same manner, insofar as is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas. "Geothermal resources" as used herein 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. Nothing in this section shall be construed to supersede the authority which any state department or agency has with respect to the management, protection and utilization of the state lands and resources under its jurisdiction.

(5) That pursuant to the authority and duty vested in it by the aforesaid Section 1, the Commission has caused to be prepared certain rules and regulations governing the drilling, development and production of geothermal resources in this State, with the objective of conserving and preventing waste of said geothermal resources in the same manner, insofar as it is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas.

(6) That while there is considerable dissimilitude between geothermal resources and natural or hydrocarbon gas, there is sufficient similarity between the drilling for and development and production of these two natural resources as to make it practicable to apply the same general concepts for the prevention of waste of geothermal resources as are applied to the prevention of waste of natural or hydrocarbon gas.

(7) That to prevent the waste of geothermal resources, it is also necessary to apply the concept of the protection of correlative rights, inasmuch as the protection of correlative rights is a necessary adjunct to the prevention of waste, and waste will result unless the Commission can also act to protect correlative rights.

(8) That to prevent the waste of geothermal resources, rules and regulations should be adopted by the Commission which, among other things, would:

(a) provide definitions of geothermal resources, operations, and related subjects;

(b) prohibit waste of geothermal resources, make provision for cooperation by the Commission with the federal government and other state agencies, and require geothermal operations to be conducted in such a manner as to afford maximum reasonable protection to human life and health and to the environment;

(c) provide for the requirement of a resident agent and the posting of plugging ~~bounds~~ bonds with the Commission prior to commencement of drilling operations;

(d) establish acreage dedication requirements and spacing and well location rules;

(e) require wells to be drilled, cased, and cemented in such a manner as to protect useable underground waters;

(f) require wells to be drilled and produced and geothermal products to be handled in a safe manner to prevent loss of or damage to human life and health or to property or natural resources;

(g) require notification to the Commission of fires, breaks, leaks, spills, and blowouts so that appropriate action may be taken to minimize damage resulting from such incidents;

(h) require the keeping of books, records, and well histories and logs to ensure compliance with these geothermal rules and regulations ~~governing waste and correlative rights~~;

(i) require the filing of forms and reports concerning the drilling for and production of geothermal resources and the injection of fluids underground to ensure compliance with these rules and regulations;

(j) require proper plugging and abandonment of wells in such a manner as to prevent waste of geothermal resources, useable underground waters, and other natural resources;

(k) require the ratable taking of geothermal resources within a single geothermal reservoir by any purchaser therein, in order to protect correlative rights and prevent the waste of geothermal resources;

(l) provide for the limitation and allocation of geothermal resources production if such production is causing waste;

(m) require prior approval from the Commission before injecting fluids into any geothermal resources reservoir, or before injecting geothermal fluids into any formation for disposal purposes;

(n) require the use of blowout prevention equipment to prevent loss of geothermal resources from high pressure reservoirs;

(9) That to provide procedures for the amendment of these rules, for obtaining exceptions thereto, for having hearings and rehearings concerning geothermal matters, and to generally outline the lawful processes attendant to the execution and administration of the geothermal laws and rules and regulations, Rules on Procedure should be adopted.

(10) That the Rules and Regulations, Geothermal Resources, should apply to all present and future geothermal operations in the State of New Mexico, provided however, that any low-temperature thermal well drilled and completed prior to the date of this order should be exempted from the bonding requirements of these rules, and from the casing and cementing requirements of these rules as long as it appears that the casing and cementing of any such well is adequate to prevent waste; and provided further, that the owner of any such low-temperature thermal well should file with the Commission an affidavit listing the location of each such well he owns, the date of completion of said well, the capacity of the well in gallons per minute, and the temperature of the water produced from the well, such affidavit being due at the Commission's Santa Fe office not later than 180 days after the adoption of these rules, whereupon

(11) That the adoption of the Rules and Regulations, Geothermal Resources, as contained in Exhibit "A" attached hereto and made a part hereof, is in the public interest, will prevent waste of geothermal resources within the State and will protect correlative rights, and should be approved.

(12) That the adoption of the Forms described in Section D, Rules 201 through 212, inclusive, of Exhibit "A" of this order, and as shown by Exhibits "B" through "M", inclusive, attached hereto and made a part hereof, is in the public interest and will facilitate the prevention of waste of geothermal resources within the State and the protection of correlative rights, and should be approved.

the Commission will determine what forms or reports, if any, will be required for such wells in the future.

IT IS THEREFORE ORDERED:

(1) That rules and regulations governing the drilling, development and production of geothermal resources within this State are hereby adopted and promulgated, said rules and regulations being in the form of Exhibit "A" attached hereto and made a part hereof, entitled, "State of New Mexico Oil Conservation Commission Rules and Regulations Geothermal Resources".

(2) That the following forms, identified as exhibits attached hereto and made a part hereof, are hereby adopted and promulgated:

(a) Form G-101, Application for Permit to Drill, Deepen, or Plug Back-Geothermal Resources Well: Exhibit "B".

(b) Form G-102, Geothermal Resources Well Location and Acreage Dedication Plat: Exhibit "C".

(c) Form G-103, Sundry Notices and Reports on Geothermal Resources Wells: Exhibit "D".

(d) Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources: Exhibit "E".

(e) Form G-105, Geothermal Resources Well Log: Exhibit "F".

(f) Form G-106, Geothermal Resources Well Summary Report: Exhibit "G".

(g) Form G-107, Geothermal Resources Well History: Exhibit "H".

(h) Form G-108, Monthly Geothermal Production Report: Exhibit "I".

(i) Form G-109, Monthly Geothermal Purchaser's Report: Exhibit "J".

(j) Form G-110, Monthly Geothermal Injection Report: Exhibit "K".

(k) Form G-111, Annual Geothermal Temperature and Pressure Tests: Exhibit "L".

(l) Form G-112, Application to Place Well on Injection--Geothermal Resources Area: Exhibit "M".

(3) That these Rules and Regulations, Geothermal Resources, shall and do apply to all present and future geothermal resources drilling, development and production operations within the State of New Mexico, provided however, that any low-temperature thermal well as defined herein which was drilled and completed prior to October 1, 1974, shall be exempted from the bonding requirements of these rules and shall remain so exempted, and shall be exempted from the casing and cementing requirements of the rules, and shall remain so exempted for so long as it appears that the casing and cementing of the well is adequate to prevent waste. Provided further, that for any low-temperature thermal well as defined herein to be exempted from the bonding and casing and cementing requirements of these rules, the owner thereof shall file with the Commission an affidavit listing thereon the location of each such well he owns, the date of completion of said well, the capacity of the well in gallons per minute, and the temperature of the water produced from the well, said affidavit being due at the Commission's Santa Fe office not later than April 1, 1975. Upon receipt of such affidavits,

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

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

the Commission shall make a determination as to which further forms or reports, if any, will be required in the future for each such low-temperature thermal well.

BEFORE THE OIL CONSERVATION COMMISSION
OF THE STATE OF NEW MEXICO

CASE NO. 5255
Order No. R-4860

IN THE MATTER OF THE HEARING CALLED BY THE OIL CONSERVATION COMMISSION OF NEW MEXICO UPON ITS OWN MOTION TO CONSIDER THE ADOPTION OF GENERAL RULES AND REGULATIONS GOVERNING THE DRILLING FOR AND PRODUCTION OF GEOTHERMAL RESOURCES IN THE STATE OF NEW MEXICO.

ORDER OF THE COMMISSION

BY THE COMMISSION:

This cause came on for hearing at 9 a.m. on June 11, 1974, at Santa Fe, New Mexico, before the Oil Conservation Commission of New Mexico, hereinafter referred to as the "Commission."

NOW, on this 1st day of October, 1974, 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 Legislature of the State of New Mexico, by House Bill No. 156, enacted Chapter 75, Laws of 1973, an Act... "Relating to the conservation, regulation, and prevention of waste of geothermal resources; giving the Oil Conservation Commission authority to regulate, conserve and prevent waste of geothermal resources."

(3) That said Act was signed into law by the Governor of the State of New Mexico on the 15th day of March, 1973.

(4) That said Act reads as follows:

> Section 1. The oil conservation commission is hereby vested with the authority and duty of regulating the drilling, development and production of geothermal resources and with the authority and duty of conserving and preventing waste of geothermal resources within this state in the same manner, insofar as is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas. "Geothermal resources" as used herein 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. Nothing in this section shall be construed to supersede the authority which any state department or agency has with respect to the management, protection and utilization of the state lands and resources under its jurisdiction.

(5) That pursuant to the authority and duty vested in it by the aforesaid Section 1, the Commission has caused to be prepared certain rules and regulations governing the drilling, development and production of geothermal resources in this State, with the objective of conserving and preventing waste of said geothermal resources in the same manner, insofar as it is practicable, as it regulates, conserves and prevents waste of natural or hydrocarbon gas.

(6) That while there is considerable dissimilitude between geothermal resources and natural or hydrocarbon gas, there is sufficient similarity between the drilling for and development and production of these two natural resources as to make it practicable to apply the same general concepts for the prevention of waste of geothermal resources as are applied to the prevention of waste of natural or hydrocarbon gas.

(7) That to prevent the waste of geothermal resources, it is also necessary to apply the concept of the protection of correlative rights, inasmuch as the protection of correlative rights is a necessary adjunct to the prevention of waste, and waste will result unless the Commission can also act to protect correlative rights.

(8) That to prevent the waste of geothermal resources, rules and regulations should be adopted by the Commission which, among other things, would:

(a) provide definitions of geothermal resources, operations, and related subjects;

(b) prohibit waste of geothermal resources, make provision for cooperation by the Commission with the federal government and other state agencies, and require geothermal operations to be conducted in such a manner as to afford maximum reasonable protection to human life and health and to the environment;

(c) provide for the requirement of a resident agent and the posting of plugging bonds with the Commission prior to commencement of drilling operations;

(d) establish acreage dedication requirements and spacing and well location rules;

(e) require wells to be drilled, cased, and cemented in such a manner as to protect useable underground waters;

(f) require wells to be drilled and produced and geothermal products to be handled in a safe manner to prevent loss of or damage to human life and health or to property or natural resources;

(g) require notification to the Commission of fires, breaks, leaks, spills, and blowouts so that appropriate action may be taken to minimize damage resulting from such incidents;

(h) require the keeping of books, records, and well histories and logs to ensure compliance with the geothermal rules and regulations;

(i) require the filing of forms and reports concerning the drilling for and production of geothermal resources and the injection of fluids underground to ensure compliance with the rules and regulations;

(j) require proper plugging and abandonment of wells in such a manner as to prevent waste of geothermal resources, useable underground waters, and other natural resources;

(k) require the ratable taking of geothermal resources within a single geothermal reservoir by any purchaser therein, in order to protect correlative rights and prevent the waste of geothermal resources;

(l) provide for the limitation and allocation of geothermal resources production if such production is causing waste;

(m) require prior approval from the Commission before injecting fluids into any geothermal resources reservoir, or before injecting geothermal fluids into any formation for disposal purposes;

(n) require the use of blowout prevention equipment to prevent loss of geothermal resources from high pressure reservoirs;

(9) That to provide procedures for the amendment of these rules, for obtaining exceptions thereto, for having hearings and rehearings concerning geothermal matters, and to generally outline the lawful processes attendant to the execution and administration of the geothermal laws and rules and regulations, Rules on Procedure should be adopted.

(10) That the Rules and Regulations, Geothermal Resources, should apply to all present and future geothermal operations in the State of New Mexico, provided however, that any low-temperature thermal well drilled and completed prior to the date of this order should be exempted from the bonding requirements of these rules, and from the casing and cementing requirements of these rules as long as it appears that the casing and cementing of any such well is adequate to prevent waste; and provided further, that the owner of any such low-temperature thermal well should file with the Commission an affidavit listing the location of each such well he owns, the date of completion of said well, the capacity of the well in gallons per minute, and the temperature of the water produced from the well, such affidavit being due at the Commission's Santa Fe office not later than 180 days after the adoption of these rules, whereupon the Commission will determine what forms or reports, if any, will be required for such wells in the future.

(11) That the adoption of the Rules and Regulations, Geothermal Resources, as contained in Exhibit "A" attached hereto and made a part hereof, is in the public interest, will prevent waste of geothermal resources within the State and will protect correlative rights, and should be approved.

(12) That the adoption of the Forms described in Section D, Rules 201 through 212, inclusive, of Exhibit "A" of this order, and as shown by Exhibits "B" through "M", inclusive, attached hereto and made a part hereof, is in the public interest and will facilitate the prevention of waste of geothermal resources within the State and the protection of correlative rights, and should be approved.

IT IS THEREFORE ORDERED:

(1) That rules and regulations governing the drilling, development and production of geothermal resources within this State are hereby adopted and promulgated, said rules and regulations being in the form of Exhibit "A" attached hereto and made a part hereof, entitled, "State of New Mexico Oil Conservation Commission Rules and Regulations Geothermal Resources".

(2) That the following forms, identified as exhibits attached hereto and made a part hereof, are hereby adopted and promulgated:

(a) Form G-101, Application for Permit to Drill, Deepen, or Plug Back-Geothermal Resources Well: Exhibit "B".

(b) Form G-102, Geothermal Resources Well Location and Acreage Dedication Plat: Exhibit "C".

(c) Form G-103, Sundry Notices and Reports on Geothermal Resources Wells: Exhibit "D".

(d) Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources: Exhibit "E".

(e) Form G-105, Geothermal Resources Well Log: Exhibit "F".

(f) Form G-106, Geothermal Resources Well Summary Report: Exhibit "G".

(g) Form G-107, Geothermal Resources Well History: Exhibit "H".

(h) Form G-108, Monthly Geothermal Production Report: Exhibit "I".

(i) Form G-109, Monthly Geothermal Purchaser's Report: Exhibit "J".

(j) Form G-110, Monthly Geothermal Injection Report: Exhibit "K".

(k) Form G-111, Annual Geothermal Temperature and Pressure Tests: Exhibit "L".

(l) Form G-112, Application to Place Well on Injection--Geothermal Resources Area: Exhibit "M".

(3) That these Rules and Regulations, Geothermal Resources, shall and do apply to all present and future geothermal resources drilling, development and production operations within the State of New Mexico, provided however, that any low-temperature thermal well as defined herein which was drilled and completed prior to October 1, 1974, shall be exempted from the bonding requirements of these rules and shall remain so exempted, and shall be exempted from the casing and cementing requirements of the rules, and shall remain so exempted for so long as it appears that the casing and cementing of the well is adequate to prevent

waste. Provided further, that for any low-temperature thermal well as defined herein to be exempted from the bonding and casing and cementing requirements of these rules, the owner thereof shall file with the Commission an affidavit listing thereon the location of each such well he owns, the date of completion of said well, the capacity of the well in gallons per minute, and the temperature of the water produced from the well, said affidavit being due at the Commission's Santa Fe office not later than April 1, 1975. Upon receipt of such affidavits, the Commission shall make a determination as to which further forms or reports, if any, will be required in the future for each low-temperature thermal well.

(4) That jurisdiction of this cause is hereby 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.

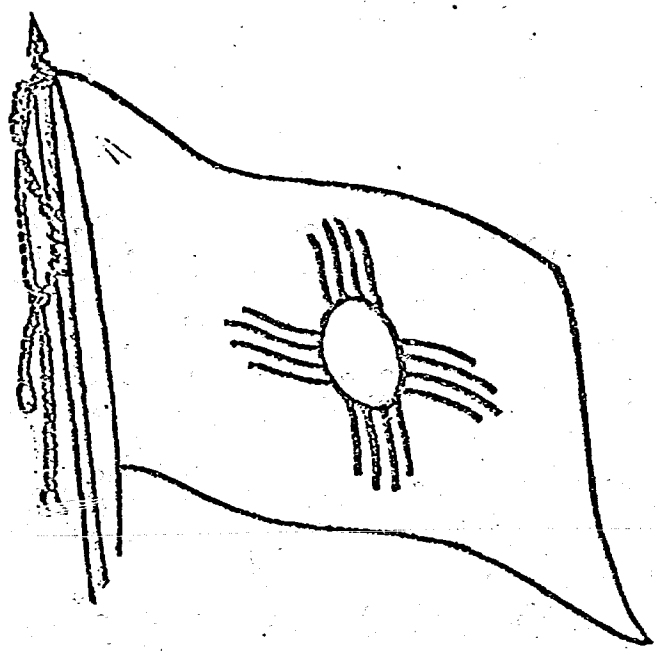
STATE OF NEW MEXICO
OIL CONSERVATION COMMISSION

I. R. TRUJILLO, Chairman

ALEX J. ARMIJO, Member

A. L. PORTER, Jr., Member & Secretary

dr/



STATE OF NEW MEXICO

OIL CONSERVATION COMMISSION

RULES AND REGULATIONS

Geothermal Resources

Order No. R-4860
Exhibit No. A

NEW MEXICO
OIL CONSERVATION COMMISSION

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Telephone: 827-2432

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PRINCIPAL OFFICE

and

GEOTHERMAL DIVISION

Santa Fe

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Engineering Division	827-2533	Director	827-2432

A. L. Porter, Jr., Secretary-Director
R. L. Stamets, Technical Support Chief
Wm. F. Carr, General Counsel
D. S. Nutter, Chief Engineer
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NEW MEXICO
OIL CONSERVATION COMMISSION

GEOTHERMAL RESOURCES DIVISION

RULES AND REGULATIONS

* * * *

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A. DEFINITIONS

COMMISSION shall mean the Oil Conservation Commission created by Section 3, Chapter 168, Laws of 1949.

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, to 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.

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 DIVISION shall mean that division of the Oil Conservation Commission 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 Section 1, Chapter 75, Laws of 1973.

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

GEOTHERMAL OBSERVATION WELL shall mean 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 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 occurence, 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 resource 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 Commission.

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.

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 Commission.

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, geothermal observation well, or low-temperature thermal well, as defined herein.

B. MISCELLANEOUS RULES

RULE 1. SCOPE OF RULES AND REGULATIONS

(a) The following Geothermal Rules and Regulations are of statewide application and have been adopted by the Oil Conservation Commission to conserve the natural geothermal resources of the State of New Mexico, to prevent waste, and to protect the correlative rights of all owners of geothermal resources. Special rules, regulations, and orders may be adopted from time to time when required for a particular geothermal resources area, and shall prevail over the Geothermal Rules and Regulations if in conflict therewith. However, when these Geothermal Rules and Regulations do not conflict with special rules hereafter adopted, these Geothermal Rules and Regulations will apply.

(b) The Commission may grant exceptions to these rules and regulations after notice and hearing, when the granting of such exceptions will not result in waste but will protect correlative rights or prevent waste.

RULE 2. ENFORCEMENT OF LAWS, RULES, AND REGULATIONS DEALING WITH CONSERVATION OF GEOTHERMAL RESOURCES

The Commission, its agents, representatives, and employees are charged with the duty and obligation of enforcing all statutes, rules, and regulations of the State of New Mexico relating to the conservation of geothermal resources. However, it shall be the responsibility of all geothermal resource owners or operators to obtain information pertaining to the regulation of geothermal resources before operations have begun. Minor deviations from the requirements of these rules as to field practices may be permitted by the Commission or its duly authorized representatives where such can be safely done without waste, and burdensome delay or expense to the operator avoided.

RULE 3. WASTE PROHIBITED

(a) The production or handling of geothermal resources of any type or in any form, or the handling of products thereof, in such a manner or under such conditions or in such an amount as to constitute or result in waste is hereby prohibited.

(b) All owners, operators, contractors, drillers, transporters, service companies, pipe pulling and salvage contractors, and other persons shall at all times conduct their operations in the drilling, equipping, operating, producing, and plugging and abandoning

of geothermal resource wells in a manner that will prevent waste of geothermal resources, and shall not wastefully utilize geothermal resources, or allow leakage of such resources from a geothermal reservoir, or from wells, tanks, containers, or pipe, or other storage, conduit, or operating equipment.

RULE 4. PROTECTION OF LIFE, HEALTH, AND THE ENVIRONMENT

All geothermal operations, exploratory, drilling, and producing, shall be conducted in a manner that will afford maximum reasonable protection to human life and health and to the environment.

RULE 5. OTHER DEPARTMENTS AND AGENCIES

Nothing in these rules shall be construed to supersede the authority which any state department or agency has with respect to the management, protection and utilization of the state lands and resources under its jurisdiction.

RULE 6. UNITED STATES GOVERNMENT LEASES

It is recognized by the Commission that all persons conducting geothermal operations on United States Government land shall comply with the United States government regulations. Such persons shall also comply with all applicable State rules and regulations which are not in conflict therewith.

RULE 7. UNITIZED AREAS

After notice and hearing, the Commission may grant approval for the combining of two or more contiguous leases into a unitized area for purposes of exploration for and production of geothermal resources.

RULE 8. CLASSIFYING AND DEFINING POOLS

The Commission will determine whether a particular well or field is a high-temperature geothermal well or field or a low-temperature thermal well or field, as the case may be, and will, from time to time, classify and reclassify wells and name pools accordingly, and will determine the limits of any field so designated and from time to time redetermine such limits.

RULE 9. FORMS UPON REQUEST

Forms for written notices, requests, and reports required by the Commission will be furnished upon request.

RULE 10. AUTHORITY TO COOPERATE WITH OTHER AGENCIES

The Commission may from time to time enter into arrangements with State and Federal governmental agencies, industrial committees, and other persons, with respect to special projects, services, and studies relating to conservation of geothermal resources.

