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Geothermal Sales Contracts

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Mr. Snyder considers the components of a contract for the sale of geothermal resources to a party which intends to use the resource for the generation of electricity. Because the problems posed to the purchaser of geothermal resources for the generation of electricity are no different than the problems such a purchaser faces in buying electricity generated by other means, the author emphasizes the problems faced by the producer of the geothermal resources.

GEOTHERMAL SALES CONTRACTS†

*Sam A. Snyder**

I. GENERAL BACKGROUND

Almost two decades have elapsed since Magma Power Company and Thermal Power Company entered into a contract to sell geothermal steam to Pacific Gas and Electric Company for the purpose of converting the geothermal energy into electricity. That contract, to my knowledge, was the first such agreement in the United States. I do not want to leave the impression that the Magma-Thermal-Pacific Gas and Electric contract was the first contract for the sale of steam or for the utilization of geothermal resources. There were contracts for steam supplies dating well back in the last century, albeit, such steam was manufactured.

A perusal of the legal literature, including that venerable encyclopedia, *Corpus Juris*,[1] reveals that such contracts were the subject of litigation, and a study of the cases is useful,

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1. 60 C.J. *Steam* §§ 1 *et seq.* (1932). Essentially, all of the legal encyclopedias contain the same or a similar heading. A perusal of the sections and an examination of the cited material reveals that statutes, ordinances and regulations relating to the sale of steam have been on the books in various jurisdictions for decades. These statutes, ordinances and regulations were not enacted for the purpose of regulating the sale of naturally occurring steam. Some of them may nevertheless be held to be applicable and an examination of such acts in the jurisdiction of any proposed sale of geothermal energy is not only advisable but mandatory.

even today, in anticipating the problems that can, and if one applies the omnipresent Murphy's Law, will develop. A very interesting case,[2] for example, arose as a result of the destruction of a steam generating plant in the City of San Francisco at the time of the famous San Francisco earthquake. In that case the parties had clearly ignored the possibility of plant destruction and the seller rued the day that it and its counsel did not anticipate plant destruction.

While these cases and the contracts discussed therein are useful, they really do not cover all and sundry the problems that are encountered today in entering into a long-term contract for the sale of geothermal energy for the purpose of converting such energy into electricity. You will note that I have again stressed the point of a sale for the specified purpose of generating electricity. Geothermal energy can, has been and doubtlessly will be utilized for other purposes; for example space heating, direct processing and agriculture (greenhouses). In fact, the first utilization of the phenomena on a commercial basis occurred at Larderello, Italy, in 1812 when geothermal heat was utilized for the recovery of boric acid. Incidentally, Larderello was also the site of the first utilization of geothermal energy for the purpose of generating electric energy. This occurred one hundred and one years after the establishment of the boric acid recovery work and has grown from a simple beginning of 250 Kilowatts to a 390,000 Kilowatts (Kw) capacity.[3]

In the United States geothermal energy is used for space heating in and around Klamath Falls, Oregon, and there are numerous other proposals and projects for similar applications.[4] Geothermal energy is, after all, simply heat energy and one does not have to have a doctorate in physics, impanel a group of experts, conduct a Congressional investigation, divert public funds to a research project, or otherwise waste time, effort and money to know that heat dissipates and, therefore, must be utilized at or near the place it is found.

2. Law v. San Francisco Gas & Elec. Co., 168 Cal. 112, 142 P. 52 (1914). This case is one of many involving the sale of manufactured steam and is cited primarily because the litigation was a direct result of the San Francisco earthquake of 1906.
3. KRUGER & OTTE, GEOTHERMAL ENERGY 23 *et seq.* (1973). This work covers all the technical and operational aspects of the geothermal industry and is extremely useful as a bibliography on the subject.
4. KRUGER & OTTE, *supra* note 3, at 34.

