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.
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State Land Office Building
Santa Fe, New Mexico

For Union Oil Company: Sumner Buell, Esq.
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I N D E X

E X H I B I T S

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 drilling 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 well-head.

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 those 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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