C. DRILLING AND PRODUCTION

RULE 100. DESIGNATION OF AGENT

Any person who has drilled or is drilling or proposes to drill any geothermal well shall file a "Designation of Agent" (on a form approved by the Commission) with the Commission. The designated agent shall be a resident of this state and shall be the repository for all well records of wells drilled by the owner or operator for whom he is agent (See Rule 200 B). All changes of address of the agent shall be immediately reported to the Commission in writing. Upon termination of any agent's authority, a new Designation of Agent shall be filed with the Commission within ten days.

RULE 101. PLUGGING BOND

(a) Any person who has drilled or is drilling or proposes to drill any geothermal resources well shall post with the Commission, and obtain approval thereof, a bond, in a form approved by the Commission, 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. The bond shall be in the amount prescribed below:

(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) For the purposes of the Commission, 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 Commission. 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 Commission 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 Commission 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 Commission to the principal and to the surety company.

(c) The Secretary-Director of the Commission is vested with power to act for the Commission 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 for injection or disposal purposes, shall file Commission Form G-101, Application for Permit to Drill, Deepen, or Plug Back-Geothermal Resources Well, and obtain approval thereof from the Commission. 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 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 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 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 Wells and Low-Temperature Thermal Wells

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

C. NON-STANDARD LOCATIONS

(1) The Secretary-Director of the Commission 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 Secretary-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 Commission. If such objection is received, the matter will be set for hearing if the applicant so desires. If the Secretary-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 Commission 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 Commission 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 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. 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 107. SEALING OFF STRATA

(a) During the drilling of any well, all fresh water strata and salt water strata overlying the geothermal resources strata shall be sealed or separated to prevent the migration of fluids from one stratum to the other.

(b) All waters of present or probable future value for domestic, commercial, agricultural or stock purposes shall be confined to their respective strata and shall be adequately protected by methods approved by the Commission. Special precautions by methods satisfactory to the Commission shall be taken to guard against loss of artesian water from the strata in which it occurs, and to prevent the contamination of such artesian water strata by any objectionable geothermal fluids. Sealing off of strata, and migration prevention shall ordinarily be accomplished by cementing casing.

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. Geothermal observation wells shall be drilled, completed, and plugged in such a manner as to protect surface waters, if any, and useable ground waters.

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 Commission 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 Commission shall be installed on conductor pipe on exploratory wells and on development wells when deemed necessary by the Commission. Note: For low-temperature thermal wells the conductor pipe requirement may be reduced or waived by the Commission.

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 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 Commission after a careful study of geological conditions. The Commission 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 Commission 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 Commission 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 times (see Section H).

(3) Intermediate Casing. Intermediate casing shall be required for protection against anomalous pressure zones, cave-ins, 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).

(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 Commission-approved plugging program.

(7) Logging. All wells, except 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 Commission depending upon geological or engineering conditions.

RULE 109. DEVIATION TESTS AND DIRECTIONAL DRILLING

Any well which is deepened or drilled with rotary tools shall be tested at reasonably frequent intervals to determine the deviation from the vertical. Such tests shall be made at least each 500 feet or at the first bit change succeeding 500 feet. A tabulation of all deviation tests, sworn to and notarized, shall be filed with Form G-105, Geothermal Resources Well Log. When the deviation averages more than five degrees in any 500-foot interval, the Secretary-Director of the Commission may require that a directional survey be run to establish the location of the producing interval(s).

The Secretary-Director of the Commission, at the request of an offset operator, may require any operator to make a directional survey of any well. Said directional survey and all associated costs shall be at the expense of the requesting party and shall be secured in advance by a $5,000.00 indemnity bond posted with and approved by the Commission. The requesting party may designate the well survey company, and said survey shall be witnessed by a representative of the Commission.

No well shall be intentionally deviated except toward the vertical without prior permission from the Commission. Permission to deviate a well other than toward the vertical shall be obtained on Commission Form G-103 with copies of said Form G-103 being furnished to all other operators owning leases offsetting the drilling tract, if any there be. Upon request of the Secretary-Director of the Commission, any well which was intentionally deviated shall be directionally surveyed. The Commission may at its option witness such survey and the Santa Fe Office shall be notified of the date and hour all directional surveys are to be conducted. All directional surveys run on any well which was intentionally deviated in any manner for any reason must be filed with the Commission upon completion of the well. Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources, will not be approved until the operator has submitted an affidavit that all such directional surveys have been filed.

RULE 110. SHOOTING AND CHEMICAL TREATMENT OF WELLS

If injury results to the producing formation, casing, or casing seat from shooting or treating a well, the operator thereof shall proceed with diligence to use the appropriate method and means for rectifying such damage. If shooting or chemical treating results in irreparable injury to the well, the Commission may require the operator to properly plug and abandon the well.

RULE 111. RIGHT OF ENTRY

The Commission or its duly authorized representatives shall have the right of entry onto any geothermal resources 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.

RULE 112. NOISE ABATEMENT

Adequate noise abatement equipment shall be installed and maintained in good condition to reduce noise to a level approved by the Commission or its representative on any drilling or producing geothermal resources well located within 1500 feet of a habitation, school, or church.

RULE 113. SAFETY REGULATIONS

The well site around any drilling or producing well shall be kept clear of any rubbish or debris or fuel which may constitute a fire hazard. In any area where there is any likelihood of encountering unexpected hydrocarbons, the drilling mud and cuttings shall be stored in a pit a safe distance from the drilling rig. All waste shall be burned or disposed of in such a manner as to avoid creating a fire hazard.

RULE 114. WELL HEADS AND PRODUCTION EQUIPMENT

Well heads and all fittings appurtenant thereto shall be installed and maintained in good condition so that all necessary pressure tests may be readily made on flowing wells. The well head and related parts and fittings shall have a test pressure equivalent to at least 150 percent of the calculated or known pressure in the reservoir from which production is obtained or expected.

Valves shall be installed and maintained in good order to permit pressures to be obtained on the production casing and the annulus between the casing strings.

Flow lines shall be of adequate pressure rating and capacity and shall be sufficiently equipped with expansion bends to prevent leakage or rupture.

All separators, pumps, mufflers, manifolds, flowlines, and other equipment used for the production of geothermal resources shall be of adequate pressure rating and capacity and shall be maintained in good condition in order to prevent loss of or damage to human life and health or to property or natural resources.

RULE 115. CORROSION

All well head equipment, surface production equipment, flowlines and pipelines, and subsurface casing and tubing shall be subject to periodic surveillance to prevent leakage or rupture and to safeguard human life and health and property and natural resources.

RULE 116. DISPOSAL OF PRODUCED WATERS

The disposal of highly mineralized waters produced from geothermal resources wells shall be in such a manner as to not constitute a hazard to surface waters or underground supplies of useable water.

RULE 117. NOTIFICATION OF FIRE, BREAKS, LEAKS, SPILLS, AND BLOWOUTS

The Commission shall be notified of any fire, break, leak, spill, or blowout occurring at any geothermal drilling, producing, transporting, treating, disposal, or utilization facility in the State of New Mexico by the person operating or controlling such facility.

"Facility", for the purpose of this rule, shall include any geothermal drilling, producing, injection, or disposal well; any pipeline through which geothermal resources or the waste products thereof are gathered or transported; any tank or other storage unit into which geothermal products, waters, or wastes are produced, received, or stored; any treating plant in which geothermal resources are treated or processed; any electrical generating plant in which geothermal resources are utilized; and any drilling pit, slush pit, or storage pit or pond associated with geothermal drilling, producing, treating, or utilization processes in which hydrocarbons or hydrocarbon waste or residue, salt water, strong caustics or acids, or other deleterious chemicals or harmful substances are present.

Notification to the Commission of such fire, break, leak, spill, or blowout shall be in accordance with the provisions set forth below:

(1) Well Blowouts. Notification of well blowouts and/or fires shall be "immediate notification" described below.

(2) "Major" Breaks, Spills, or Leaks. Notification of breaks, spills, or leaks of wellheads, pipelines, or tanks, or drilling pits, slush pits, or storage pits or ponds, the result of which 50 barrels or more of liquids containing hydrocarbons or hydrocarbon wastes, salt water, strong caustics or strong acids, or other deleterious substances reach a water course or enter a

stream or lake, or in which noxious gases escape or any quantity of fluids are lost which may with reasonable probability endanger human health or result in substantial damage to property, shall be "immediate notification" described below.

(3) "Minor" Breaks, Spills, or Leaks. Notification of breaks, spills, or leaks of wellheads, pipelines, or tanks, or drilling pits, slush pits, or storage pits or ponds, the result of which 25 barrels or more but less than 50 barrels of liquids containing hydrocarbons or hydrocarbon wastes, salt water, strong caustics or strong acids, or other deleterious substances are lost or in which noxious gases escape, but in which there is no danger to human health nor of substantial damage to property shall be "subsequent notice" described below.

(4) Fires. Notification of fires at geothermal installations in which there is reasonable probability of danger to human health or substantial damage to adjoining properties or substantial loss of geothermal resources shall be "immediate notice" described below. Notification of fires of lesser magnitude but of $500.00 or more of property damage or $500.00 or more of geothermal resources loss shall be "subsequent notice" described below.

IMMEDIATE NOTIFICATION - "Immediate Notification" shall be as soon as possible after discovery and shall be in person or by telephone to the Santa Fe office or the nearest district office of the Commission if the incident occurs during business hours. If the incident occurs after business hours, notification shall be in accordance with the latest Commission memorandum on the subject. A complete written report of the incident shall be submitted to the Santa Fe office of the Commission within ten days after discovery of the incident.

SUBSEQUENT NOTIFICATION - "Subsequent Notification" shall be a complete written report of the incident and shall be submitted to the Santa Fe office of the Commission within ten days after discovery of the incident.

CONTENT OF NOTIFICATION - All reports of fires, breaks, spills, leaks, or blowouts, whether verbal or written, shall identify the location of the incident by quarter-quarter, section, township, and range, and by distance and direction from the nearest town or prominent landmark so that the exact site of the incident can be readily located on the ground. The report shall specify the nature and quantity of the loss and also the general conditions prevailing in the area, including precipitation, temperature, and soil conditions. The report shall also detail the measures that have been taken and are being taken to remedy the situation reported.

WATERCOURSE, for the purpose of this rule, is defined as any lake-bed or gully, draw, stream bed, wash, arroyo, or natural or man-made channel through which water flows or has flowed.

RULE 118. MEASUREMENT OF PRODUCTION

All production from a completed geothermal resources well shall be accounted for by continuous metering or by other method approved by the Commission.

RULE 119. UTILIZATION OF GEOTHERMAL RESOURCES

After the completion of a geothermal resources well, all production from said well shall be put to beneficial use. No production shall be permitted unless beneficial use is made thereof except for authorized periods of testing, in which case proper disposition of produced liquids shall be made.

D. RECORDS AND REPORTS

RULE 200. GENERAL

A. Books and Records

All producers, transporters, purchasers, or utilizers of geothermal resources within the State of New Mexico shall make and keep appropriate books and records for a period of not less than five years, covering their operations in this state, from which they may be able to substantiate the reports required by these rules.

B. Well Records

The owner or operator of any geothermal resources well shall keep, or cause to be kept, a careful and accurate well log and history of the drilling of any such well, including the lithologic characteristics and depths of formations encountered, and the depths, pressures, and temperatures of water-bearing and steam-bearing strata. These data, as well as such other tests, surveys, and logs which may be taken on the well including the temperatures, chemical compositions, and physical characteristics of fluids encountered in the well, deviation, directional, and temperature surveys, logs, including electrical logs, physical logs, and core logs, and tests, including potential tests, shall be placed in the custody of the Designated Agent (See Rule 100) of the owner or operator of the well and shall remain in such custody within the State of New Mexico until all required forms and attachments pertaining to the well have been filed with the Commission. These data shall be subject to inspection, during normal business hours, by the Commission or its representatives, and by the State Engineer or his representatives.

C. Where to File Reports

All forms and reports required by these rules shall be filed with the New Mexico Oil Conservation Commission, Geothermal Division, Post Office Box 2088, Santa Fe, New Mexico 87501.

D. Additional Data

These rules shall not be construed to limit or restrict the authority of the Commission to require the furnishing of such additional reports, data, or other information relative to the production, transportation, or utilization of geothermal resources in the State of New Mexico as may appear to be necessary or desirable, either generally or specifically, for the prevention of waste and the conservation of natural resources of the State of New Mexico.

RULE 201. APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK-GEOTHERMAL RESOURCES WELL (FORM G-101)

Before commencement of drilling or deepening operations of any geothermal resources well, or before plugging a well back to another zone, the operator of the well shall obtain a permit to do so. To obtain such a permit the operator shall submit to the Commission FOUR copies of Form G-101, Application for Permit to Drill, Deepen, or Plug Back-Geothermal Resources Well, completely filled in. If the operator has an approved bond in accordance with Rule 101 and has filed satisfactory "Designation of Agent" (Rule 100), and the proposed well meets the spacing and well location requirements (Rule 104), one copy of the Drilling Permit will be returned to him on which will be noted the Commission's approval, with any modification deemed advisable. If the proposal cannot be approved for any reason, the Forms G-101 will be returned with the cause for rejection stated thereon.

Each copy of Form G-101 must be accompanied by one copy of Form G-102, Geothermal Resources Well Location and Acreage Dedication Plat. (See Rule 202.)

If the well is to be drilled on state land, FIVE copies of Forms G-101 and G-102 shall be submitted, the extra copy being for the State Land Office.

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 Commission.

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 203. SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS (FORM G-103)

Form G-103 is a dual purpose form to be filed with the Santa Fe office of the Commission to obtain approval prior to commencing certain operations and also to report various completed operations.

A. Form G-103 as a Notice of Intention

Form G-103 shall be filed in DUPLICATE by the operator and approval obtained from the Commission prior to:

(1) Effecting a change of plans from those previously approved on Form G-101 or Form G-103.

(2) Altering a drilling well's casing program or pulling casing or otherwise altering an existing well's casing installation.

(3) Temporarily abandoning a well. (See Rule 303 B.)

(4) Plugging and abandoning a well. (See Rules 302 and 303 A.)

(5) Performing remedial work on a well which, when completed, will affect the original status of the well. (This shall include making new perforations in existing wells or squeezing old perforations in existing wells, but is not applicable to new wells in the process of being completed nor to old wells being deepened or plugged back to another zone when such recompletion has been authorized by an approved Form G-101, Application for Permit to Drill, Deepen, or Plug Back, nor to acidizing, fracturing, or cleaning out previously completed wells.)

In the case of well plugging operations, the Notice of Intention shall include a detailed statement of the proposed work, including plans for shooting and pulling casing, plans for mudding, including weight of mud, plans for cementing, including number of sacks of cement and depths of plugs, and the time and date of the proposed plugging operations. (See Rules 302 and 303 A.)

B. Form G-103 as a Subsequent Report

Form G-103 as a subsequent report of operations shall be filed in accordance with the section of this rule applicable to the particular operation being reported.

Form G-103 is to be used in reporting such completed operations as:

(1) Commencement of drilling operations

(2) Casing and cement test

(3) Altering a well's casing installation

(4) Temporary abandonment

(5) Plugging and Abandonment

(6) Plugging back or deepening

(7) Remedial work

(8) Change in ownership of a drilling well

(9) Such other operations which affect the original status of the well but which are not specifically covered herein

C. Filing Form G-103 as a Subsequent Report

Information to be entered on Form G-103, Subsequent Report, for a particular operation is as follows:

(1) Report of Commencement of Drilling Operations

Within ten days following the commencement of drilling operations, the operator of the well shall file a report thereof on Form G-103 in DUPLICATE. Such report shall indicate the hour and the date the well was spudded.

(2) Report of Results of Test of Casing and Cement Job; Report of Casing Alteration

A report of casing and cement test shall be filed by the operator of the well within ten days following the setting of each string of casing or liner. Said report shall be filed in DUPLICATE on Form G-103 and shall present a detailed description of the test method employed and the results obtained by such test, and any other pertinent information required by Rule 108 B(5). The report shall also indicate the top of the cement and the means by which such top was determined. It shall also indicate any changes from the casing program previously authorized for the well.

(3) Report of Temporary Abandonment

A report of temporary abandonment of a well shall be filed by the operator of the well within ten days following completion of the work. The report shall be filed in DUPLICATE and shall present a detailed account of the work done on the well, including

location and type of plugs used, if any, type and status of surface and downhole equipment, and any other pertinent information relative to the overall status of the well.

(4) Report on Plugging of Well

A report of plugging operations shall be filed by the operator of the well within 30 days following completion of plugging operations on any well. Said report shall be filed in TRIPLICATE on Form G-103 and shall include the date the plugging operations were begun and the date the work was completed, a detailed account of the manner in which the work was performed including the depths and lengths of the various plugs set, the nature and quantities of materials employed in the plugging operations including the weight of the mud used, the size and depth of all casing left in the hole, and any other pertinent information. (See Rules 301-303 regarding plugging operations.)

No plugging report will be approved by the Commission until all forms and reports on the well have been filed and the pits have been filled and the location levelled and cleared of junk. It shall be the responsibility of the operator to contact the Santa Fe office of the Commission when the location has been so restored in order to arrange for an inspection of the plugged well and the location by a Commission representative.

(5) Report of Remedial Work

A report of remedial work performed on a producing well or former producing well shall be filed by the operator of the well within 30 days following completion of such work. Said report shall be filed in DUPLICATE on Form G-103 and shall present a detailed account of the work done and the manner in which such work was performed; the daily production from the well both prior to and after the remedial operation; the size and depth of shots; the quantity of sand, acid, chemical or other materials employed in the operation, and any other pertinent information. Among the types of remedial work to be reported on Form G-103 are the following:

(a) Report on shooting, fluid fracturing, or chemical treatment of a previously completed well

(b) Report on squeeze job

(c) Report on setting of liner or packer

(d) Report of any other remedial operations which are not specifically covered herein

(e) Report on Deepening or Plugging Back

(6) Report of Change in Ownership of a Drilling Well

A report of change of ownership shall be filed by the new owner of any drilling well within ten days following actual transfer of ownership. Said report shall be filed in TRIPLICATE on Form G-103 and shall include the name and address of both the new owner and the previous owner, the effective date of the change of ownership, and any other pertinent information. No change in the ownership of a drilling well will be approved by the Commission unless the new owner has an approved bond in accordance with Rule 101 and has filed satisfactory "Designation of Agent" (Rule 100). The former owner of the well, to obtain release of his bond, shall follow the procedures set forth in Rule 101(b). (Form G-104 shall be used to report transfer of ownership of a completed well; see Rule 204.)

(7) Other Reports on Wells

Reports on any other operations which affect the original status of the well which are not specifically covered herein shall be submitted to the Commission on Form G-103, in TRIPLICATE, by the operator of the well within ten days following the completion of such operation.

RULE 204. CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO PRODUCE GEOTHERMAL RESOURCES (FORM G-104)

Prior to placing any geothermal resources well on production, injection, or disposal the owner or operator of said well shall file (in QUINTUPLICATE, with the Commission and receive approval thereof Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources, outlining thereon the information required and certifying that all Commission Rules and Regulations pertaining to the well have been complied with. Production of or injection into any well in violation of this rule shall result in the well being shut in by the Commission subject to the penalties provided by law for violation of the Commission's Rules, Orders, and Regulations. (In addition to Form G-104 being approved, additional approval for injection or disposal must be obtained pursuant to Rules 501-505.) Forms G-104 must be accompanied by three copies of Form G-105, Geothermal Resources Well Log outlining the data required and with the attachments required by Rule 205 A, three copies of Form G-106, Geothermal Resources Well Summary Report (See Rule 206) completely filled in and three copies of Form G-107, Geothermal Resources Well History (See Rule 207) completely filled in.

Form G-104 shall also be filed in QUINTUPLICATE when there is a change in purchaser from a well or when there is a change of ownership of a producing well, injection well, or disposal well.

No change of ownership will be approved by the Commission unless the new owner has an approved bond in accordance with Rule 101 and has filed satisfactory "Designation of Agent" (Rule 100). The former owner of the well, to obtain release of his bond, shall follow the procedures set forth in Rule 101(b) (Form G-103 shall be used to report change of ownership of a drilling well; see Rule 203 C(6).)

After approval of Form G-104, distribution of Forms G-104, G-105, G-106, and G-107 shall be made by the Commission as follows:

(1) one approved copy of Form G-104 shall be returned to the operator;

(2) one approved copy of Form G-104 shall be forwarded to the purchaser from the well (except, of course, in the case of a disposal or injection well);

(3) one approved copy of Form G-104 and one copy each of Forms G-105, G-106, and G-107 shall be forwarded to the New Mexico Bureau of Mines;

(4) one approved copy of Form G-104 and one copy each of Forms G-105, G-106, and G-107 shall be forwarded to the United States Geological Survey; and

(5) one approved copy of Form G-104 and one copy each of Forms G-105, G-106, and G-107 shall be retained by the Commission

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

A. <u>For Producing, Injection, or Disposal Wells</u>

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 Commission.

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 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 Commission, 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 Commission.

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 plugged and abandoned 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 Commission.

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 Commission.

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 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 Commission. 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 in accordance with Rule 206-A above is required.

C. For Plugged and Abandoned Wells

Form G-106, Geothermal Resources Well Summary Report, completely filled in, shall be filed in TRIPLICATE for plugged and abandoned 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 Commission.

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 Commission.

B. For Non-Producing or Temporarily Abandoned 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 Commission, 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 Commission.

C. For Plugged and Abandoned 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 Commission.

RULE 208. MONTHLY GEOTHERMAL PRODUCTION REPORT (FORM G-108)

After placing any geothermal well on production, the owner or operator thereof shall file in DUPLICATE a monthly production report, Form G-108, which report shall be due in the Santa Fe office of the Commission by the 20th day of each month and shall show the production from each well and each lease during the preceding calendar month.