The obvious conclusion, therefore, is that since the resource has not been found and probably will not be found in close proximity to the points where it is needed, the best thing to do is to convert it to another energy form, *viz:* electricity, at or near the point that the resource is found. The electricity can then be transported to points of need with minimal loss. I shall, therefore, limit the scope of this paper to those things that should be considered by a producer of geothermal energy when such producer is selling the resource to another party for the purpose of utilizing the same in the generation of electricity. The problems that the purchaser will have in buying the electricity are no different than the problems such purchaser will have in buying electricity generated by other means. Because the seller of electricity is almost universally regulated as a public utility, the problems a producer could have if it opted to utilize the geothermal energy for the generation of electricity and sold the electricity are self-evident, I will not further discuss such problems.

The legal nature of geothermal energy is, as you know, unsettled at this time and such state will doubtlessly continue well into the future.[5] Others have discussed this problem and I shall eschew the temptation to delve into it and give my opinions thereon. The unsettled nature does present a problem for the producer-seller in negotiating a contract for the sale of the resource. As is always the case, the purchaser demands a warranty of the thing being sold. Such warranty is a problem unless the producer-seller has rights to the resource from all possible claimants. For the purpose of further discussion herein, it is assumed that such is the case.

II. THE FIRST CONTRACT

When my client, Union Oil Company of California, first instructed me to work on the problem of selling geothermal steam from its properties in Northern California, I was in somewhat of a quandry as to where to look for guidance. I was certain that the resource did not lend itself to being sold

5. The problem of the legal nature of the resource is highlighted by and well-discussed in United States v. Union Oil Co., 369 F. Supp. 1289 (N.D. Cal. 1973) *rev'd*, 549 F.2d 1271 (9th Cir. 1977). This case is presently on appeal to the Ninth Circuit. The cited case and related cases involving a reservation of minerals by the State of California and in a private conveyance are discussed by others at this institute.

under the same forms of contracts that we used for the sale of crude oil, refined products, natural gas and other hydrocarbon substances, although analogy to long-term gas sales contracts would certainly be the closest since the substance that was to be sold was gas.[6] It was, therefore, necessary to go back to the Magma-Thermal-Pacific Gas and Electric contract mentioned in my opening remarks. That contract, all things considered, can only be classified as a masterpiece, especially when one remembers that this was the pioneer endeavor. Could it be that the apex of geothermal sales contracts was reached at the inception, much like the apex of the art of printing occurred with the incunabula? This is something for historians to ponder, for we must certainly admit that compared to today, or even to 1970, 1958 could be called halcyon times. At that time one could do many things freely that today would require a myriad of permits, to say nothing of environmental impact statements, negative declarations, etc. etc.

The original Magma-Thermal-Pacific Gas and Electric contract covered a total of thirteen pages of eight and one-half inch by eleven inch paper, doubled spaced, with most of the thirteenth page being taken up by signatures. It did the job admirably, and a brief discussion of its contents is in order, not only because of its historic importance but because it can still serve as a guideline to most of the matters that need to be covered in a contract for the sale of geothermal resources. After the recitals and before the conclusion the contract contained sixteen number sections, as follows:

(1) Location of Lands
(2) Land Rights and Taxes
(3) First Unit
(4) Operation of First Unit
(5) Second Unit
(6) Payment for Steam for First Two Units
(7) Additional Units
(8) Payment for Steam for Additional Units

6. The substance produced at the Geysers was held to be "gas" for purposes of depletion under the Federal Income Tax Laws by the Tax Court, Arthur E. Reich, 52 T.C. 700 (1969), *aff'd*, Reich v. Commissioner, 454 F.2d 1157, (9th Cir. 1972).