RULE 209. MONTHLY GEOTHERMAL PURCHASER'S REPORT (FORM G-109)

The purchaser of production from any geothermal resource well shall file in DUPLICATE a monthly purchaser's report, Form G-109, which report shall be due in the Santa Fe office of the Commission by the 15th day of each month and shall show the purchases made from all leases and wells connected to the purchaser's facilities during the preceding calendar month.

RULE 210. MONTHLY GEOTHERMAL INJECTION REPORT (FORM G-110)

After placing any well on injection or disposal in a geothermal resources field or area, the owner or operator thereof shall file in DUPLICATE a monthly injection report, Form G-110, which report shall be due in the Santa Fe office of the Commission by the 20th day of each month and shall show the zone or formation into which injection is being made, the volume injected, the average temperature of the injected fluid, and the average injection pressure at the wellhead.

RULE 211. ANNUAL GEOTHERMAL TEMPERATURE AND PRESSURE TESTS (FORM G-111)

Annual temperature and pressure tests shall be submitted by

the owner or operator of each geothermal resources producing well in accordance with the annual testing schedule published by the Commission. Flowing temperatures and flowing pressure tests at the wellhead shall be recorded after at least 72 hours of continuous flow at normal producing rates. The well shall then be shut in for 24 hours and shut-in pressure at the wellhead recorded. Results of these tests shall be submitted in DUPLICATE to the Santa Fe office of the Commission.

RULE 212. APPLICATION TO PLACE WELL ON INJECTION-GEOTHERMAL RESOURCES AREA (FORM G-112)

Before placing any well on injection in a geothermal resources area, whether for charge, recharge, or disposal purposes, authority to do so shall be obtained on Form G-112 which shall be filed in accordance with Rule 503.

E. ABANDONMENT, TEMPORARY ABANDONMENT, AND PLUGGING OF WELLS

RULE 301. LIABILITY

The owner of any 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 302. NOTICE

Prior to commencement of plugging operations, Notice of Intention to plug shall be filed with the Commission, and approval thereof obtained by the owner or operator of the well. This shall be accomplished by filing Form G-103, Sundry Notices and Reports on Geothermal Wells, which notice shall outline the casing and cementing program of the well, the casing which is to be pulled, the size of proposed cement plugs and their depth, and such other information as may be pertinent. In the case of newly drilled wells which are to be plugged, verbal authority and instructions may be given by the Commission to plug the well provided written notice to plug shall be subsequently filed within 30 days and approval thereof obtained. Written approval or verbal approval of a plugging program shall be contingent upon evidence being furnished that the plugging program for 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 Well Summary Report, with the request for approval of the plugging program. Filing of these forms may be delayed as provided in Rule 205 C and Rule 206 C if a Commission representative has had access to and has inspected the data and materials described in Rule 200 B. Also see Rule 203 A, Rule 203 C(4), and Rule 303 A.

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 Commission. 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, 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 Commission. Such permit shall be for a period not to exceed six months and shall be requested from the Santa Fe office of the Commission 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 Commission 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 Commission shall have authority to grant one 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 Commission 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 Commission unless a one-well plugging bond for the well, in an

amount satisfactory to the Commission, but not to exceed $10,000.00, is on file with the Commission to ensure future plugging of the well.

The requirements of the paragraph immediately above may be waived and additional extensions granted in those cases where it can be shown that a contract exists for the construction of electric power plants and such plants are being designed, on order, or under construction, 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.

RULE 304. WELLS TO BE USED FOR FRESH WATER

When the well to be plugged may safely be used as a fresh water well and such utilization is desired by the land owner, the well need not be filled above a sealing plug set below the fresh water formation, provided that written agreement for such use by the owner of the well and by the land owner is filed with the Commission. Upon acceptance of the well by the land owner, the well's bond may be released.

F. PURCHASE OF GEOTHERMAL RESOURCES

RULE 401. ILLEGAL SALE PROHIBITED

The sale or purchase or acquisition, or the transporting or utilization of geothermal resources produced in violation of the laws of this state, or of these rules, is prohibited.

RULE 402. RATABLE TAKE

Any person now or hereafter engaged in purchasing geothermal resources from one or more producers within a single geothermal reservoir shall be a common purchaser within that geothermal reservoir, and shall purchase geothermal resources of like quality, quantity, and pressure lawfully produced from that geothermal reservoir and tendered to such common purchaser at a reasonable point. Such purchase shall be made without unreasonable discrimination in favor of one producer against another in the price paid, quantities taken, the bases of measurement, or the facilities offered.

In the event such purchaser is also a producer, he is prohibited to the same extent from discriminating in favor of himself with respect to geothermal resource wells in which he has an interest, direct or indirect, as against other geothermal resource wells in the same geothermal reservoir.

For the purposes of this rule, reasonable differences in prices paid or facilities afforded, or both, shall not constitute unreasonable discrimination if such differences bear a fair relationship to difference in quality, quantity, or pressure of the geothermal resource available or to the relative lengths of time during which such geothermal resources will be available to the purchaser.

Any common purchaser taking geothermal resources produced from wells within a geothermal reservoir shall take ratably under such rules, regulations, and orders, concerning quantity, as may be promulgated by the Commission after due notice and public hearing. The Commission, in promulgating such rules, regulations, and orders may consider the quality and the quantity of the geothermal resources available, the pressure and temperature of the product at the point of delivery, acreage attributable to the well, market requirements, and other pertinent factors.

Nothing in this rule shall be construed or applied to require, directly or indirectly, any person to purchase geothermal resources of a quality or under a pressure or under any other condition by

reason of which such geothermal resource cannot be economically and satisfactorily used by such purchaser by means of his geothermal utilization facilities then in service.

RULE 403. REGULATION OF GEOTHERMAL RESOURCES PRODUCTION

Upon determination by the Commission that geothermal resources production in the State of New Mexico, or in a particular geothermal resources area, is causing waste, the Commission shall limit and allocate among the producing wells the total amount of geothermal resources which may be produced in the state, or in a particular geothermal area.

G. GEOTHERMAL INJECTION AND DISPOSAL WELLS

RULE 501. GEOTHERMAL INJECTION WELLS

Geothermal injection wells are those wells used for the purpose of injecting fluids into a dry geothermal formation, or into a geothermal reservoir for the purpose of augmenting the natural supply of fluids in the reservoir, pressure maintenance of the reservoir, or such other purpose as authorized by the Commission. No well shall be utilized as a geothermal injection well until authority for such use has been obtained on an approved Form G-112, Application to Place Well on Injection-Geothermal Resources Area. Form G-112 shall be filed in accordance with Rule 503 below.

RULE 502. GEOTHERMAL DISPOSAL WELLS

Geothermal disposal wells are those wells used for the purpose of disposing of waters produced from a geothermal reservoir when disposal is into a zone or formation not classified as a geothermal reservoir. No well shall be utilized as a geothermal disposal well until authority for such use has been obtained on an approved Form G-112, Application to Place Well on Injection-Geothermal Resources Area. Form G-112 shall be filed in accordance with Rule 503 below.

RULE 503. METHOD OF MAKING APPLICATION

Application for authority to inject fluids into a geothermal reservoir or to dispose of geothermal waters into a zone or formation not classified as a geothermal reservoir shall be made in DUPLICATE on Commission Form G-112, Application to Place Well on Injection-Geothermal Resources Area, and shall be accompanied by one copy of each of the following:

(1) A plat showing the location of the proposed injection/disposal well and the location of all other wells within a radius of one mile from said well, and indicating the perforated or open-hole interval in each of said wells. The plat shall also indicate the ownership of all geothermal leases within said one-mile radius;

(2) The log of the proposed injection well, if available;

(3) A diagrammatic sketch of the proposed injection well showing all casing strings, including

diameters and setting depths, quantities used and tops of cement, perforated or open-hole interval, tubing strings, including diameters and setting depths, and the type and location of packers, if any;

Copies of the Form G-112 (without the above attachments) shall be sent to all other geothermal lease owners, if any there be, within a one-half mile radius of the proposed injection/disposal well.

If no objection is received within 20 days from the date of receipt of the application, and the Secretary-Director of the Commission is satisfied that all of the above requirements have been complied with, that the proposal is in the interest of conservation and will prevent waste and protect correlative rights, and that the well is cased, cemented, and equipped in such a manner that there will be no danger to any natural resource, including geothermal resources, useable underground water supplies, and surface resources, Form G-112 will be approved. In the event the form is not approved because of objection from an affected geothermal lease owner or for other reason, the application will be set for public hearing, if the applicant so requests.

The Secretary-Director may dispense with the 20-day waiting period if waivers of objection are received from all geothermal lease owners within a one-half mile radius of the proposed injection/disposal well.

RULE 504. INJECTION REPORTS

Monthly injection reports shall be filed for injection/disposal wells in accordance with Rule 210 of these rules and regulations.

RULE 505. SURVEILLANCE

(a) Surveillance of waste water disposal or injection projects is necessary on a continuing basis in order to establish to the satisfaction of the Commission that all water is confined to the intended zone of injection.

(b) When an operator proposes to drill an injection well, convert a producing or inactive well to an injection well, or rework an injection well and return it to injection service, he shall be required to demonstrate to the Commission by means of such tests as the Commission may deem necessary the integrity of the well's casing.

(c) To establish the integrity of the annular cement above the shoe of the casing, the operator shall make sufficient surveys, within 30 days after injection is started into a well, to demonstrate that all the injected fluid is confined to the intended zone of injection. Thereafter, such surveys shall be made at least every two years, or more often if ordered by the Commission. All such surveys may be witnessed by a representative of the Commission.

(d) After the well has been placed on injection, a Commission representative shall visit the wellsite periodically. At these times, surface conditions shall be noted and if any unsatisfactory conditions exist, the operator shall be notified of needed remedial work. If this required work is not performed within 90 days, the approval issued by the Commission may be rescinded. If it is determined that damage is occurring at a rapid rate, the Commission may order that the repair work be done immediately.

Injection pressures shall be recorded by the Commission representative and compared with the pressure reported on the appropriate forms. Any discrepancies shall be rectified immediately by the operator. A graph of daily injection rates and pressures versus time shall be maintained by the operator. Reasons for anomalies shall be promptly ascertained. If these reasons are such that it appears damage is being done, approval by the Commission may be rescinded, and injection shall cease.

(e) When an injection well has been left idle for six months, the operator shall be informed by letter that approval for use of the well for injection purposes has been rescinded, and that he should proceed in accordance with the provisions of Rule 302 and Rule 303 A or Rule 303 B. In the event the operator intends to again use the well for injection purposes, he shall be required to demonstrate by means of surveys that the injected water will be confined to the intended zone of injection.

RULE 506. ABANDONMENT

Injection or disposal wells are required to be abandoned in the same manner as other wells. (See Sec. E, ABANDONMENT, TEMPORARY ABANDONMENT, AND PLUGGING OF WELLS.)

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 low-temperature thermal wells, geothermal observation wells, and seismic, core, or other exploratory wells less than 500 feet deep.

RULE 602. BLOWOUT PREVENTION EQUIPMENT (BOPE)

The following standards are not given as final blowout prevention equipment requirements for the drilling of any geothermal resources well but are given as guidelines for the preparation of a minimum blowout prevention program for certain categories of wells.

A. Using Mud as the Drilling Fluid

(1) API Class 2M-A or 2M-RR

For wells in geothermal resources areas known to contain geothermal fluids at a temperature greater than 212° F. at depths less than 2,000 feet, and geothermal exploratory wells in areas where subsurface temperatures and pressures are unknown and the proposed depth of the well is less than 2,000 feet.

(a) An annular BOPE and a spool, fitted with a low-pressure safety pop-off and blow-down line, installed on the conductor pipe may be required for wells in the above categories to ensure against possible gas blowouts during the drilling of the surface casing hole.

(b) Annular BOPE or pipe-ram/blind-ram BOPE with minimum working-pressure ratings of 2,000 psi shall be installed on the surface casing so that the well can be shut in at any time.

(c) Hydraulic actuating system.

(d) Kelly cock.

(e) A fill-up line installed above the BOPE.

(f) A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary.

(g) A blow-down line fitted with two valves installed below the BOPE. The blow-down line shall be directed in such a manner so as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(h) All lines and fittings shall be steel and have a minimum working-pressure rating of 1,000 psi.

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

(2) API Class 2M-RSRA or Equivalent

For wells in geothermal resources areas known to contain geothermal fluids at temperatures greater than 212° F. at depths more than 2,000 feet, and geothermal exploratory wells in areas where subsurface temperatures and pressures are unknown and the proposed depth of the well is more than 2,000 feet.

(a) An annular BOPE and a spool, fitted with a low-pressure safety pop-off and blow-down line, installed on the conductor pipe may be required to ensure against possible gas blow-outs during the drilling of the surface casing hole.

(b) Annular BOPE and pipe-ram/blind-ram BOPE with a minimum working-pressure rating of 2,000 psi shall be installed so that the well can be shut in at any time. The double-ram preventer shall have a mechanical locking device.

(c) A hydraulic actuating system utilizing an accumulator of sufficient capacity and a high pressure auxiliary backup system. This total system shall be equipped with dual controls: one at the driller's station and one at least 50 feet away from the wellhead.

(d) Kelly cock and standpipe valve.

(e) A fill-up line installed above the BOPE.

(f) A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary.

(g) A blow-down line fitted with two valves installed below the BOPE. The blow-down line shall be directed in such a manner so as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(h) All lines and fittings shall be steel and have a minimum working-pressure rating of at least that of the BOPE.

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

B. Using Air as the Drilling Fluid

(1) API Class 2M RSRdG (with Banjo Box)

For wells in geothermal resources areas where it is known that dry steam exists at depth and/or formation pressures are known to be less than hydrostatic.

(a) A rotating head installed at the top of the BOPE stack.

(b) A pipe-ram/blind-ram BOPE, with a minimum working-pressure rating of 2,000 psi installed below the rotating head so that the well can be shut in at any time.

(c) A banjo box steam diversion unit installed below the double-ram BOPE fitted with an approved muffler in good working condition.

(d) A blind-ram BOPE, with a minimum working-pressure rating of 2,000 psi installed below the banjo box so that the well can be shut in while removing the rotating head during bit changes.

(e) A gate valve, with a suitable minimum working-pressure rating installed below the blind ram so that the well can be shut in after the well has been completed, prior to removal of the BOPE stack.

(f) All ram-type BOPE shall have a hydraulic actuating system utilizing an accumulator of sufficient capacity and a high-pressure backup system.

(g) Dual control stations for hydraulic backup system: one at the driller's station and the other at least 50 feet away from the wellhead.

(h) Float and standpipe valves.

(i) A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary.

(j) All lines and fittings must be steel and have a minimum working-pressure rating of 1,000 psi. Note: If any portion of a well is drilled using mud, Class 2M-BOPE shall be installed on the surface casing so that the well can be shut-in at any time.

RULE 603. AREAS WITH HISTORY OF BLOWOUTS

Notwithstanding any of the provisions of Rule 602 above, when drilling in any geothermal resources area which has a history of lost circulation and/or blowouts, the operator shall equip the well with adequate blowout prevention equipment to contain such pressures as may have previously been encountered in the other well(s).

RULE 604. TESTING OF BLOWOUT PREVENTION EQUIPMENT

Upon installation, ram-type blowout preventers, bag-type blowout preventers, valves, and manifolds shall be tested to a minimum of 750 psi pressure. Tests may be witnessed by a Commission representative on all wells prior to drilling out the shoe of the surface casing, and the Commission shall be notified of the date and hour any such test is to be conducted sufficiently in advance of the test to allow a Commission representative to travel to the well to witness the test.

Ram-type preventers shall be operated at least once each 24 hours and bag-type preventers closed on the drill pipe at least once each week, provided however, that an exception to this provision may be granted by the Commission's Geothermal Division to prevent undue wear and tear on the preventer rubbers when drilling dry-steam wells.

I. RULES ON PROCEDURE

RULE 701. NECESSITY FOR HEARING

Except as provided in some general rule herein, before any rule, regulation or order, including revocation, changes, renewal or extension thereof, shall be made by the Commission, a public hearing before the Commission or a legally appointed examiner shall be held at such time and place as may be prescribed by the Commission.

RULE 702. EMERGENCY ORDERS

Notwithstanding any other provision of these rules, in case an emergency is found to exist by the Commission, which, in its judgment, requires the making of a rule, regulation, or order without a hearing having first been had or concluded, such emergency rule, regulation, or order when made by the Commission shall have the same validity as if a hearing with respect to the same had been held before the Commission after due notice. Such emergency rule, regulation, or order shall remain in force no longer than 15 days from its effective date, and in any event, it shall expire when the rule, regulation, or order made after due notice and hearing with respect to the subject matter of such emergency rule, regulation, or order becomes effective.

RULE 703. METHOD OF INITIATING A HEARING

The Commission upon its own motion, the Attorney General on behalf of the State, and any operator or producer, or any other person having a property interest may institute proceedings for a hearing. If the hearing is sought by the Commission it shall be on motion of the Commission and if by any other person it shall be by application. The application shall be in triplicate and shall state (1) the name of the applicant, (2) the name or general description of the common source or sources of supply or the area affected by the order sought, (3) briefly the general nature of the order, rule, or regulation sought, and (4) any other matter required by a particular rule or rules, or order of the Commission. The application shall be signed by the person seeking the hearing or by his attorney.

When conditions are such as to require verbal application to place a matter for hearing on a given docket, the Commission will accept such verbal application in order to meet publishing deadlines. However, if written application, filed in accordance with the procedures outlined above, has not been received by the



Commission's Santa Fe office at least ten days before the date of the hearing, the case will be dismissed.

RULE 704. METHOD OF GIVING LEGAL NOTICE FOR HEARING

Notice of each hearing before the Commission and notice of each hearing before an Examiner shall be given by personal service on the person affected or by publication once in a newspaper of general circulation published at Santa Fe, New Mexico, and once in a newspaper of general circulation published in the county or each of the counties, if there be more than one, in which any geothermal resource or other property which may be affected is situated.

RULE 705. CONTENTS OF NOTICE OF HEARING

Such notice shall be issued in the name of "The State of New Mexico" and shall be signed by two members of the Commission or by the Secretary of the Commission, and the seal of the Commission shall be impressed thereon.

The notice shall specify whether the case is set for hearing before the Commission or before an Examiner and shall state the number and style of the case and the time and place of hearing and shall briefly state the general nature of the order or orders, rule or rules, regulation or regulations to be promulgated or effected. The notice shall also state the name of the petitioner or applicant, if any, and unless the contemplated order, rule, or regulation is intended to apply to and affect the entire state, it shall specify or generally describe the common source or sources of supply which may be affected by such order, rule, or regulation.

RULE 706. PERSONAL SERVICE OF NOTICE

Personal service of the notice of hearing may be made by any agent of the Commission or by any person over the age of 18 years in the same manner as is provided by law for the service of summons in civil actions in the district courts of this state. Such service shall be complete at the time of such personal service or on the date of publication, as the case may be. Proof of service shall be by the affidavit of the person making personal service or of the publisher of the newspaper in which publication is had. Service of the notice shall be made at least 10 days before the hearing.

RULE 707. PREPARATION OF NOTICES

After a motion or application is filed with the Commission, the notice or notices required shall be prepared by the Commission and service and publication thereof shall be taken care of by the Commission without cost to the applicant.

RULE 708. FILING PLEADINGS: COPY DELIVERED TO ADVERSE PARTY OR PARTIES

When any party to a hearing files any pleading, plea, or motion of any character (other than application for hearing) which is not by law or by these rules required to be served upon the adverse party or parties, he shall at the same time either deliver or mail to the adverse party or parties who have entered their appearance therein, or their respective attorneys of record, a copy of such pleading, plea, or motion. For the purposes of these rules, an appearance of any interested party shall be made either by letter addressed to the Commission, or in person at any proceeding before the Commission or before an Examiner, with notice of such appearance to the parties from whom such pleadings, pleas, or motions are desired.

RULE 709. CONTINUANCE OF HEARING WITHOUT NEW SERVICE

Any hearing before the Commission or an Examiner held after due notice may be continued by the person presiding at such hearing to a specified time and place without the necessity of notice of the same being again served or published. In the event of any continuance, a statement thereof shall be made in the record of the hearing which is continued.

RULE 710. CONDUCT OF HEARINGS

Hearings before the Commission or any Examiner shall be conducted without rigid formality. A transcript of testimony shall be taken and preserved as a part of the permanent record of the Commission. Any person testifying in response to a subpoena issued by the Commission and any person seeking to testify in support of an application or motion or in opposition thereto shall be required to do so under oath. However, relevant unsworn comments and observations by any interested party will be designated as such and included in the record. Comments and observations by representatives of operators' committees, the United States Geological Survey, the United States Bureau of Mines, the New Mexico Bureau of Mines, and other competent persons are welcomed. Any Examiner legally appointed by the Commission may

conduct such hearings as may be referred to such Examiner by the Commission or the Secretary thereof.

RULE 711. POWER OF COMMISSION TO REQUIRE ATTENDANCE OF WITNESSES AND PRODUCTION OF EVIDENCE

The Commission or any member thereof has statutory power to subpoena witnesses and to require the production of books, papers, and records in any proceeding before the Commission. A subpoena will be issued by the Commission for attendance at a hearing upon the written request of any person interested in the subject matter of the hearing. In case of the failure of a person to comply with the subpoena issued by the Commission, an attachment of the person may be issued by the district court of any district in the state, and such court has powers to punish for contempt. Any person found guilty of swearing falsely at any hearing may be punished for contempt.

RULE 712. RULES OF EVIDENCE

Full opportunity shall be afforded all interested parties at a hearing to present evidence and to cross-examine witnesses. In general, the rules of evidence applicable in a trial before a court without a jury shall be applicable, provided that such rules may be relaxed, where, by so doing, the ends of justice will be better served. No order shall be made which is not supported by competent legal evidence.

RULE 713. EXAMINERS' QUALIFICATIONS AND APPOINTMENT

The Commission shall, by ex parte order, designate and appoint not more than four individuals to be examiners. Each Examiner so appointed shall be a member of the staff of the Commission, but no Examiner need be a full time employee of the Commission. The Commission may, by ex parte order, designate and appoint a successor to any person whose status as an Examiner is terminated for any reason. Each individual designated and appointed as an Examiner must have at least six years practical experience as a geologist, petroleum engineer or licensed lawyer, or at least two years of such experience and a college degree in geology, engineering, or law; provided however, that nothing herein contained shall prevent any member of the Commission from being designated as, or serving as, an Examiner.

RULE 714. REFERRAL OF CASES TO EXAMINERS

Either the Commission or the Secretary thereof may refer any

matter or proceeding to any legally designated and appointed Examiner for hearing in accordance with these rules. The Examiner appointed to hear any specific case shall be designated by name.

RULE 715. EXAMINER'S POWER AND AUTHORITY

The Commission may, by ex parte order, limit the powers and duties of the Examiner in any particular case to such issues or to the performance of such acts as the Commission deems expedient; however, subject only to such limitations as may be ordered by the Commission, the Examiner to whom any matter or proceeding is referred under these rules shall have full authority to hold hearings on such matter or proceeding in accordance with and pursuant to these rules. The Examiner shall have the power to regulate all proceedings before him and to perform all acts and take all measures necessary or proper for the efficient and orderly conduct of such hearing, including the swearing of witnesses, receiving of testimony and exhibits offered in evidence, subject to such objections as may be imposed, and shall cause a complete record of the proceedings to be made and transcribed and shall certify same to the Commission as hereinafter provided.

RULE 716. HEARINGS WHICH MUST BE HELD BEFORE COMMISSION

Notwithstanding any other provisions of these rules, the hearing on any matter shall be held before the Commission (1) if it is a hearing de novo, or (2) if the Commission in its discretion desires to hear the matter.

RULE 717. EXAMINER'S MANNER OF CONDUCTING HEARING

An Examiner conducting a hearing under these rules shall conduct himself as a disinterested umpire.

RULE 718. REPORT AND RECOMMENDATIONS, EXAMINER'S HEARINGS

Upon the conclusion of any hearing before an Examiner, the Examiner shall promptly consider the proceedings in such hearing, and based upon the record of such hearing the Examiner shall prepare his written report and recommendations for the disposition of the matter of proceeding by the Commission. Such report and recommendations shall either be accompanied by a proposed order or shall be in the form of a proposed order, and shall be submitted to the Commission with the certified record of the hearing.

RULE 719. DISPOSITION OF CASES HEARD BY EXAMINERS

After receipt of the report and recommendations of the Examiner, the Commission shall either enter its order disposing of the matter or proceeding, or refer such matter or proceeding to the Examiner for further hearing.

RULE 720. DE NOVO HEARING BEFORE COMMISSION

When any order has been entered by the Commission pursuant to any hearing held by an Examiner, any party adversely affected by such order shall have the right to have such matter or proceeding heard de novo before the Commission, provided that within 30 days from the date such order is rendered such party files with the Commission a written application for such hearing before the Commission. If such application is filed, the matter or proceeding shall be set for hearing before the Commission at the next regular hearing date following the expiration of fifteen days from the date such application is filed with the Commission. Any person affected by the order or decision rendered by the Commission after hearing before the Commission may apply for rehearing pursuant to and in accordance with the provisions of Rule 722, and said Rule 722 together with the law applicable to rehearing and appeals in matters and proceedings before the Commission shall thereafter apply to such matter or proceeding.

RULE 721. NOTICE OF COMMISSION'S ORDERS

Within ten days after any order, including any order granting or refusing rehearing, or order following rehearing, has been rendered by the Commission, a copy of such order shall be mailed by the Commission to each person or his attorney of record who has entered his appearance of record in the matter of proceeding pursuant to which such order is rendered.

RULE 722. REHEARINGS

Within 20 days after entry of any order or decision of the Commission any person affected thereby may file with the Commission an application for rehearing in respect of any matter determined by such order or decision, setting forth the respect in which such order or decision is believed to be erroneous. The Commission shall grant or refuse any such application in whole or in part within 10 days after the same is filed and failure to act thereon within such period shall be deemed a refusal thereof and a final disposition of such application. In the event the rehearing is granted, the Commission may enter such new order or decision after rehearing as may be required under the circumstances.

RULE 723. CHANGES IN FORMS AND REPORTS

Any change in the forms and reports or rules relating to such forms and reports shall be made only by order of the Commission issued after due notice and hearing.

NO. OF COPIES RECEIVED		
DISTRIBUTION		
File		
N.M.B.M.		
U.S.G.S.		
Operator		
Land Office		

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-101
10-1-74

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK---GEOTHERMAL RESOURCES WELL

5. Indicate Type of Lease STATE [ ] FEE [ ]

5A. State Lease No.

1a. Type of Work: Drill [ ] Deepen [ ] Plug Back [ ]

b. Type of Well: Geothermal Producer [ ] Temp Observation [ ] Low-Temp Thermal [ ] Injection/Disposal [ ]

7. Unit Agreement Name

8. Farm or Lease Name

2. Name of Operator

9. Well No.

3. Address of Operator

10. Field and Pool, or Wildcat

4. Location of Well UNIT LETTER _____ LOCATED _____ FEET FROM THE _____ LINE AND _____ FEET FROM THE _____ LINE OF SEC. _____ TWP. _____ RGE. _____ NMPM

12. County

19. Proposed Depth | 19A. Formation | 20. Rotary or C.T.

21. Elevations (Show whether DF, RT, etc.) | 21A. Kind & Status Plug. Bond | 21B. Drilling Contractor | 22. Approx. Date Work will start—

23.

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP

Order No. R-4860
Exhibit No. B

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed _____ *Title* _____ *Date* _____

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION

Form G-102
10-1-74

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.

Unit Letter	Section	Township	Range	County

Actual Footage Location of Well:
feet from the line and feet from the line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
			Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

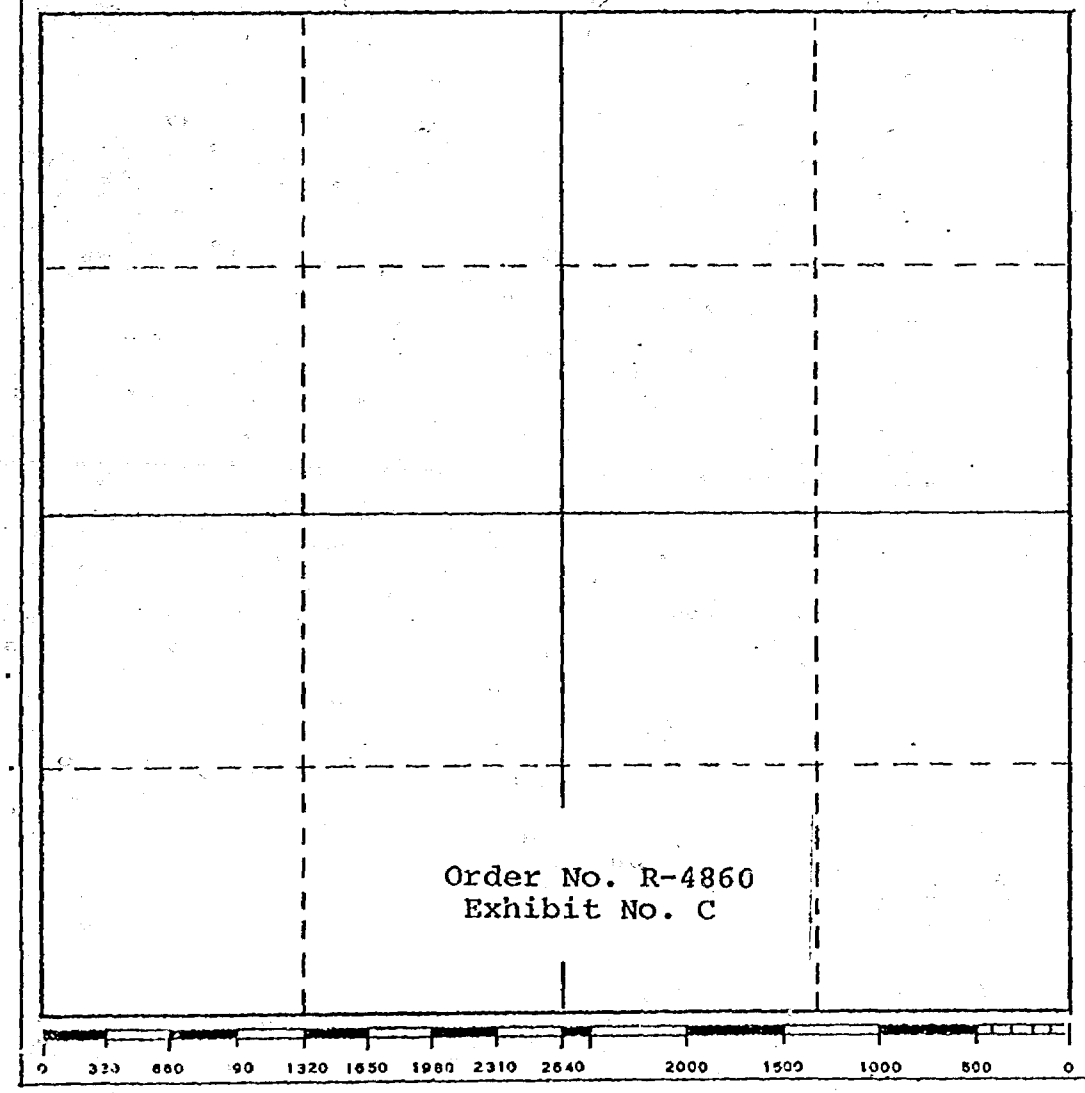
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name

Position

Company

Date

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

NO. OF COPIES RECEIVED		
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N.M.B.M.		
U.S.G.S.		
Operator		
Land Office		

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-103
10-1-74

SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS

5. Indicate Type of Lease State ☐ Fee ☐

5A State Lease No.

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM G-101) FOR SUCH PROPOSALS.)

1. Type of Well — Geothermal Producer ☐ Temp Observation ☐ Low-Temp Thermal ☐ Injection/Disposal ☐

7. Unit Agreement Name

2. Name of Operator

8. Farm or Lease Name

3. Address of Operator

9. Well No.

4. Location of Well

UNIT LETTER _____, _____ FEET FROM THE _____ LINE AND _____ FEET FROM THE _____ LINE, SECTION _____ TOWNSHIP _____ RANGE _____ NMPM.

10. Field and Pool, or wildcat

15. Elevation *(Show whether DF, RT, GR, etc.)*

12. County

16. Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER _____ ☐		OTHER _____ ☐	

17. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE 203.

Order No. R-4860
Exhibit No. D

18. *I hereby certify that the information above is true and complete to the best of my knowledge and belief.*

SIGNED _____ TITLE _____ DATE _____

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-104
10-1-74

CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO PRODUCE GEOTHERMAL RESOURCES

OWNER OR OPERATOR
Name_____
Address_____

TYPE OF WELL
Geothermal Producer [ ] Low-Temperature Thermal [ ] Injection/Disposal [ ]

REASON FOR FILING
New well [ ] Recompletion [ ]
Change in Ownership [ ] Designation of Purchaser [ ]
Other (Please Explain) [ ] _____

DESCRIPTION OF WELL
Lease Name_____ Well No. _____ Name of Reservoir_____
Kind of Lease (Fee, Fed. or State)_____ Lease Number_____

LOCATION
Unit Letter_____; _____feet from the_____line and _____feet from the_____line of
Section_____Township_____Range_____
County_____

TYPE OF PRODUCT
Dry Steam_____ Steam and Water _____ Low-Temp. Thermal Water_____

DESIGNATION OF PURCHASER OF PRODUCT
Name of Purchaser_____
Address of Purchaser _____
Product Will Be Used For_____

Order No. R-4860
Exhibit No. E

CERTIFICATE OF COMPLIANCE

I hereby certify that all rules and regulations concerning geothermal resources wells in the State of New Mexico, as promulgated by the Oil Conservation Commission of New Mexico, have been complied with, with respect to the subject well, and that the information given above is true and complete to the best of my knowledge and belief.

Signed_____Position_____Date_____

Approved_____Position_____Date_____

NEW MEXICO OIL CONSERVATION COMMISSION
P.O. Box 2088, Santa Fe 87501

Form G-105
10-1-74

GEOTHERMAL RESOURCES WELL LOG

Operator _____

Address _____

Reservoir _____

Lease Name _____ Well No. _____ Unit Letter ___

Location: _____ feet from the _____ line and _____ feet from the _____ line Section _____

Township _____ Range _____ County _____

FORMATIONS PENETRATED BY WELL

DEPTH TO		Thickness	Drilled or Cored	Recovery	DESCRIPTION
Top of Formation	Bottom of Formation				

Attach Additional Sheets if Necessary

This form must be accompanied by copies of electric logs, directional surveys, physical or chemical logs, water analyses, tests, including potential tests, and temperature surveys (See Rule 205).

Order No. R-4860
Exhibit No. F

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position _____ Date _____

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-106
10-1-74

GEOTHERMAL RESOURCES WELL SUMMARY REPORT

Operator _____ Address _____
Lease Name _____ Well No. _____
Unit Letter _____ Sec. _____ Twp. _____ Rge. _____
Reservoir _____ County _____

Commenced drilling _____ GEOLOGICAL MARKERS DEPTH
Completed drilling _____
Total depth _____ Plugged depth _____
Junk _____
_____
Commenced producing _____ (Date) Geologic age at total depth: _____

Date	Static test Shut-in well head		Production Test Data								
			Total Mass Flow Data					Separator Data			
	Temp. °F	Pres. Psig	Lbs/Hr	Temp. °F	Pres. Psig.	Enthalpy	Orifice	Water cuft/Hr	Steam Lbs/Hr	Pres. Psig.	Temp. °F

CASING RECORD (Present Hole)

Size of Hole Drilled	Size of Casing (A. P. I.)	Weight of Casing	Grade of Casing	New or Second Hand	Seamless or Lapweld	Depth of Shoe	Top of Casing	Number of Sacks of Cement	Top of Cement	Method of Determining Top

PERFORATED CASING
(Size, top, bottom, perforated intervals, size and spacing of perforation and method.)

Was analysis of effluent made? _____ Electrical log depths _____ Temperature log depths _____

Order No. R-4860
Exhibit No. G

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position _____ Date _____

Form G-107
10-1-74

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL HISTORY

Operator _____ Address _____

Lease Name _____ Well No. _____

Unit Letter _____ Sec. _____ Twp. _____ Rge _____

Reservoir _____ County _____

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting, and initial production data and zone temperature.

Date

Order No. R-4860
Exhibit No. H

CERTIFICATION *(Attach additional sheets if necessary)*

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position _____ Date _____

Form G-108
10-1-74

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

MONTHLY GEOTHERMAL PRODUCTION REPORT

SUBMIT IN DUPLICATE

Month of

Operator | Address

Lease Name | Reservoir | County

NOTE: Report actual production (NOT SALES). Use Form G-109 for water injection wells.

Well No.	Unit Ltr	Sec.	Twp.	Rge	Total mass produced (Lbs x 10^6)	Dry steam produced (Lbs x 10^6)	Flow temp. (^oF)	Flow pres. (psi)	Water produced (acre-feet)	Minerals produced (type and tons)	Method of Prod (F. or P.)	No. days well produced	If well not on production, state reason

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

Form G-109
10-1-74

MONTHLY GEOTHERMAL PURCHASER'S REPORT

Month of

Purchaser's Name	Address	
Place of Utilization	Purpose	Producer's Name
Lease	Field	County

WELL NO.	LOCATION UL	S	T	R	Product* Purchased	Total Mass, Lbs. x 10^6	Total Vol., Acre Feet	Total Vol., Gallons†	Temp. °F	Pres. psi
Totals										

Residual Water	Acre Feet	Gallons†	Disposition
Type and Weight of Minerals Extracted			Disposition of Minerals

*State type of product: Dry Steam, Geothermal Water, Low-Temp. Thermal Water, etc.
†Total Volume in Gallons for Low-Temp. Thermal Wells Only

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

Remarks: _____ Name _____

_____ Title _____ Date _____

Order No. R-4860
Exhibit No. J

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-110
10-1-74

MONTHLY GEOTHERMAL INJECTION REPORT

Month of

Operator | Address

Lease Name | Field | County

WELL NO.	LOCATION UL	S	T	R	P.M. or D.	ACRE FEET WATER INJ.	AVE. SURF. INJ. PRES.	AVE. TEMP. INJ. WTR.	CUMULATIVE WATER INJ.	NAME OF INJ. ZONE	SOURCE OF WATER

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

Form G-111
10-1-74

ANNUAL GEOTHERMAL TEMPERATURE AND PRESSURE TESTS

Operator	Address	Field	County

LEASE	WELL NO.	LOCATION UL	S	T	R	Date & Hour Shut In	Production Last 24 Hrs.	Flowing Pres. psi	Flowing Temp. °F	Date & Hour of Tests	Time Shut-in Hrs., Mins.	SI Pres psig Dead-weight

Order No. R-4860
Exhibit No. L

I hereby certify that the above information is true and complete to the best of my knowledge and belief.

Signature _____ Title _____ Date _____

NEW MEXICO OIL CONSERVATION COMMISSION

P. O. Box 2088, Santa Fe 87501

Form G-112
10-1-74

APPLICATION TO PLACE WELL ON INJECTION-GEOTHERMAL RESOURCES AREA

OPERATOR		ADDRESS	
LEASE NAME	WELL NO.	FIELD	COUNTY

LOCATION

UNIT LETTER _____; WELL IS LOCATED _____ FEET FROM THE _____ LINE AND _____ FEET FROM THE

LINE, SECTION _____, TOWNSHIP _____ RANGE _____ NMPM.

CASING AND TUBING DATA

NAME OF STRING	SIZE	SETTING DEPTH	SACKS CEMENT	TOP OF CEMENT	TOP DETERMINED BY
CONDUCTOR PIPE					
SURFACE CASING					
LONG STRING					
TUBING			NAME, MODEL AND DEPTH OF TUBING PACKER		

NAME OF PROPOSED INJECTION FORMATION	TOP OF FORMATION	BOTTOM OF FORMATION

IS INJECTION THROUGH TUBING, CASING, OR ANNULUS?	PERFORATIONS OR OPEN HOLE?	PROPOSED INTERVAL(S) OF INJECTION

IS THIS A NEW WELL DRILLED FOR INJECTION	IF ANSWER IS NO, FOR WHAT PURPOSE WAS WELL ORIGINALLY DRILLED?	HAS WELL EVER BEEN PERFORATED IN ANY ZONE OTHER THAN THE PROPOSED INJECTION ZONE?

LIST ALL SUCH PERFORATED INTERVALS AND SACKS OF CEMENT USED TO SEAL OFF OR SQUEEZE EACH

DEPTH OF BOTTOM OF DEEPEST FRESH WATER ZONE IN THIS AREA	IS THIS INJECTION FOR PURPOSE OF PRESSURE MAINTENANCE OR WATER DISPOSAL? (SEE RULES 501 AND 502)	

ANTICIPATED DAILY INJECTION VOLUME	MINIMUM	MAXIMUM	OPEN OR CLOSED TYPE SYSTEM	IS INJECTION TO BE BY GRAVITY OR PRESSURE?	APPROX. PRESSURE (PSI)

ANSWER YES OR NO WHETHER THE FOLLOWING WATERS ARE MINERALIZED TO SUCH A DEGREE AS TO BE UNFIT FOR DOMESTIC, STOCK, IRRIGATION, OR OTHER GENERAL USE --	WATER TO BE INJECTED	NATURAL WATER IN INJECTION ZONE	ARE WATER ANALYSES ATTACHED?

NAME AND ADDRESS OF SURFACE OWNER (OR LESSEE, IF STATE OR FEDERAL LAND)

LIST NAMES AND ADDRESSES OF ALL OPERATORS WITHIN ONE-HALF (½) MILE OF THIS INJECTION WELL

Order No. R-4860
Exhibit No. M

HAVE COPIES OF THIS APPLICATION BEEN SENT TO EACH OPERATOR WITHIN ONE-HALF MILE OF THIS WELL?			
ARE THE FOLLOWING ITEMS ATTACHED TO THIS APPLICATION (SEE RULE 503)	PLAT OF AREA	ELECTRICAL LOG	DIAGRAMMATIC SKETCH OF WELL

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

(Signature) (Title) (Date)

NOTE: Should waivers from all operators within one-half mile of the proposed injection well not accompany this application, the New Mexico Oil Conservation Commission will hold the application for a period of 20 days from the date of receipt by the Commission's Santa Fe office. If at the end of the 20-day waiting period no protest has been received by the Santa Fe office, the application will be processed. If a protest is received, the application will be set for hearing, if the applicant so requests. SEE RULE 503.

NEW MEXICO

OIL CONSERVATION COMMISSION

GEOTHERMAL DIVISION

* * * *

RULES AND REGULATIONS

FOR

GEOTHERMAL RESOURCES

(Proposed)

BEFORE THE
OIL CONSERVATION COMMISSION
Santa Fe, New Mexico
Case No. 5255 Exhibit No. A
Submitted by OCC Staff
Hearing Date June 11, 1974

These proposed rules and regulations will be considered at public hearing by the New Mexico Oil Conservation Commission at 9:00 o'clock a.m. June 11, 1974, at Morgan Hall, State Land Office Building, Santa Fe, New Mexico.

NEW MEXICO
OIL CONSERVATION COMMISSION

I. R. TRUJILLO
CHAIRMAN
P. O. Box 2088, Santa Fe
Telephone: 827-2432

LAND COMMISSIONER ALEX J. ARMIJO
MEMBER
P. O. Box 1148, Santa Fe
Telephone: 827-2538

STATE GEOLOGIST A. L. PORTER, JR., SECRETARY-DIRECTOR
P. O. Box 2088, Santa Fe 87501
Telephone: 827-2432

PRINCIPAL OFFICE

and

GEOTHERMAL DIVISION

Santa Fe

Administrative Division	827-2434	Legal Division	827-2741
Engineering Division	827-2533	Director	827-2432

A. L. Porter, Jr., Secretary-Director
R. L. Stamets, Technical Support Chief
Wm. F. Carr, General Counsel
T. W. Derryberry, Attorney

D. S. Nutter, Chief Engineer
J. E. Kapteina, Engineer
Carl Ulvog, Geologist
W. E. Alarid, Finance Officer

OIL AND GAS DISTRICT OFFICES

DISTRICT I - Hobbs 88240

P. O. Box 1980
Telephone: 393-6161

J. D. Ramey, Supervisor and Oil & Gas Inspector
J. W. Runyan, Geologist and Deputy Oil & Gas Inspector
L. A. Clements,
N. E. Clegg,
Deputy Oil & Gas Inspectors

DISTRICT II - Artesia 88210

Drawer DD
Telephone: 746-4861

W. A. Gressett, Supervisor and Oil & Gas Inspector
L. A. Mermis, Deputy Oil & Gas Inspector

DISTRICT III - Aztec 87410

1000 Rio Brazos Road
Telephone: 334-6178

E. C. Arnold, Supervisor and Oil & Gas Inspector
A. R. Kendrick, Engineer and Deputy Oil & Gas Inspector
C. C. Gholson,
Deputy Oil & Gas Inspector

DISTRICT IV - Santa Fe 87501

P. O. Box 2088
Telephone: 827-2533

Carl Ulvog, Geologist and Oil & Gas Inspector

Telephone Area Code: New Mexico 505

NEW MEXICO
OIL CONSERVATION COMMISSION

GEOTHERMAL RESOURCES DIVISION

RULES AND REGULATIONS

* * *

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A - DEFINITIONS

COMMISSION shall mean the Oil Conservation Commission created by Section 3, Chapter 168, Laws of 1949.

COMPLETION or COMPLETED WELL shall mean a well upon which drilling operations have been completed and which is capable of producing a geothermal resource or a well upon which no drilling operations have been conducted for at least 30 days.

Date of Compl

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, to 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 pool, and for such purpose to use his just and equitable share of the natural heat or energy in the reservoir.

could be reservoir

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.

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 DIVISION shall mean that division of the Oil Conservation Commission 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 Section 1, Chapter 75, Laws of 1973.

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

GEOTHERMAL OBSERVATION WELL shall mean a shallow 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.

does not include water

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 WATERS shall mean the water or brine produced from a geothermal reservoir.

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

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 occurence, 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, industrial, municipal, or domestic uses. does not include commercial - perhaps should.

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 resource 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 Commission.

TEMPORARY ABANDONMENT shall mean a state or period of suspended operations during which no continuous drilling, production, injection, storage, or work-over procedures have taken place. Such period shall be 60 days for drilling wells and six months for all other classes of wells.

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 Commission.

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, or injection well, as defined herein, drilled below fresh water by an "owner" as defined herein.

B. MISCELLANEOUS RULES

RULE 1. SCOPE OF RULES AND REGULATIONS

(a) The following Geothermal Rules and Regulations are of statewide application and have been adopted by the Oil Conservation Commission to conserve the natural geothermal resources of the State of New Mexico, to prevent waste, and to protect the correlative rights of all owners of geothermal resources. Special rules, regulations, and orders may be adopted from time to time when required for a particular geothermal resources area, and shall prevail over the Geothermal Rules and Regulations if in conflict therewith. However, when these Geothermal Rules and Regulations do not conflict with special rules hereafter adopted, these Geothermal Rules and Regulations will apply.

(b) The Commission may grant exceptions to these rules and regulations after notice and hearing, when the granting of such exceptions will not result in waste but will protect correlative rights or prevent waste.

RULE 2. ENFORCEMENT OF LAWS, RULES, AND REGULATIONS DEALING WITH CONSERVATION OF GEOTHERMAL RESOURCES

The Commission, its agents, representatives, and employees are charged with the duty and obligation of enforcing all rules and statutes of the State of New Mexico relating to the conservation of geothermal resources. However, it shall be the responsibility of all geothermal resource owners or operators to obtain information pertaining to the regulation of geothermal resources before operations have begun. Minor deviations from the requirements of these rules as to field practices may be permitted by the Commission or its duly authorized representatives where such can be safely done without waste, and burdensome delay or expense to the operator avoided.

RULE 3. WASTE PROHIBITED

(a) The production or handling of geothermal resources of any type or in any form, or the handling of products thereof, in such a manner or under such conditions or in such an amount as to constitute or result in waste is hereby prohibited.

(b) All owners, operators, contractors, drillers, transporters, service companies, pipe pulling and salvage contractors, and other persons shall at all times conduct their operations in the drilling, equipping, operating, producing, plugging and abandonment of geothermal resource wells in a manner that will prevent waste of geothermal resources, and shall not wastefully utilize geothermal resources, or allow leakage of such resources from a geothermal reservoir, or from wells, tanks, containers, or pipe, or other storage, conduit, or operating equipment.

RULE 4. PROTECTION OF LIFE, HEALTH, AND THE ENVIRONMENT

All geothermal operations, exploratory, drilling, and producing, shall be conducted in a manner that will afford maximum reasonable protection to human life and health and to the environment.

RULE 5. WATER RIGHTS AND WATER PERMITS

It is recognized by the Commission that the appropriation of water, in a liquid or gaseous state, from a geothermal reservoir, or the appropriation of water from any other source for the purpose of injection into a geothermal reservoir is subject to ~~such water rights and permits for water appropriation as may be required under~~ the laws of the State of New Mexico concerning water rights and permits for the appropriation of water.

RULE 6. UNITED STATES GOVERNMENT LEASES

It is recognized by the Commission that all persons conducting geothermal operations on United State Government land shall comply with the United States government regulations. Such persons shall also comply with all applicable State rules and regulations which are not in conflict therewith.

RULE 7. UNITIZED AREAS

After notice and hearing, the Commission may grant approval for the combining of ~~several or~~ one or more contiguous leases into a unitized area for purposes of exploration for and production of geothermal resources.

RULE 8. CLASSIFYING AND DEFINING POOLS

The Commission will determine whether a particular well or field is a high temperature geothermal well or field or a low-temperature thermal well or field, as the case may be, and will, from time to time, classify and reclassify wells and name pools accordingly, and will determine the limits of any field so designated and from time to time redetermine such limits.

RULE 9. FORMS UPON REQUEST

Forms for written notices, requests, and reports required by the Commission will be furnished upon request.

RULE 10. AUTHORITY TO COOPERATE WITH OTHER AGENCIES

The Commission may from time to time enter into arrangements with State and Federal governmental agencies, industrial committees, and other persons, with respect to special projects, services, and studies relating to conservation of geothermal resources.

RULE 101. PLUGGING BOND

(a) Any person who has drilled or is drilling or proposes to drill for geothermal resources shall post with the Commission, and obtain approval thereof, a bond, in a form approved by the Commission, 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. The bond shall be in the amount prescribed below:

(1) One-well geothermal exploratory, development, or injection well bond: $5,000.

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

(3) Multiple well geothermal exploratory,development, or injection well bond: $10,000 (Not more than five such wells may be drilled under such bond. An additional $10,000 bond must be posted for each additional five wells.)

(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. An additional $10,000 bond must be posted for each additional ten wells.)

(b) For the purposes of the Commission, 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 Commission. 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 Commission 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 Commission 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 Commission to the principal and to the surety company.

Release of bond when conv to landowners the well

(c) The Secretary-Director of the Commission is vested with power to act for the Commission in all matters relating to this rule.

RULE 102. NOTICE OF INTENTION TO DRILL or disposal

(a) Prior to the commencement of operations, notice shall be delivered to the Commission of intention to drill any well for geothermal production or observation, or for injection purposes, on Commission Form G-101, Notice of Intention to Drill, Deepen, or Plug Back-Geothermal Resources Well and approval thereof obtained from the Commission. 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 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

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A. CLASSIFICATION OF WELLS

Any well, other than a geothermal observation well or a low-temperature thermal well, which is drilled a distance of one mile or more from (1) the outer boundary of any defined geothermal field and (2) any well which is within one of such field, shall be classified as an exploratory well, any such well shall be spaced, drilled, operated, and produced in accordance with the New Mexico Geothermal Rules and Regulations.

Any well, other than 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 purposes, in which case it will be classified as an injection well.

Any well classified as a development well or an injection well for a given geothermal reservoir shall be drilled, operated, and produced in accordance with the New Mexico Geothermal Rules and Regulations unless special rules in conflict therewith have been promulgated for such reservoir, said special rules than being applicable.

B. ACREAGE AND WELL LOCATION REQUIREMENTS

(1) Exploration Wells

A well classified as an exploratory well shall be located on a lease or drilling parcel comprising at least 40 surface acres and shall be located at least 330 feet from the outer boundary of such lease or drilling parcel, and 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 or of an independent survey), and shall be located at least 165 feet from the outer boundary of the quarter-quarter-quarter section line, 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) Geothermal Observation Wells and Low-Temperature Thermal Wells

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

C. NON-STANDARD LOCATIONS

(1) The Secretary-Director of the Commission 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 1320-foot radius if application is for exception to Rule 104 B (1) Exploration Wells; within a 660-foot radius if application is for exception to Rule 104 B (2) Development Wells; within a 1320-foot radius 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 Secretary-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 Commission. If such objection is received, the matter will be set for hearing if the applicant so desires. If the application is based upon geologic or engineering considerations and the Secretary-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 Commission 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

In order to prevent waste and protect correlative rights, the Commission 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 ~~geothermal wells~~ and may adopt special well location and acreage dedication requirements for low-temperature thermal fields.

RULE 105. ROTARY DRILLING AND CABLE TOOL DRILLING

Rotary drilling equipment, adequately equipped to contain high underground pressures and prevent or control blowouts, shall be used for the drilling of all geothermal resources wells except temperature 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

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 from entering any watercourse.

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RULE 107. SEALING OFF STRATA

(a) During the drilling of any geothermal or low-temperature thermal well, all fresh water strata and/or brackish or briny water strata overlying the geothermal resources strata shall be sealed or separated to prevent the migration of fluids from one stratum to the other.

(b) All fresh waters and waters of present or probable future value for domestic, commercial, agricultural or stock purposes shall be confined to their respective strata and shall be adequately protected by methods approved by the Commission. Special precautions by methods satisfactory to the Commission shall be taken to guard against loss of artesian water from the strata in which it occurs, and to prevent the contamination of such artesian water strata by any objectionable geothermal fluids. Sealing off of strata, and migration prevention shall ordinarily be accomplished by cementing casing.

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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, ~~and geothermal observation wells if they penetrate fresh water~~ bearing strata, shall be cased and cemented in such a manner as to protect ~~useable~~ surface waters, if any, ground waters, geothermal resources, life, health, and property. usable and

Geothermal observation wells, if they penetrate fresh water-bearing strata, shall be completed and plugged in such a manner as to protect surface waters, if any, and usable ground waters.

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, Notice of Intention to Drill:

(1) Conductor Pipe. A minimum of 90 feet and a maximum of 150 feet. In special cases the Commission 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 Commission shall be installed on conductor pipe on exploratory wells and on development wells when deemed necessary by the Commission. Note: For low-temperature thermal wells the conductor pipe requirement may be reduced or waived by the Commission.

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 low-temperature thermal wells, the surface casing hole shall be logged with an induction electrical 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 not be required under certain conditions. Notice of intention to deviate from this rule should be noted on Form G-101 when applying for a drilling permit.

~~Usable~~ Surface casing shall provide for control of formation fluids, for protection of shallow usable 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 equaling or exceeding 10 percent of the proposed total depths of wells drilled in such areas. A minimum of 200 feet and a maximum of 1,300 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 Commission after a careful study of geological conditions. The Commission 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 Commission on the basis of known field conditions. Requirements (1) and (2) ~~and (3)~~ 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 usable 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 usable ground 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 and either a rapidly increasing thermal gradient or rapidly increasing formation pressures are encountered.

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

(c) Mud Return Temperatures. The temperatures of the return mud shall be monitored continuously during the drilling of the surface casing hole. Either a continuous temperature monitoring device shall be installed and maintained in working condition, or the temperature shall be read manually. In either case, return mud temperatures shall be entered into the log book after each joint of pipe has been drilled down about 30 feet.

Section H

(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 times (see ~~Article 4~~). BOPE pressure tests may be witnessed by a Commission representative on all wells prior to drilling out the shoe of the surface casing. The decision to witness BOPE pressure tests on all wells shall be made on a well-to-well basis. In any case, a Commission representative must be contacted well in advance of a scheduled pressure test to allow time for the representative to travel to the well to witness the test.

(3) Intermediate Casing. Intermediate casing shall be required for protection against anomalous pressure zones, cave-ins, 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 usable 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) Defective Casing or Cementing. If the casing or cementing of casing in any well appears to be defective or corroded or parted or if there appears to be any underground leakage from whatever other cause, 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 Commission-approved plugging program.

(6) Electric Logging. All wells, except observation wells and low-temperature thermal wells, shall be logged with an induction electrical log, or equivalent, from total depth to the bottom of the conductor pipe, except in the case where air is used as the drilling medium. This requirement may be waived by the Commission and may vary depending on geologic conditions.

RULE 109. DEVIATION TESTS AND DIRECTIONAL DRILLING

Geothermal Resources Well Logs

Any well which is deepened or drilled with rotary tools shall be tested at reasonably frequent intervals to determine the deviation from the vertical. Such tests shall be made at least each 500 feet or at the first bit change succeeding 500 feet. A tabulation of all deviation tests, sworn to and notarized, shall be filed with Form G-105, ~~Certificate and Compliance and Authorization to Produce Geothermal Resources~~. When the deviation averages more than five degrees, in any 500 foot interval, the Secretary-Director of the Commission may require that a directional survey be run to establish

the location of the producing interval(s).

The Secretary-Director of the Commission, at the request of an offset operator, may require any operator to make a directional survey of any well. Said directional survey and all associated costs shall be at the expense of the requesting party and shall be secured in advance by a $5,000.00 indemnity bond posted with and approved by the Commission. The requesting party may designate the well survey company, and said survey shall be witnessed by a representative of the Commission.

No well shall be intentionally deviated except toward the vertical without prior permission from the Commission. Permission to deviate a well other than toward the vertical shall be obtained on Commission Form G-103 with copies of said Form G-103 being furnished to all other operators owning leases offsetting the drilling tract, if any there be. Upon request of the Secretary-Director of the Commission, any well which was intentionally deviated shall be directionally surveyed. The Commission may at its option witness such survey and the Santa Fe Office shall be notified of the appropriate time all directional surveys are to be conducted. All directional surveys run on any well which was intentionally deviated in any manner for any reason must be filed with the Commission upon completion of the well. Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources, will not be approved until the operator has submitted an affidavit that all such directional surveys have been filed.

RULE 110. SHOOTING AND CHEMICAL TREATMENT OF WELLS

If injury results to the producing formation, casing, or casing seat from shooting or treating a well, the operator thereof shall proceed with diligence to use the appropriate method and means for rectifying such damage. If shooting or chemical treating results in irreparable injury to the well the Commission may require the operator to properly plug and abandon the well.

RULE 111. RIGHT OF ENTRY

The Commission or its duly authorized representatives shall have the right of entry onto any geothermal resources 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.

RULE 112. NOISE ABATEMENT

Adequate noise abatement equipment shall be installed and maintained in good condition to reduce noise to a level approved by the Commission or its representative on any drilling or producing geothermal resources well located within 1500 feet of a habitation, school, or church.

RULE 113. SAFETY REGULATIONS

The well site around any drilling or producing well shall be kept clear of any rubbish or debris or fuel which may constitute a fire hazard. In any area where there is any likelihood of encountering unexpected hydrocarbons, the drilling mud and cuttings shall be stored in a pit a safe distance from the drilling rig. All waste shall be burned or disposed of in such a manner as to avoid creating a fire hazard.

RULE 114. WELL HEADS AND PRODUCTION EQUIPMENT

Well heads and all fittings appurtenant thereto shall be installed and maintained in first class condition so that all necessary pressure tests may be easily made on flowing wells. The well head and related parts and fittings shall have a test pressure equivalent to at least 150 percent of the calculated or known pressure in the reservoir from which production is expected.

Valves shall be installed and maintained in good order to permit pressures to be obtained on the production casing and the annulus between the casing strings.

Flow lines shall be of adequate pressure rating and capacity and shall be sufficiently equipped with expansion bends to prevent leakage or rupture.

All separators, pumps, mufflers, manifolds, flowlines, and other equipment used for the production of geothermal resources shall be of adequate pressure rating and capacity and shall be maintained in good condition in order to prevent loss of or damage to human life and health or to property or natural resources.

RULE 115. CORROSION

All well head equipment, surface production equipment, flowlines and pipelines, and subsurface casing and tubing shall be subject to periodic surveillance to prevent leakage or rupture and to safeguard life, health, property, and natural resources.

RULE 116. DISPOSAL OF PRODUCED WATERS

The disposal of highly mineralized waters produced from geothermal resources wells shall be in such a manner as to not constitute a hazard to fresh surface waters or underground supplies of fresh water.

RULE 117. NOTIFICATION OF FIRE, BREAKS, LEAKS, SPILLS, AND BLOWOUTS

The Commission shall be notified of any fire, break, leak, spill, or blowout occuring at any geothermal drilling, producing, transporting, treating, disposal,

disposal or injection wells, or

or utilization facility in the State of New Mexico by the person operating or controlling such facility.

"Facility", for the purpose of this rule, shall include any geothermal drilling or producing well; any pipeline through which geothermal resources or the waste products thereof are gathered or transported; any receiving tank into which geothermal waters or wastes are produced, received, or stored; any treating plant in which geothermal resources are treated or processed; any electrical generating plant in which geothermal resources are utilized; and any drilling pit, slush pit, or storage pit or pond associated with geothermal drilling, producing, treating, or utilization processes in which hydrocarbons or hydrocarbon waste or residue, salt water, strong caustics or acids, or other deleterious chemicals or harmful substances are present.

Notification to the Commission of such fire, break leak spill or blowout shall be in accordance with the provisions set forth below:

(1) Well Blowouts. Notification of well blowouts and/or fires shall be "immediate notification" described below.

(2) "Major" Breaks, Spills, or Leaks. Notification of breaks, spills, or leaks of wellheads, pipelines, tanks, or drilling pits, slush pits, or storage pits or ponds, the result of which 50 barrels or more of liquids containing hydrocarbons or hydrocarbon wastes, salt water, strong caustics or strong acids, or other deleterious substances reach a watercourse or enter a stream or lake, or in which noxious gases escape or any quantity of fluids are lost which may with reasonable probability endanger human health or result in substantial damage to property, shall be "immediate notification" described below.

(3) "Minor" Breaks, Spills, or Leaks. Notification of breaks, spills, or leaks of wellheads, pipelines, tanks, or drilling pits, slush pits, or storage pits or ponds, the result of which 25 barrels or more but less than 50 barrels of liquids containing hydrocarbons or hydrocarbon wastes, salt water, strong caustics or strong acids, or other deleterious substances are lost or in which noxious gases escape, but in which there is no danger to human health nor of substantial damage to property shall be "subsequent notice" described below.

(4) Fires. Notification of fires at geothermal installations in which there is reasonable probability of danger to human health or substantial damage to adjoining properties or substantial loss of geothermal resources shall be "immediate notice" described below. Notification of fires of lesser magnitude but of $500.00 or more of property damage or $500.00 or more of geothermal resources loss shall be "subsequent notice" described below.

IMMEDIATE NOTIFICATION - "Immediate Notification" shall be as soon as possible after discovery and shall be in person or by telephone to the Santa Fe office or the nearest district office of the Commission if the incident occurs during business hours. If the incident occurs after business hours, notification shall be in accordance with the latest Commission memorandum on the subject. A complete written report of the incident shall be submitted to the Santa Fe office of the Commission within ten days after discovery of the incident.

SUBSEQUENT NOTIFICATION - "Subsequent Notification" shall be a complete written report of the incident and shall be submitted to the Santa Fe office of the Commission within ten days after discovery of the incident.

CONTENT OF NOTIFICATION - All reports of fires, breaks, spills, leaks, or blowouts, whether verbal or written, shall identify the location of the incident by quarter-quarter, section, township, and range, and by distance and direction from the nearest town or prominent landmark so that the exact site of the incident can be readily located on the ground. The report shall specify the nature and quantity of the loss and also the general conditions prevailing in the area, including precipitation, temperature, and soil conditions. The report shall also detail the measures that have been taken and are being taken to remedy the situation reported.

WATERCOURSE, for the purpose of this rule, is defined as any lake-bed or gully, draw, stream bed, wash, arroyo, or natural or man-made channel through which water flows or has flowed.

RULE 118. MEASUREMENT OF PRODUCTION

All production from a completed geothermal resources well shall be accounted for by continuous metering or by other method approved by the Commission.

RULE 119. UTILIZATION OF GEOTHERMAL RESOURCES

After the completion of a geothermal resources well, all production from said well shall be put to beneficial use. No production shall be permitted unless beneficial use is made thereof except for limited periods of testing, in which case ~~prior~~ proper disposition of produced liquids shall be made.

D - RECORDS AND REPORTS

RULE 200. GENERAL

A. Books and Records

All producers, transporters, purchasers or utilizers of geothermal resources within the State of New Mexico shall make and keep appropriate books and records for a period of not less than five years, covering their operations in this state, from which they may be able to substantiate the reports required by these rules.

B. Well Records

The owner or operator of any geothermal resources well shall keep, or cause to be kept, a careful and accurate well log, core record, and history of the drilling of any such well, including the lithologic characteristics and depths of formations encountered, the depths, pressures, and temperatures of water-bearing and steam-bearing strata, the temperatures, chemical compositions and physical characteristics of fluids encountered, and electrical logs, directional surveys, deviation and physical or chemical logs, tests, including potential tests, and surveys, including temperature surveys.

These data shall be kept in the local New Mexico office of the owner or operator of the well or in the office of his statutory agent in New Mexico and shall be subject to inspection, during normal business hours, by the Commission or its representatives, and by the State Engineer or his representatives.

C. Where to File Reports

All forms and reports required by these rules shall be filed with the New Mexico Oil Conservation Commission, Geothermal ~~Department~~ Division, Post Office Box 2088, Santa Fe, New Mexico 87501.

D. Additional Data

These rules shall not be construed to limit or restrict the authority of the Commission to require the furnishing of such additional reports, data, or other information relative to the production, transportation, or utilization of geothermal resources in the State of New Mexico as may appear to be necessary or desirable, either generally or specifically, for the prevention of waste and the conservation of natural resources of the State of New Mexico.

RULE 201. APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK-GEOTHERMAL RESOURCES WELL (FORM G-101)

Before commencement of drilling or deepening operations of any geothermal exploratory, development, temperature observation, injection, or disposal well, or low temperature thermal well, or before plugging a well back to another zone, the operator of the well shall obtain a permit to do so. To obtain such a permit

Four copies one for OCC SF
one for operator
one for NMBM
one for USGS

the operator shall submit to the Commission FOUR copies of Form G-101, Application for Permit to Drill, Deepen or Plug Back-Geothermal Resources Well, completely filled in. If the operator has an approved bond in accordance with Rule 101 and the proposed well meets the spacing and well location requirements (Rule 104), one copy of the Drilling Permit will be returned to him on which will be noted the Commission's approval, with any modification deemed advisable. If the proposal cannot be approved for any reason, the Forms G-101 will be returned with the cause for rejection stated thereon.

Each copy of Form G-101 must be accompanied by one copy of Form G-102, Geothermal Resources Well Location and Acreage Dedication Plat. (See Rule 202.)

If the well is to be drilled on state land, FIVE copies of Forms G-101 and G-102 shall be submitted, the extra copy being for the State Land Office.

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.

Del SE.

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 Commission.

2

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 203. SUNDRY NOTICES AND REPORTS ON GEOTHERMAL RESOURCES WELLS (FORM G-103)

Form G-103 is a dual purpose form to be filed with the Santa Fe office of the Commission to obtain Commission approval prior to commencing certain operations and also to report various completed operations.

A. Form G-103 as a Notice of Intention

(1) Form G-103 shall be filed in DUPLICATE by the operator and approval obtained from the Commission prior to:

(1)(a) Effecting a change of plans from those previously approved on Form G-101 or Form G-103.

no change

(2) Altering a drilling well's casing program or pulling casing or otherwise altering an existing well's casing installation.

(3) Temporarily abandoning a well (See Rule 303 B).

(4) Plugging and abandoning a well (See Rules 302 and 303 A).

(5) Performing remedial work on a well which, when completed, will affect the original status of the well. (This shall include making new perforations in existing wells or squeezing old perforations in existing wells, but is not applicable to new wells in the process of being completed nor to old wells being deepened or plugged back to another zone when such recompletion has been authorized by an approved Form C-101, Application for Permit to Drill, Deepen, or Plug Back, nor to acidizing, fracturing, or cleaning out previously completed wells.)

In the case of well plugging operations, the Notice of Intention shall include a detailed statement of the proposed work, including plans for shooting and pulling casing, plans for mudding, including weight of mud, plans for cementing, including number of sacks of cement and depths of plugs, and the time and date of the proposed plugging operations. ~~If not previously filed, a complete log of the well on Form C-105 (see Rule 205) shall accompany the Notice of Intention to plug the well; the bond will not be released until this is complied with.~~ (See Rule 302).

B. Form C-103 as a Subsequent Report

Form C-103 as a subsequent report of operations shall be filed in accordance with the section of this rule applicable to the particular operation being reported.

Form C-103 is to be used in reporting such completed operations as:

(1) Commencement of drilling operations

(2) Casing and cement test

(3) Altering a well's casing installation

(4) Temporary abandonment

(5) Plug and Abandonment

(6) Plugging back or deepening

(7) Remedial work

(8) Change in ownership of a drilling well

(9) Such other operations which affect the original status of the well but which are not specifically covered herein

No change

(c) ~~(2)~~ Information to be entered on Form G-103, Subsequent Report, for a particular operation is as follows:

(1) Report of Commencement of Drilling Operations

Within ten days following the commencement of drilling operations, the operator of the well shall file a report thereof on Form G-103 in DUPLICATE. Such report shall indicate the hour and the date the well was spudded.

(2) Report of Results of Test of Casing and Cement Job; Report of Casing Alteration

A report of casing and cement test shall be filed by the operator of the well within ten days following the setting of each string of casing or liner. Said report shall be filed in DUPLICATE on Form G-103 and shall present a detailed description of the test method employed and the results obtained by such test, and any other pertinent information required by Rule ~~106~~ 107 or Rule ~~107~~ 108. The report shall also indicate the top of the cement and the means by which such top was determined. It shall also indicate any changes from the casing program previously authorized for the well.

(3) Report of Temporary Abandonment

A report of temporary abandonment of a well shall be filed by the operator of the well within ten days following completion of the work. The report shall be filed in TRIPLICATE and shall present a detailed account of the work done on the well, including location and type of plugs used, if any, type and status of surface and downhole equipment, and any other pertinent information relative to the overall status of the well.

(4) Report on Pluggging of Well

A report of plugging operations shall be filed by the operator of the well within 30 days following completion of plugging operations on any well. Said report shall be filed in TRIPLICATE on Form G-103 and shall include the date the plugging operations were begun and the date the work was completed, a detailed account of the manner in which the work was performed including the depths and lengths of the various plugs set, the nature and quantities of materials employed in the plugging operations including the weight of the mud used, the size and depth of all casing left in the hole, and any other pertinent information. (See Rules 301-303 regarding plugging operations.)

No plugging report will be approved by the Commission until all forms and reports on the well have been filed and the location levelled and cleared of junk. It shall be the responsibility of the operator to contact the Santa Fe office of the Commission when the location has been so restored in order to arrange for an inspection of the plugged well and the location by a Commission representative.

(5) Report of Remedial Work

A report of remedial work performed on a producing well or former producing well shall be filed by the operator of the well within 30 days following

completion of such work. Said report shall be filed in DUPLICATE on Form G-103 and shall present a detailed account of the work done and the manner in which such work was performed; the daily production from the well both prior to and after the remedial operation; the size and depth of shots; the quantity of sand, acid, chemical or other materials employed in the operation, and any other pertinent information. Among the remedial work to be reported on Form G-103 are the following:

(a) Report on shooting, fluid fracturing or chemical treatment of a previously completed well

(b) Report on squeeze job

(c) Report on setting of liner or packer

(d) Report of any other remedial operations which are not specifically covered herein

(e) Report on Deepening or Plugging Back

A report of deepening or plugging back shall be filed by the operator of the well within 30 days following completion of such operations on any well. Said report shall be filed in DUPLICATE on Form G-103 and shall present a detailed account of the work done and the manner in which such work was performed. Form G-103 shall also report the daily production from the well both prior to and after recompletion.

(7) Report of Change in Ownership of a Drilling Well

A report of change of ownership shall be filed by the new owner of any drilling well within ten days following actual transfer of ownership. Said report shall be filed in TRIPLICATE on Form G-103 and shall include the name and address of both the new owner and the previous owner, the effective date of the change of ownership, and any other pertinent information. No change in the ownership of a drilling well will be approved by the Commission unless the new owner has an approved bond in accordance with Rule 101. (Form G-104 shall be used to report transfer of ownership of a completed well; see Rule 204.)

The former owner of the well, to obtain release of his bond, shall follow the procedures set forth in Rule 101(b).

(8) Other Reports on Wells

Reports on any other operations which affect the original status of the well but which are not specifically covered herein shall be submitted to the Commission on Form G-103, in DUPLICATE, by the operator of the well within ten days following the completion of such operation.

RULE 204. CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO PRODUCE GEOTHERMAL RESOURCES (FORM G-104)

Quintuplicate

Prior to placing any geothermal resources well on production or injection, the owner or operator of said well shall file (in ~~QUADRUPLICATE~~) with the Commission and receive approval thereof Form G-104, Certificate of Compliance and Authorization to Produce Geothermal Resources, outlining thereon the

information required and certifying that all Commission Rules and Regulations pertaining to the well have been complied with. Production of or injection into any well in violation of this rule shall result in the well being shut in by the Commission subject to the penalties provided by law for violation of the Commission's Rules, Orders, and Regulations. (In addition to Form G-104 being approved, additional approval for injection or disposal must be obtained pursuant to Rules 501-505.) Forms G-104 must be accompanied by two copies of Form G-105, Geothermal Resources Well Log (see Rule 205) outlining the data required and with the attachments required by Rule 205, two copies of Form G-106, Geothermal Resources Well Summary Report (See Rule 206) completely filled in and two copies of Form G-107, Geothermal Resources Well History (See Rule 207) completely filled in.

After approval of Form G-104, distribution of Forms G-104, G-105, G-106 and G-107 shall be made by the Commission as follows:

(1) one approved copy of Form G-104 shall be returned to the operator;

(2) one approved copy of Form G-104 shall be forwarded to the purchaser from the well;

(3) one approved copy of Form G-104 and one copy each of Forms G-105, G-106, and G-107 shall be forwarded to the New Mexico Bureau of Mines; and

(4) one approved copy of Form G-104 and one copy each of Forms G-105, G-106, and G-107 shall be retained by the Commission

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

A. For Producing or Injection Wells

Form G-105, Geothermal Resources Well Log, shall be filed in ~~DUPLICATE~~ QUADRUPLICATE with the Form G-104 when it is desired to put any geothermal resources well or injection well on production. It shall be accompanied by copies of electric logs, 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 wells shall be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission.

B. For ~~Non-Producing~~ Inactive or Temporarily Abandoned Wells

Form G-105, Geothermal Resources Well Log, shall be filed in DUPLICATE for every geothermal resources well not on producing 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

Form G-104 shall also be filed in QUADRUPLICATE when there is a change in purchaser from a well or when there is a change of ownership of a well other than a drilling well. No change of ownership will be approved the Commission unless the new owner has an approved bond in accordance

inactive

Rule 303 B. In no event, even in the case of prolonged temporary abandonment approved by the Commission, shall the filing of Form G-105 be delayed for more than five years after cessation of active drilling operations. Distribution of Form G-105 for ~~non-producing~~ or temporarily abandoned wells shall be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission.

C. For Plugged and Abandoned wells. ~~Form G-105, and Recmpletion Log~~, in DUPLICATE shall be filed for plugged and abandoned wells within one year later

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

A. For Producing Wells or Injection

Form G-106, Geothermal Resources Well Summary Report, completely filled in, shall be filed in ~~DUPLICATE~~ with the Form G-104 when it is desired to put any geothermal resources well on production or injection OK ~~Questionable~~ or injection. 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 wells shall be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission.

Inactive

B. For ~~Non-Producing~~ or Temporarily Abandoned Wells

Form G-106, Geothermal Resources Well Summary Report, shall be filed in DUPLICATE for every geothermal resources well not on producing 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 ~~non-producing~~ inactive or temporarily abandoned wells shall be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission. If Form G-106 is filed for ~~a non-producing~~ an inactive or temporarily abandoned well, and the well later goes on production or injection, refiling of Form G-106 in accordance with Rule 206-A above is required.

C. For P & A Wells

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

A. For Producing Wells or Injection

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 DUPLICATE with the Form G-104 when it is desired to put any geothermal resources well on production or injection. Failure to file a complete 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 wells shall be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission.

with Rule 101. The former owner of the well, to obtain release of his bond, shall follow the procedures set forth in Rule 101(6). (Form C-103 shall be used to report transfer of ownership of a drilling well; See Rule 203 B(7).

B. For ~~Non-Producing~~ Inactive or Temporarily Abandoned Wells

Form G-107, Geothermal Resources Well History shall be filed in DUPLICATE for every geothermal resources well not on producing (active) status or injection 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 Commission, 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 ~~non-producing~~ inactive or temporarily abandoned wells shall be one copy to the New Mexico Bureau of Mines and one copy retained by the Commission.

C. For P&A wells

RULE 208. MONTHLY GEOTHERMAL PRODUCTION REPORT (FORM G-108)

After placing any geothermal well on production, the owner or operator thereof shall file in DUPLICATE a monthly production report, Form ~~G-115~~ G-108, which report shall be due in the Santa Fe office of the Commission by the 20th day of each month and shall show the production from each well and each lease during the preceding calendar month.

RULE 209. MONTHLY GEOTHERMAL PURCHASER'S REPORT (FORM G-109)

The purchaser of production from any geothermal resource shall file in DUPLICATE a monthly purchaser's report, Form G-109, which report shall be due in the Santa Fe office of the Commission by the 15th day of each month and shall show the purchases made from all leases and wells connected to the purchaser's facilities during the preceding calendar month.

RULE 210. MONTHLY GEOTHERMAL INJECTION REPORT (FORM G-110)

After placing any well on injection or disposal in a geothermal resources field or area, the owner or operator thereof shall file in DUPLICATE a monthly injection report, Form G-110, which report shall be due in the Santa Fe office of the Commission by the 20th day of each month and show the zone or formation into which injection is being made, the volume injected, the average temperature of the injected fluid, and the average injection pressure at the well head.

RULE 211. ANNUAL GEOTHERMAL TEMPERATURE AND PRESSURE TESTS (FORM G-111)

Annual temperature and pressure tests shall be submitted by the owner or operator of each geothermal resources producing well in accordance with the annual testing schedule published by the Commission. Flowing temperatures and flowing pressure tests at the wellhead shall be recorded after at least 72 hours of continuous flow at normal producing rates. The well shall then be shut in for 24 hours and shut-in pressure at the wellhead recorded. Results of these tests shall be submitted in DUPLICATE to the Santa Fe office of the Commission.

RULE 212. APPLICATION TO PLACE WELL ON INJECTION-GEOTHERMAL RESOURCES AREA (FORM G-112)

Before placing any well on injection in a geothermal resources area, whether for recharge, disposal purposes, authority to do so shall be obtained on Form G-112 which shall be filed in accordance with Rule 503.

by whom?

E - ABANDONMENT, TEMPORARY ABANDONMENT,
AND PLUGGING OF WELLS

RULE 301. LIABILITY

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

drilled for geothermal purposes

RULE 302. NOTICE

Notice of Intention to Plug must be filed with the Commission and approval obtained by the owner or his agent prior to the commencement of plugging operations on Form G-103, Sundry Notices and Reports on Geothermal Wells, which notice shall outline the casing and cementing program of the well, the casing which is to be pulled, the size of proposed cement plugs and their depth, and such other information as may be pertinent. In the case of newly completed ~~dry holes~~ wells which are to be plugged, ~~upon verbal submission of adequate data to the Commission's Santa Fe office,~~ verbal authority and instructions may be given to plug the well. Subsequent written notice ~~and approval shall be required upon submission of the data required by Rule 202 B(1) or Rule 202 B(2) or the filing of Commission Form C-105 (see Rule 202 D and Rule 303 below).~~

be filed in accordance with Rule 203 A and shall

of plugging shall be filed within 30 days after obtaining verbal approval to plug.

See Rule 203 A; also Rule 203 C(4) and Rule 303 A

RULE 303. PLUGGING AND TEMPORARY ABANDONMENT

E-1-a

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 Commission. 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, temperature observation, or other exploratory wells drilled to or below fresh water sands shall be plugged in accordance with the applicable provisions recited above. Permanent markers shall not be required on wells not penetrating fresh water.

3.C.

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 Commission. Such permit shall be for a period not to exceed six months and shall be requested from the Santa Fe office of the Commission by filing Form G-103 in duplicate.

provided written notice to plug shall subsequently be filed within 30 days and approval thereof obtained. Written approval or verbal approval of a plugging program shall be contingent upon evidence being furnished that the plugging program for the well is such as to prevent damage to any producing zone, migration of fluids from one zone to another, the contamination of fresh water or other natural resources, or the leakage of any substance at the surface, all as substantiated by Form G-105, Geothermal Well Summary and Report, unless a representative of the Commission has had access to and has inspected the data and materials described in Rule 200B.

E - ABANDONMENT, TEMPORARY ABANDONMENT, AND PLUGGING OF WELLS

drilled for geothermal purposes

RULE 301. LIABILITY

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

203 A 203 B(4)

RULE 302. NOTICE

Notice of Intention to Plug must be filed with the Commission and approval obtained by the owner or his agent prior to the commencement of plugging operations on Form G-103, Sundry Notices and Reports on Geothermal Wells, which notice shall outline the casing and cementing program of the well, the casing which is to be pulled, the size of proposed cement plugs and their depth, and such other information as may be pertinent. ~~In the case of newly completed dry holes which are to be plugged, upon verbal submission of adequate data to the Commission's Santa Fe office, verbal authority and instructions may be given to plug the well. Subsequent written notice and approval shall be required upon submission of the data required by Rule 202 B(1) or Rule 202 B(2) or the filing of Commission Form G-105 (see Rule 202 D and Rule 303 below).~~ be filed in accordance with Rule 203 A and shall

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 Commission. 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, temperature observation, or other exploratory wells drilled to or below fresh water sands shall be plugged in accordance with the applicable provisions recited above. Permanent markers shall not be required on wells not penetrating fresh water.

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 Commission. Such permit shall be for a period not to exceed six months and shall be requested from the Santa Fe office of the Commission by filing Form G-103 in duplicate.

see E-1-(a)

No such permit shall be approved unless evidence is furnished that the condition of the well is such as to prevent damage to the producing zone, migration of fluids from one zone to another, the contamination of fresh water or other natural resources, or the leakage of any substance at the surface, as substantiated by Form G-106, Geothermal Well Summary and Report, and Form G-105, Geothermal Well Log, unless a representative of the Commission has had access to and has inspected the data and materials described in Rule ~~201 A.~~ 200 B

The Santa Fe office of the Commission shall have authority to grant one 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 Commission 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 Commission unless a one-well plugging bond for the well, in an amount satisfactory to the Commission, but not to exceed $10,000.00, is on file with the Commission to ensure future plugging of the well.

Clarify that bond is to be compatible w/ the 5 year rule for filing info.

The requirements of the paragraph immediately above may be waived and additional extensions granted in those cases where it can be shown that a contract exists for the construction of electric power plants and such plants are being designed, on order, or under construction.

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.

RULE 304. WELLS TO BE USED FOR FRESH WATER

When the well to be plugged may safely be used as a fresh water well and such utilization is desired by the land owner, the well need not be filled above a sealing plug set below the fresh water formation, provided that written agreement for such use by the owner of the well and by the land owner is filed with the Commission. See Rule 101 for release of bond

F - PURCHASE OF GEOTHERMAL RESOURCES

RULE 401. ILLEGAL SALE PROHIBITED

The sale or purchase or acquisition, or the transporting or utilization of geothermal resources produced in violation of the laws of this state, or of these rules, is prohibited.

RULE 402. RATABLE TAKE

Any person now or hereafter engaged in purchasing geothermal resources from one or more producers within a single geothermal reservoir shall be a common purchaser within that geothermal reservoir, and shall purchase geothermal resources of like quality, quantity, and pressure lawfully produced from that geothermal reservoir and tendered to such common purchaser at a reasonable point. Such purchase shall be made without unreasonable discrimination in favor of one producer against another in the price paid, quantities taken, the bases of measurement, or the facilities offered.

In the event such purchaser is also a producer, he is prohibited to the same extent from discriminating in favor of himself on geothermal resource wells in which he has an interest, direct or indirect, as against other geothermal resource wells in the same geothermal reservoir.

For the purposes of this rule, reasonable differences in prices paid or facilities afforded, or both, shall not constitute unreasonable discrimination if such differences bear a fair relationship to difference in quality, quantity, or pressure of the geothermal resource available or to the relative lengths of time during which such geothermal resources will be available to the purchaser.

Any common purchaser taking geothermal resources produced from wells within a geothermal reservoir shall take ratably under such rules, regulations, and orders, concerning quantity, as may be promulgated by the Commission after due notice and public hearing. The Commission, in promulgating such rules, regulations, and orders may consider the quality and the quantity of the geothermal resources available, the pressure and temperature of the product at the point of delivery, acreage attributable to the well, market requirements, and other pertinent factors.

Nothing in this rule shall be construed or applied to require, directly or indirectly, any person to purchase geothermal resources of a quality or under a pressure or under any other condition by reason of which such geothermal resource cannot be economically and satisfactorily used by such purchaser by means of his geothermal utilization facilities then in service.

RULE 403. REGULATION OF GEOTHERMAL RESOURCES PRODUCTION

Upon determination by the Commission that geothermal resources production in the State of New Mexico, or in a particular geothermal resources area, is causing waste, the Commission shall limit and allocate among the producing wells the total amount of geothermal resources which may be produced in the state, or in a particular geothermal area.

G - GEOTHERMAL INJECTION AND DISPOSAL WELLS

RULE 501. GEOTHERMAL INJECTION WELLS

Geothermal injection wells are those wells used for the purpose of injecting fluids into a dry geothermal reservoir, or into a wet ~~into a~~ geothermal ~~resources~~ reservoir for the purpose of augmenting the natural supply of fluids in the reservoir, pressure maintenance of the reservoir, or such other purpose as authorized by the Commission. No well shall be utilized as a geothermal injection well until authority for such use has been obtained on an approved Form G-112, Application to Place Well on Injection-Geothermal Resources Area. Form G-112 shall be filed in accordance with Rule 503 below.

RULE 502. GEOTHERMAL DISPOSAL WELLS

Geothermal disposal wells are those wells used for the purpose of disposing of waters produced from a geothermal ~~resources~~ reservoir when disposal is into a zone or formation not classified as a geothermal ~~resources~~ reservoir. No well shall be utilized as a geothermal disposal well until authority for such use has been obtained on an approved Form G-112, Application to Place Well on Injection-Geothermal Resources Area. Form G-112 shall be filed in accordance with Rule 503 below.

RULE 503. METHOD OF MAKING APPLICATION

Application for authority to inject fluids into a geothermal ~~resources~~ reservoir or to dispose of geothermal waters into a zone or formation not classified as a geothermal ~~resources~~ reservoir shall be made in DUPLICATE on Commission Form G-112, Application to Place Well on Injection, Geothermal Resources Area, and shall be accompanied by one copy of each of the following:

(1) A plat showing the location of the proposed injection/disposal well and the location of all other wells within a radius of one mile ~~two miles~~ from said well, and indicating the perforated or open-hole interval in each of said wells. The plat shall also indicate the ownership of all geothermal leases within said two-mile radius;

(2) The log of the proposed injection well, if available;

(3) A diagrammatic sketch of the proposed injection well showing all casing strings, including diameters and setting depths, quantities used and tops of cement, perforated or open-hole interval, tubing strings, including diameters and setting depths, and the type and location of packers, if any;

~~(4) Structure map showing the contours on a geologic marker at or near the intended zone of injection; and~~ cut

Put on Form → add something on fluids see Cal Code 1960

~~(5) At least one cross-section showing the proposed injection/disposal well and at least two offsetting wells in opposite directions.~~

Copies of the Form G-112 (without the above attachments) shall be sent to all other geothermal lease owners, if any there be, within a one-half mile radius of the proposed injection/disposal well.

If no objection is received within 20 days from the date of receipt of the application, and the Secretary-Director of the Commission is satisfied that all of the above requirements have been complied with, that the proposal is in the interest of conservation and will prevent waste and protect correlative rights, and that the well is cased, cemented, and equipped in such a manner that there will be no danger to any natural resource, including geothermal resources, usable underground ~~fresh~~ water supplies, and surface resources, Form G-112 will be approved. In the event the form is not approved because of objection from an affected geothermal lease owner or for other reason, the application will be set for public hearing, if the applicant so requests.

The Secretary-Director may dispense with the 20-day waiting period if waivers of objection are received from all geothermal lease owners within a one-half mile radius of the proposed injection/disposal well.

RULE 504. INJECTION REPORTS

Monthly injection reports shall be filed for injection/disposal wells in accordance with Rule 210 of these rules and regulations.

RULE 505. SURVEILLANCE

(a) Surveillance of is necessary on a continuing basis in order to establish to the satisfaction of the Commission that all water is confined to the intended zone of injection.

(b) When an operator proposes to drill an injection well, convert a producing or ~~idle~~ inactive well to an injection well, or rework an injection well and return it to injection service, he shall be required to demonstrate to the Commission by means of such tests as the Commission may deem necessary that the casing has complete integrity.

(c) To establish the integrity of the annular cement above the shoe of the casing, the operator shall make sufficient surveys, within 30 days after injection is started into a well, to demonstrate that all the injected fluid is confined to the intended zone of injection. Thereafter, such surveys shall be made at least every two years, or more often if ordered by the ~~supervisor~~ Commission. All such surveys ~~shall~~ may be witnessed by a representative of the Commission.

(d) After the well has been placed on injection, a Commission representative shall visit the wellsite periodically. At these times, surface conditions shall be noted and if any unsatisfactory conditions exist, the operator

Do we need to provide that offsets can witness tests also? See Packer Leakage Test Pressure 112 A VI (c)

shall be notified of needed remedial work. If this required work is not performed within 90 days, the approval issued by the Commission ~~shall~~ may be rescinded. If it is determined that damage is occurring at a rapid rate, the Commission may order that the repair work be done immediately.

(b) Injection pressures shall be recorded by the Commission representative and compared with the pressure reported on the appropriate forms. Any discrepancies shall be rectified immediately by the operator. A graph of daily pressures and rates versus time shall be maintained by the operator. Reasons for anomalies shall be promptly ascertained. If these reasons are such that it appears damage is being done, approval by the Commission may be rescinded, and injection shall cease.

(c) ~~At the discretion of the Secretary Director of the Commission,~~ When an injection well has been left idle for a period of ~~significant length of time~~, the operator shall be informed by letter that approval for use of the well for injection purposes has been rescinded. In the event the operator intends to again use the well as an injector, he shall be required to file a notice proposing to demonstrate by means of surveys that the injected water will be confined to the intended zone of injection.

RULE 506 ABANDONMENT

Injection or disposal wells are required to be plugged and abandoned in the same manner as other wells. (See Sec. E, ABANDONMENT, TEMPORARY ABANDONMENT, AND PLUGGING OF WELLS.)

Make compatible with TA rule.

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 low-temperature thermal wells nor for the drilling of shallow temperature observation wells.

RULE 602. BLOWOUT PREVENTION EQUIPMENT (BOPE)

The following standards are not given as final blowout prevention equipment requirements for the drilling of any geothermal resources well but are given as guidelines for the preparation of a minimum blowout prevention program for certain categories of wells.

A. Using Mud as the Drilling Fluid

(1) Wells in geothermal resources areas known to contain geothermal fluids at a temperature greater than 212° F. at depths less than 2,000 feet, and geothermal exploratory wells in areas where subsurface temperatures and pressures are unknown and the proposed depth of the well is less than 2,000 feet.

Requirements: API Class 2M-A or 2M-RR

(a) An annular BOPE and a spool, fitted with a low-pressure safety pop-off and blow-down line, installed on the conductor pipe may be required for wells in the above categories to ensure against possible gas blowouts during the drilling of the surface casing hole.

(b) 2,000 Annular BOPE or pipe-ram/blind-ram BOPE with minimum working-pressure ratings of 1,000 psi shall be installed on the surface casing so that the well can be shut-in at any time.

(c) Hydraulic actuating system.

(d) Kelly cock.

(e) A fill-up line installed above the BOPE.

(f) A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary.

Clarify when?

(g) A blow-down line fitted with two valves installed below the BOPE. The blow-down line shall be directed in such a manner so as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(h) All lines and fittings shall be steel and have a minimum working-pressure rating of at least that of the BOPE.

(i) ~~The temperature of the return mud during the drilling of the surface casing hole shall be monitored continuously. Either a continuous temperature monitoring device shall be installed and maintained in working condition, or the temperature shall be read manually.~~ In either case, Return mud temperatures shall be entered into the log book after each joint of pipe is drilled down. See Rule 106(b).

(2) Wells in geothermal resources areas known to contain geothermal fluids at temperatures greater than 212° F. at depths more than 2,000 feet, and geothermal exploratory wells in areas where subsurface temperatures and pressures are unknown and the proposed depth of the well is more than 2,000 feet.

Requirements: API Class 2M-RSRA or Equivalent

(a) An annular BOPE and a spool, fitted with a low-pressure safety pop-off and blow-down line, installed on the conductor pipe may be required to ensure against possible gas blowouts during the drilling of the surface casing hole.

(b) Annular BOPE and pipe-ram/blind-ram BOPE with a minimum working-pressure rating of 2,000 psi shall be installed so that the well can be shut-in at any time. The double-ram preventer shall have a mechanical locking device.

(c) A hydraulic actuating system utilizing an accumulator of sufficient capacity and a high pressure auxiliary backup system. This total system shall be equipped with dual controls: one at the driller's station and one at least 50 feet away from the wellhead.

(d) Kelly cock and standpipe valve.

(e) A fill-up line installed above the BOPE.

(f) A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary.

(g) A blow-down line fitted with two valves installed below the BOPE. The blow-down line shall be directed in such a manner ~~so~~ as to permit containment of produced fluids and to minimize any safety hazard to personnel.

(h) All lines and fittings shall be steel and have a minimum working-pressure rating of at least that of the BOPE.

(1) ~~The temperature of the return mud during the drilling of the surface casing hole shall be monitored continuously. Either a continuous temperature monitoring device shall be installed and maintained in working condition, or the temperature shall be read manually. In either case,~~ Return mud temperatures shall be entered into the log book after each joint of pipe is drilled down. See Rule 106(b)

B. Using Air as the Drilling Fluid

(1) Wells in geothermal resources areas where it is known that dry steam exists at depth and/or formation pressures are less than hydrostatic.

Requirements: API Class 2M RSRdG (with Banjo Box)

(a) A rotating-head installed at the top of the BOPE stack.

(b) A pipe-ram/blind-ram BOPE, with a minimum working-pressure rating of 2,000 psi installed below the rotating-head so that the well can be shut-in at any time.

(c) A banjo-box steam diversion unit installed below the double-ram BOPE fitted with an approved muffler in good working condition.

(d) A blind-ram BOPE, with a minimum working-pressure rating of 2000 1,000 psi installed below the banjo-box so that the well can be shut-in while removing the rotating-head during bit changes.

(e) A gate valve, with a suitable minimum working-pressure rating installed below the blind-ram so that the well can be shut-in after the well has been completed, prior to removal of the BOPE stack.

(f) All ram-type BOPE shall have a hydraulic actuating system utilizing an accumulator of sufficient capacity and a high-pressure backup system.

(g) Dual control stations for hydraulic backup system: one at the driller's station and the other at least 50 feet away from the wellhead.

(h) Float and standpipe valves.

(i) A kill line installed below the BOPE, leading directly to the mud pumps and fitted with a valve through which cement could be pumped if necessary.

(j) All lines and fittings must be steel and have a minimum working-pressure rating of 1,000 psi. Note: If any portion of a well is drilled using mud, Class 2M BOPE shall be installed on the surface casing so that the well can be shut-in at any time.

RULE 603. AREAS WITH HISTORY OF BLOWOUTS

Notwithstanding any of the provisions of Rule 602 above, when drilling in any geothermal resources area which has a history of lost circulation and/or blowouts the operator shall equip the well with adequate blowout prevention equipment to contain such pressures as may have previously been encountered in the other well(s).

a minimum of 750 ~~psi~~ psi

RULE 604. TESTING OF BLOWOUT PREVENTION EQUIPMENT

Upon installation, ram-type blowout preventers, bag-type blowout preventers, valves, and manifolds shall be ~~tested to 100 percent of the rated working pressure and bag-type blowout preventers shall be~~ tested to ~~1000~~ psi pressure. Ram-type preventers shall be operated at least once every 24 hours and bag-type preventers closed on the drill pipe at least once each week.

Provision should possibly be made for exception to the daily and weekly test for BO preventers when drlg dry steam wells. Stages of wells not highly advanced. Rubbers dry out & take

I - RULES ON PROCEDURE

RULE 701. NECESSITY FOR HEARING

Except as provided in some general rule herein, before any rule, regulation or order, including revocation, changes, renewal or extension thereof shall be made by the Commission, a public hearing before the Commission or a legally appointed examiner shall be held at such time and place as may be prescribed by the Commission.

RULE 702. EMERGENCY ORDERS

Notwithstanding any other provision of these rules, in case an emergency is found to exist by the Commission, which, in its judgment, requires the making of a rule, regulation or order without a hearing having first been had or concluded, such emergency rule, regulation or order when made by the Commission shall have the same validity as if a hearing with respect to the same had been held before the Commission after due notice. Such emergency rule, regulation or order shall remain in force no longer than 15 days from its effective date, and in any event, it shall expire when the rule, regulation or order made after due notice and hearing with respect to the subject matter of such emergency rule, regulation or order becomes effective.

RULE 703. METHOD OF INITIATING A HEARING

The Commission upon its own motion, the Attorney General on behalf of the State, and any operator or producer, or any other person having a property interest may institute proceedings for a hearing. If the hearing is sought by the Commission it shall be on motion of the Commission and if by any other person it shall be by application. The application shall be in triplicate and shall state (1) the name of the applicant, (2) the name or general description of the common source or sources of supply or the area affected by the order sought, (3) briefly the general nature of the order, rule, or regulation sought, and (4) any other matter required by a particular rule or rules, or order of the Commission. The application shall be signed by the person seeking the hearing or by his attorney.

When conditions are such as to require verbal application to place a matter for hearing on a given docket, the Commission will accept such verbal application in order to meet publishing deadlines. However, if written application, filed in accordance with the procedures outlined above, has not been received by the Commission's Santa Fe office at least ten days before the date of the hearing, the case will be dismissed.

RULE 704. METHOD OF GIVING LEGAL NOTICE FOR HEARING

Notice of each hearing before the Commission and notice of each hearing before an Examiner shall be given by personal service on the person affected or by publication once in a newspaper of general circulation published at Santa Fe, New Mexico, and once in a newspaper of general circulation published in the county or each of the counties, if there be more than one, in which any geothermal resource or other property which may be affected shall be situated.

RULE 705. CONTENTS OF NOTICE OF HEARING

Such notice shall be issued in the name of "The State of New Mexico" and shall be signed by two members of the Commission or by the Secretary of the Commission, and the seal of the Commission shall be impressed thereon.

The notice shall specify whether the case is set for hearing before the Commission or before an Examiner and shall state the number and style of the case and the time and place of hearing and shall briefly state the general nature of the order or orders, rule or rules, regulation or regulations to be promulgated or effected. The notice shall also state the name of the petitioner or applicant, if any, and unless the contemplated order, rule or regulation is intended to apply to and affect the entire state it shall specify or generally describe the common source or sources of supply which may be affected by such order, rule or regulation.

RULE 706. PERSONAL SERVICE OF NOTICE

Personal service of the notice of hearing may be made by any agent of the Commission or by any person over the age of 18 years in the same manner as is provided by law for the service of summons in civil actions in the district courts of this state. Such service shall be complete at the time of such personal service or on the date of publication, as the case may be. Proof of service shall be by the affidavit of the person making personal service or of the publisher of the newspaper in which publication is had. Service of the notice shall be made at least 10 days before the hearing.

RULE 707. PREPARATION OF NOTICES

After a motion or application is filed with the Commission the notice or notices required shall be prepared by the Commission and service and publication thereof shall be taken care of by the Commission without cost to the applicant.

RULE 708. FILING PLEADINGS: COPY DELIVERED TO ADVERSE PARTY OR PARTIES

When any party to a hearing files any pleading, plea or motion of any character (other than application for hearing) which is not by law or by these rules required to be served upon the adverse party or parties, he shall at the same time either deliver or mail to the adverse party or parties who have entered their appearance therein, or their respective attorneys of record, a copy of such pleading, plea or motion. For the purposes of these rules, an appearance of any interested party shall be made either by letter addressed to the Commission, or in person at any proceeding before the Commission or before an Examiner, with notice of such appearance to the parties from whom such pleadings, pleas, or motions are desired.

RULE 709. CONTINUANCE OF HEARING WITHOUT NEW SERVICE

Any hearing before the Commission or an Examiner held after due notice may be continued by the person presiding at such hearing to a specified time and place without the necessity of notice of the same being again served or published. In the event of any continuance, a statement thereof shall be made in the record of the hearing which is continued.

RULE 710. CONDUCT OF HEARINGS

Hearings before the Commission or any Examiner shall be conducted without rigid formality. A transcript of testimony shall be taken and preserved as a part of the permanent record of the Commission. Any person testifying in response to a subpoena issued by the Commission and any person seeking to testify in support of an application or motion or in opposition thereto shall be required to do so under oath. However, relevant unsworn comments and observations by any interested party will be designated as such and included in the record. Comments and observations by representatives of operators' committees, the United States Geological Survey, the United States Bureau of Mines, the New Mexico Bureau of Mines and other competent persons are welcomed.

State Engineer

Any Examiner legally appointed by the Commission may conduct such hearings as may be referred to such Examiner by the Commission or the Secretary thereof.

RULE 711. POWER OF COMMISSION TO REQUIRE ATTENDANCE OF WITNESSES AND PRODUCTION OF EVIDENCE

The Commission or any member thereof has statutory power to subpoena witnesses and to require the production of books, papers and records in any proceeding before the Commission. A subpoena will be issued by the Commission for attendance at a hearing upon the written request of any person interested in the subject matter of the hearing. In case of the failure of a person to comply with the subpoena issued by the Commission, an attachment of the person may be issued by the district court of any district in the state, and such court has powers to punish for contempt. Any person found guilty of swearing falsely at any hearing may be punished for contempt.

RULE 712. RULES OF EVIDENCE

Full opportunity shall be afforded all interested parties at a hearing to present evidence and to cross-examine witnesses. In general, the rules of evidence applicable in a trial before a court without a jury shall be applicable, provided that such rules may be relaxed, where, by so doing, the ends of justice will be better served. No order shall be made which is not supported by competent legal evidence.

RULE 713. EXAMINERS' QUALIFICATIONS AND APPOINTMENT

The Commission shall by ex parte order, designate and appoint not more than four individuals to be examiners. Each Examiner so appointed shall be a member of the staff of the Commission, but no Examiner need be a full time employee of the Commission. The Commission may, by ex parte order, designate and appoint a successor to any person whose status as an Examiner is terminated for any reason. Each individual designated and appointed as an Examiner must have at least six years practical experience as a geologist, petroleum engineer or licensed lawyer, or at least two years of such experience and a college degree in geology, engineering, or law; provided however, that nothing herein contained shall prevent any member of the Commission from being designated as, or serving as, an Examiner.

RULE 714. REFERRAL OF CASES TO EXAMINERS

Either the Commission or the Secretary thereof may refer any matter or proceeding to any legally designated and appointed Examiner for hearing in accordance with these rules. The Examiner appointed to hear any specific case shall be designated by name.

RULE 715. EXAMINER'S POWER AND AUTHORITY

The Commission may, by ex parte order, limit the powers and duties of the Examiner in any particular case to such issues or to the performance of such acts as the Commission deems expedient; however, subject only to such limitations as may be ordered by the Commission, the Examiner to whom any matter or proceeding is referred under these rules shall have full authority to hold hearings on such matter or proceeding in accordance with and pursuant to these rules. The Examiner shall have the power to regulate all proceedings before him and to perform all acts and take all measures necessary or proper for the efficient and orderly conduct of such hearing, including the swearing of witnesses, receiving of testimony and exhibits offered in evidence, subject to such objections as may be imposed, and shall cause a complete record of the proceedings to be made and transcribed and shall certify same to the Commission as hereinafter provided.

RULE 716. HEARINGS WHICH MUST BE HELD BEFORE COMMISSION

Notwithstanding any other provisions of these rules, the hearing on any matter shall be held before the Commission (1) if it is a hearing de novo, or (2) if the Commission in its discretion desires to hear the matter.

RULE 717. EXAMINER'S MANNER OF CONDUCTING HEARING

An Examiner conducting a hearing under these rules shall conduct himself as a disinterested umpire.

RULE 718. REPORT AND RECOMMENDATIONS, RE EXAMINER'S HEARINGS

Upon the conclusion of any hearing before an Examiner, the Examiner shall promptly consider the proceedings in such hearing, and based upon the record of such hearing the Examiner shall prepare his written report and recommendations for the disposition of the matter of proceeding by the Commission. Such report and recommendations shall either be accompanied by a proposed order

or shall be in the form of a proposed order, and shall be submitted to the Commission with the certified record of the hearing.

RULE 719. DISPOSITION OF CASES HEARD BY EXAMINERS

After receipt of the report and recommendations of the Examiner, the Commission shall either enter its order disposing of the matter or proceeding, or refer such matter or proceeding to the Examiner for further hearing.

RULE 720. DE NOVO HEARING BEFORE COMMISSION

When any order has been entered by the Commission pursuant to any hearing held by an Examiner, any party adversely affected by such order shall have the right to have such matter or proceeding heard de novo before the Commission, provided that within 30 days from the date such order is rendered such party files with the Commission a written application for such hearing before the Commission. If such application is filed, the matter or proceeding shall be set for hearing before the Commission at the next regular hearing date following the expiration of fifteen days from the date such application is filed with the Commission. Any person affected by the order or decision rendered by the Commission after hearing before the Commission may apply for rehearing pursuant to and in accordance with the provisions of Rule 722, and said Rule 722 together with the law applicable to rehearings and appeals in matters and proceedings before the Commission shall thereafter apply to such matter or proceeding.

RULE 721. NOTICE OF COMMISSION'S ORDERS

Within ten days after any order, including any order granting or refusing rehearing, or order following rehearing, has been rendered by the Commission, a copy of such order shall be mailed by the Commission to each person or his attorney of record who has entered his appearance of record in the matter of proceeding pursuant to which such order is rendered.

RULE 722. REHEARINGS

Within 20 days after entry of any order or decision of the Commission any person affected thereby may file with the Commission an application for rehearing in respect of any matter determined by such order or decision, setting forth the respect in which such order or decision is believed to be erroneous. The

Commission shall grant or refuse any such application in whole or in part within 10 days after the same is filed and failure to act thereon within such period shall be deemed a refusal thereof and a final disposition of such application. In the event the rehearing is granted, the Commission may enter such new order or decision after rehearing as may be required under the circumstances.

RULE 723. CHANGES IN FORMS AND REPORTS

Any change in the forms and reports or rules relating to such forms and reports shall be made only by order of the Commission issued after due notice and hearing.

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NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

Form G-101

APPLICATION FOR PERMIT TO DRILL, DEEPEN, OR PLUG BACK---GEOTHERMAL RESOURCES WELL

5A. Indicate Type of Lease STATE [ ] FEE [ ]

5. State Lease No.

1a. Type of Work: Drill [ ] Deepen [ ] Plug Back [ ]

b. Type of Well: Geothermal Producer [ ] Temp Observation [ ] Low-Temp Thermal [ ] Injection/Disposal [ ]

7. Unit Agreement Name

8. Farm or Lease Name

2. Name of Operator

9. Well No.

3. Address of Operator

10. Field and Pool, or Wildcat

4. Location of Well UNIT LETTER _____ LOCATED _____ FEET FROM THE _____ LINE AND _____ FEET FROM THE _____ LINE OF SEC. _____ TWP. _____ RGE. _____ NMPM

12. County

19. Proposed Depth | 19A. Formation | 20. Rotary or C.T.

21. Elevations (Show whether DF, RT, etc.) | 21A. Kind & Status Plug. Bond | 21B. Drilling Contractor | 22. Approx. Date Work will start

23.

PROPOSED CASING AND CEMENT PROGRAM

SIZE OF HOLE	SIZE OF CASING	WEIGHT PER FOOT	SETTING DEPTH	SACKS OF CEMENT	EST. TOP

IN ABOVE SPACE DESCRIBE PROPOSED PROGRAM: IF PROPOSAL IS TO DEEPEN OR PLUG BACK, GIVE DATA ON PRESENT PRODUCTIVE ZONE AND PROPOSED NEW PRODUCTIVE ZONE. GIVE BLOWOUT PREVENTER PROGRAM, IF ANY.

I hereby certify that the information above is true and complete to the best of my knowledge and belief.

Signed _____ *Title* _____ *Date* _____

(This space for State Use)

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

NEW MEXICO OIL CONSERVATION COMMISSION — Form G-102

GEOTHERMAL RESOURCES WELL LOCATION AND ACREAGE DEDICATION PLAT

All distances must be from the outer boundaries of the Section.

Operator	Lease	Well No.

Unit Letter	Section	Township	Range	County

Actual Footage Location of Well:
feet from the line and feet from the line

Ground Level Elev.	Producing Formation	Pool	Dedicated Acreage:
			Acres

1. Outline the acreage dedicated to the subject well by colored pencil or hachure marks on the plat below.

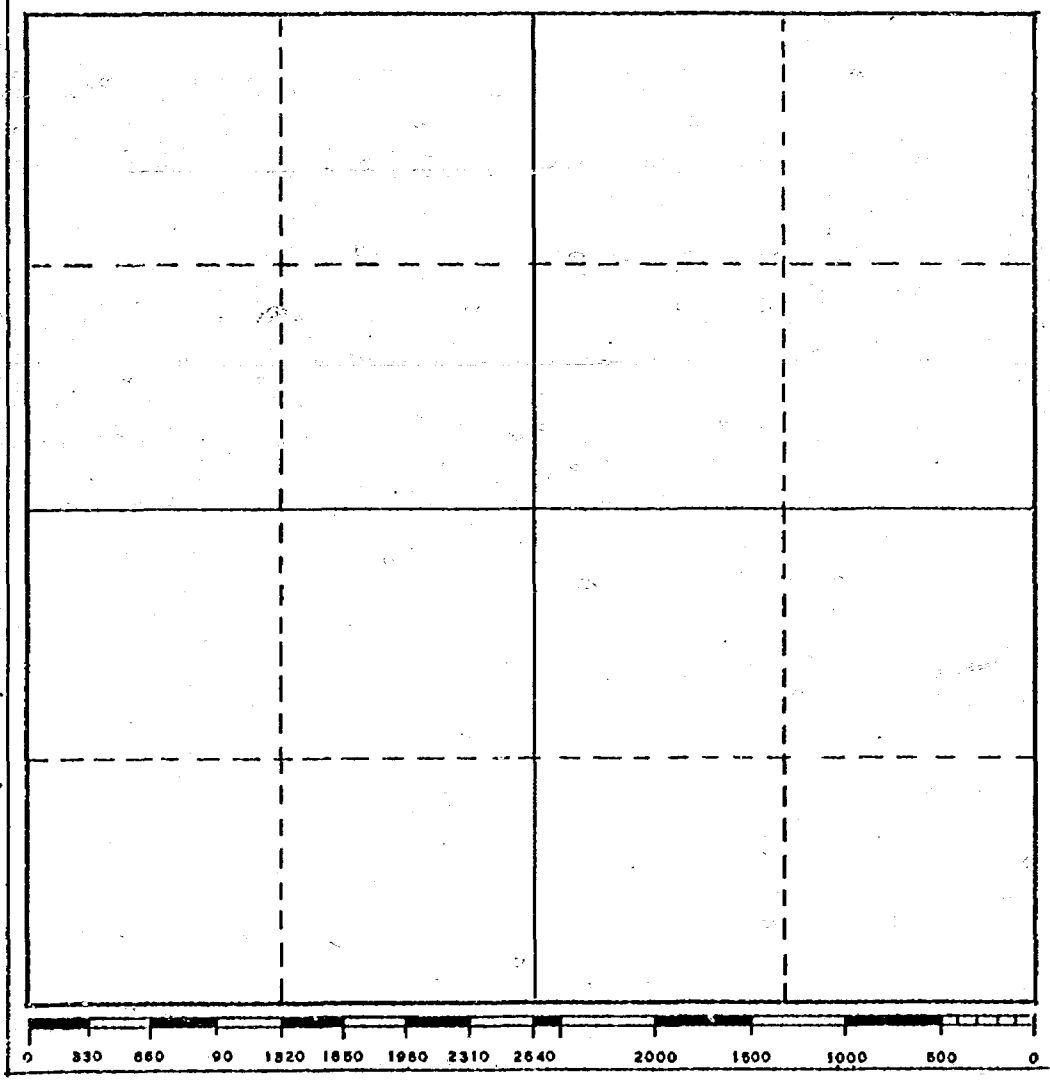
2. If more than one lease is dedicated to the well, outline each and identify the ownership thereof (both as to working interest and royalty).

3. If more than one lease of different ownership is dedicated to the well, have the interests of all owners been consolidated by communitization, unitization, force-pooling. etc?

☐ Yes ☐ No If answer is "yes," type of consolidation _____

If answer is "no," list the owners and tract descriptions which have actually been consolidated. (Use reverse side of this form if necessary.) _____

No allowable will be assigned to the well until all interests have been consolidated (by communitization, unitization, forced-pooling, or otherwise) or until a non-standard unit, eliminating such interests, has been approved by the Commission.



CERTIFICATION

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief.

Name

Position

Company

Date

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my knowledge and belief.

Date Surveyed

Registered Professional Engineer and/or Land Surveyor

Certificate No.

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NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

SUNDRY NOTICES AND REPORTS
ON
GEOTHERMAL RESOURCES WELLS

Form G-103

5a. Indicate Type of Lease
State ☐ Fee ☐

5. State Lease No.

(DO NOT USE THIS FORM FOR PROPOSALS TO DRILL OR TO DEEPEN OR PLUG BACK TO A DIFFERENT RESERVOIR. USE "APPLICATION FOR PERMIT —" (FORM G-101) FOR SUCH PROPOSALS.)

1. OIL WELL ☐ GAS WELL ☐ OTHER-

7. Unit Agreement Name

2. Name of Operator

8. Farm or Lease Name

3. Address of Operator

9. Well No.

4. Location of Well
UNIT LETTER _____, _____ FEET FROM THE _____ LINE AND _____ FEET FROM THE _____ LINE, SECTION _____ TOWNSHIP _____ RANGE _____ NMPM.

10. Field and Pool, or Wildcat

15. Elevation *(Show whether DF, RT, GR, etc.)*

12. County

16.

Check Appropriate Box To Indicate Nature of Notice, Report or Other Data

NOTICE OF INTENTION TO:		SUBSEQUENT REPORT OF:	
PERFORM REMEDIAL WORK ☐	PLUG AND ABANDON ☐	REMEDIAL WORK ☐	ALTERING CASING ☐
TEMPORARILY ABANDON ☐		COMMENCE DRILLING OPNS. ☐	PLUG AND ABANDONMENT ☐
PULL OR ALTER CASING ☐	CHANGE PLANS ☐	CASING TEST AND CEMENT JOB ☐	
OTHER _____ ☐		OTHER _____ ☐	

17. Describe Proposed or Completed Operations *(Clearly state all pertinent details, and give pertinent dates, including estimated date of starting any proposed work)* SEE RULE ~~1103~~ 203.

18. I hereby certify that the information above is true and complete to the best of my knowledge and belief.

SIGNED _____ TITLE _____ DATE _____

APPROVED BY _____ TITLE _____ DATE _____

CONDITIONS OF APPROVAL, IF ANY:

Form G-104

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

CERTIFICATE OF COMPLIANCE AND AUTHORIZATION TO PRODUCE GEOTHERMAL RESOURCES

OWNER OR OPERATOR
Name _____
Address _____

REASON FOR FILING
New well [ ] Recompletion [ ]
Change in Ownership [ ] Designation of Purchaser [ ]
Other (Please Explain) [ ] _____

DESCRIPTION OF WELL
Lease Name _____ Well No. _____ Name of Reservoir _____
Kind of Lease (Fee, Fed. or State) Lease No.

LOCATION
Unit Letter _____; _____ feet from the _____ line and _____ feet from the _____ line of
Section _____ Township _____ Range _____
County _____

TYPE OF PRODUCT
Dry Steam _____ Steam and Water _____ Low Temp Thermal Water _____

DESIGNATION OF PURCHASER OF PRODUCT
Name of Purchaser _____
Address of Purchaser _____
Product Will Be Used For _____

CERTIFICATE OF COMPLIANCE

I hereby certify that all rules and regulations concerning geothermal resources wells in the State of New Mexico, as promulgated by the Oil Conservation Commission of New Mexico, have been complied with, with respect to the subject well, and that the information given above is true and complete to the best of my knowledge and belief.

Signed _____ Position _____ Date _____

Approved _____ Position _____ Date _____

Form G-105

NEW MEXICO OIL CONSERVATION COMMISSION
P.O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL LOG

Operator _____

Address _____

Reservoir _____

Lease Name _____ Well No. _____ Unit Letter ___

Location: _____ feet from the _____ line and _____ feet from the _____ line Section _____

Township _____ Range _____ County _____

FORMATIONS PENETRATED BY WELL

DEPTH TO		Thickness	Drilled or Cored	Recovery	DESCRIPTION
Top of Formation	Bottom of Formation				

Attach Additional Sheets if Necessary

This form must be accompanied by copies of electric logs, deviation and directional surveys, physical or chemical logs, water analyses, tests, including potential tests, and temperature surveys (See Rule 205).

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position _____ Date _____

Form G-106

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL SUMMARY REPORT

Operator _____ Address _____
Lease Name _____ Well No. _____
Unit Letter _____ Sec. _____ Twp. _____ Rge _____
Reservoir _____ County _____

Commenced drilling _____ GEOLOGICAL MARKERS DEPTH
Completed drilling _____
Total depth _____ Plugged depth _____
Junk _____
_____
Commenced producing _____ (Date) Geologic age at total depth: _____

Date	Static test Shut-in well head		Production Test Data								
			Total Mass Flow Data					Separator Data			
	Temp.°F	Pres. Psig	Lbs/Hr	Temp.°F	Pres. Psig.	Enthalpy	Orifice	Water cuft/Hr	Steam Lbs/Hr	Pres. Psig.	Temp.°F
			✓	✓	✓						

CASING RECORD (Present Hole)

Size of Casing (A. P. I.)	Depth of Shoe	Top of Casing	Weight of Casing	New or Second Hand	Seamless or Lapweld	Grade of Casing	Size of Hole Drilled	Number of Sacks of Cement	Depth of Cementing if through perforation

PERFORATED CASING
(Size, top, bottom, perforated intervals, size and spacing of perforation and method.)

Was analysis of effluent made? _____ Electrical log depths _____ _____ Temperature log depths _____ _____

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position _____ Date _____

Form G-107

NEW MEXICO OIL CONSERVATION COMMISSION
P. O. Box 2088, Santa Fe 87501

GEOTHERMAL RESOURCES WELL HISTORY

Operator _____ Address _____
Lease Name _____ Well No. _____
Unit Letter _____ Sec. _____ Twp. _____ Rge _____
Reservoir _____ County _____

It is of the greatest importance to have a complete history of the well. Use this form to report a full account of all important operations during the drilling and testing of the well or during re-drilling, altering of casing, plugging, or abandonment with the dates thereof. Be sure to include such items as hole size, formation test details, amounts of cement used, top and bottom of plugs, perforation details, sidetracked junk, bailing tests, shooting and initial production data and zone temperature.

Date	

CERTIFICATION

I hereby certify that the information given above and the data and material attached hereto are true and complete to the best of my knowledge and belief.

Signed _____ Position _____ Date _____

GEOTHERMAL RULES ADDRESS LIST

Gerald Kitchen
Amax Exploration Inc.
4704 Harlan St.
Denver, Colorado 80212

Carroll L. Jones
Amoco Production Co.
Security Life Bldg.
Denver, Colorado 80202

L. H. Axtell
2624 Angell Avenue
San Diego, California 92122

Battelle Northwest
P. O. Box 999
Richland, Washington 99352

Jerry Moritz
BTA Oil Producers
104 S. Pecos
Midland, Texas 79701

Mr. D. R. Butler
Chevron Oil Co.
225 Bush St.
San Francisco, Ca 94104

Ronald C. Barr
Earth Power Corp.
P. O. Box 1566
Tulsa, Oklahoma 74101

Roy D. Lyman, Jr.
Exxon Company USA
P. O. Box 120
Denver, Colorado 80201

Dow Chemical Co.
2800 Mitchell Dr.
Walnut Creek, Ca 94598

Attn: J. Roger Lochhead

Phillip Scott
Gulf Energy & Minerals
1780 South Bellaire St.
Denver, Colorado 80222

Geothermal Kinetics Systems Corp.
301 West Indian School Road
Phoenix, Arizona 85013

Getty Oil Co.
P. O. Box 5237
Bakersfield, Ca 93308

Geothermal Resources Int'l
4676 Admiralty Way
Suite 503
Marina del Rey, Ca 90291

University of Hawaii at Monoa
Hawaii Geothermal Project
College of Engineering
Holmes Hall, 240 2540 Dale St.
Honolulu, Hawaii 96822

Robert M. Kamins
University of Hawaii
Hawaii Geothermal Project
252 B Spalding Hall
2540 Maile Way
Honolulu, Hawaii 96822

Lawrence Livermore Laboratory
Environmental International Group
L-47
P. O. Box 808
Livermore, Ca 94550

Attn: Mr. J. J. Cohen

Dr. Morton Smith
Dept. Q-22
Los Alamos Scientific Labs
P. O. Box 1663
Los Alamos, New Mexico 87544

Joseph W. Aidlin
Magma Energy, Inc.
631 South Witmer St.
Los Angeles, Ca 90017

Pacific Energy Corporation
Wells Fargo Bldg.
44 Montgomery St.
San Francisco, Ca 94104

Attn: Mr. T. J. Neville

Republic Geothermal, Inc.
P. O. Box 0982
Santa Rosa, Ca 95405

Bill House
Signal Oil & Gas Co.
P. O. Box 2828
Long Beach, Ca 90801

Shell Oil Co.
1008 West 6th Street
Los Angeles, Ca 90017

GEOTHERMAL RESOURCES ADDRESS LIST, CON'd

OCC DISTRICT OFFICES

JOHN WRIGHT
WATER QUALITY CONTROL COMM.
HEALTH & SOCIAL SERVICES
PERA BUILDING

ATTORNEY GENERAL
SUPREME COURT BUILDING

AARON L. BOND
ENVIRONMENTAL IMPROVEMENT AGENCY
PERA BUILDING

STEVE REYNOLDS
STATE ENGINEER
BATAAN MEMORIAL BUILDING

GEOTHERMAL RESOURCES
518 Denver Center Building
1776 Lincoln St.
Denver, Colorado 80203

Mr. Jack F. Grimm
P. O. Box 35
Abilene, Texas 79604

Calvert Geothermal Resources, Inc.
2300 Fourth National Bank Bldg.
Tulsa, Oklahoma 74119

Thermal Exploration Company
785 Market Street, Rm. 1304
San Francisco, California 94103

Leland A. Hodges, Trustee
P. O. Box 1718
Fort Worth, Texas 76101

Jason Kellahin, Esq.
Kellahin & Fox
P. O. Box 1769
Santa Fe, New Mexico 87501

Mr. R. E. Huber
1560 Colorado State Bank Bldg.
Denver, Colorado 80202

Sumner Buell, Esq.
Montgomery, Andrews, Hannahs & Buell
350 E. Palace Avenue
Santa Fe, New Mexico 87501

Anadarko Production Company
P. O. Box 9317
Fort Worth, Texas 76107

Anschutz Corporation
1110 Denver Club Building
Denver, Colorado 80202

Alan J. Antweil
P. O. Box 2010
Hobbs, New Mexico 88240

Chevron Oil Company
P. O. Box 599
Dnvr, Colorado 80201

Attention: W. A. Burton

Hunt Oil Company
1401 Elm Street
Dallas, Texas 75202

Livingston Internatioanl, Inc.
P. O. Box 2848
Tulsa, Oklahoma 74101

Phillips Petroleum Company
P. O. Box 752
Del Mar, California 92014

Sun Oil Company
12850 Hillcrest Road
Dallas, Texas 75230

Thermal Resources, Inc.
39 Broadway, 31st Floor
New York, New York 10006

Union Oil Company of California
P. O. Box 7600
Los Angeles, California 90051

Attention: Mr. Carl Ott

Jack K. Letts
Thermex Company
1560 Colorado State Bank
Building
Denver, Colorado 80202

Mr. N. O. Fredericks
U. S. Geological Survey
P. O. Box 1857
Roswell, New Mexico 88201

U. S. Geological Survey
Conservation Division
345 Middlefield Road
Menlo Park, Ca 94025

Western Goethermal, Inc.
601 California St.
22nd Floor
San Francisco, Ca 94108

Union Oil Company of Calif.
1100 Coddingtown Ctr.
Suite A
Santa Rosa, Ca 95401

Attn: Mr. Vane Suter

Shell Oil Company
P. O. Box 831
Houston, Texas 77001

Attn: R. L. Freeman

Mr. Frank Kottlowski
Director
New Mexico Bureau of Mines
Campus Station
Socorro, New Mexico

Mr. Dave Rainey
El Paso Natural Gas Co.
P. O. Box 1492
El Paso, Texas

Mr. Peter Hannagan
Oil & Gas Association
P. O. Box 1864
Santa Fe, New Mexico 87501

State Geothermal Leases (as of 4/29/74)

✓ 2. Geothermal Resources (Exxon Hartley)
518 Denver Center Bldg.
1776 Lincoln St.
Denver, Colorado 80203

✓ Jack F. Grimm
P.O. Box 35
Abilene, Texas 79604

✓ Calvert Geothermal Resources, Inc.
2300 Fourth National Bank Bldg.
Tulsa, Oklahoma 74119

✓ Phenal Exploration Company (Dan C. McMillan)
785 Market Street, Rm. 1304
San Francisco, California 94103

Cecil J. Folmar, M.D.
202 Hospital Circle, Suite B-7
Westminister, California 92683

✓ Leland R. Hodges, Trustee
PO Box 1718
Fort Worth, Texas 76101

✓ James Kellahin - Box 1769

✓ Sumner Buell

Federal filings for Geothermal Leases

(x = [illegible])

✓ Anadarko Production Company
PO Box 9317
Fort Worth, Texas 76107

✓ Anschutz Corporation
1110 Denver Club Bldg.
Denver, Colorado 80202

✓ Alan J. Antweil (and Mary F.)
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Hobbs, New Mexico 88240

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x Calvert Geothermal Resources, Inc.
2300 Fourth National Bank Bldg.
Tulsa, Oklahoma 74119

✓ Chevron Oil Company
PO Box 599
Denver, Colorado 80201 Attn: W.A. Burton

✓ Earth Power Company
1550 Bay Street #137
San Francisco, California 94123

x Jack F. Grimm
PO Box 35
Abilene, Texas, 79604

x Leland A. Hodges, Trustee
PO Box 1718
Fort Worth, Texas 76101

✓ Hunt Oil Company (also other Hunts, Sanders, Jordan, Pittman, etc.)
1401 Elm Street
Dallas, Texas 75202

✓ Livingston International, Inc.
PO Box 2848
Tulsa, Oklahoma 74101

✓ Phillips Petroleum Company
PO Box 752
Del Mar, California 92014

Gary W. Seltzer, M.D.
841 W. Valley Blvd.
Alhambra, California 91803

[redacted]

✓ Sun Oil Company
12850 Hillcrest Road
Dallas, Texas 75230

✓ Thermal Resources, Inc.
39 Broadway, 31st Floor
New York, N.Y., 10006

✓ Union Oil Company of California
PO Box 7600
Los Angeles, California 90051
attn: Mr. Carl Ott (OTT)

✓ Mr. R.E. Huber
1560 Colo. St. Bk. Bldg
Denver, Colo. 80202

wants copy of Proposed Geothermal Regulations as soon as possible - preferably before June 11th hearing.