(9) Payments — General

(10) First Party's Failure to Provide Steam

(11) Lesser Steam Pressures

(12) Sale of Steam to Others

(13) Force Majeure

(14) Conditions Precedent; Term of Agreement

(15) Termination

(16) Assignment

I will discuss the numbered sections seriatum:

(1) This clause consists of a reference to the producer's lands and a statement that Magma-Thermal would develop the land and sell exclusively to the Second Party (Pacific Gas and Electric) geothermal steam produced from the lands with a proviso that the contract would also cover contiguous property subsequently acquired by First Party (Magma-Thermal);

(2) This clause provides for the plant site, the payment of ad valorem taxes and contained a simple warranty wherein First Party represents that it believes in good faith with certain exceptions that it holds the necessary rights, etc.;

(3) This clause sets out the undertaking by Pacific Gas and Electric to construct a 12,500 kw condensing turbine generator unit for the utilization of geothermal steam;

(4) This clause provides for the drilling of the necessary wells, specifies the delivery pressure and the quality of the steam, *i.e.*, "steam shall be as free from moisture and particulate matter that could cause excessive wear or erosion of said unit as can be accomplished with the best commercially available equipment insofar as economically practical . . . ." Pacific Gas and Electric is also granted the right to test the wells;

(5) This clause provides for the time of the installation of the second unit;

(6) This clause covers payment for the steam. I shall refrain at this point and hereafter from discussing price, except to note that the price received by these pioneer producers could only be classified as exiguous;

(7) and (8) These clauses refer to the additional units and include a provision for determining the price to be paid for the steam for the additional units. Such price to be determined by formula, a component of which was Pacific Gas and Electric's fossil fuel costs for all of its steam electric power plants, escalated over a 1958 base. This particular provision has resulted in a brouhaha by many energy industry opponents who feel that it is anticompetitive and is somehow a nefarious scheme perpetrated by that great hobgoblin, "the oil industry", for the sole purpose of *not* developing geothermal energy so it, the hobgoblin, could continue to "rip off the consumers" by selling them high priced oil. I just do not understand either the basic premise or the conclusion of all of this, but it does exist. I assume that these detractors, while well motivated, just do not understand basic economics—that all other things being equal, a consumer is not going to pay more for an unknown substitute than he is currently paying for a known product. This basic principle was exemplified at the very dawn of the industrial age when the rate at which James Watt and his associates were paid for the first commercial steam engine was computed on the number of horses replaced by the steam engine.[7] The proponents of the anticompetitive theory failed to consider the fact that the clause was developed by parties that are in no sense of the word a part of "the oil industry";

(9) This clause provided:

(a) That if there is insufficient steam to operate the unit at or above fifty percent of its capac-

7. Fetterley, *Two Bicentennials, Two Revolutions*, 62 A.B.A.J. 311 (1976).

ity, no payment shall be required for the steam utilized during such period; and

(b) That the payments are inclusive of all applicable taxes.

Clause (9) again exemplifies the fact that the producer took most of the risk;

(10) This clause permits the purchaser to develop and produce the resource if the seller fails to do so. The purchaser is to accumulate the costs on the basis of the purchaser's accounting practices, together with interest, at a specified rate. It further provides that such costs may be deducted from future payments to seller;

(11) This clause provides for negotiations by the parties in the event the steam pressure drops below a specified amount;

(12) This clause permits sale of steam to others under certain specified conditions with the purchaser having the right to meet any other offer;

(13) This clause, as its name implies, excuses performance in the event of force majeure;

(14) This clause specifies only two conditions precedent, *viz*:

(a) Seller's obtaining an order satisfactory to it from the California Public Utilities Commission granting the necessary authority and certificates of public convenience and necessity; and

(b) Approval of title by the purchaser.

The term specified is fifty years from and after the installation of the last unit;

(15) This clause provides a right of termination by the purchaser if the quality and quantity of the steam, in its opinion, rendered operation of any unit economically impractical;

(16) The contract is not to be assigned by the seller without the consent of the purchaser.

The above covers all of the provisions of the very first contract in this country for the sale of geothermal steam for the purpose of generating electricity. While I have characterized it as a masterpiece, I do not mean to imply that it was necessarily favorable to both parties. In fact, it tilted in favor of the purchaser and, all things considered, I think this could have been anticipated. As always, pioneers assume most, if not all, of the risks incurred in giving birth to a new industry. Unfortunately, they do not always receive corresponding tangible rewards for their high risk endeavors.

III. LEGAL DEVELOPMENTS BETWEEN CONTRACTS

Some twelve years after the execution of the first contract my client was in a position to enter into a contract for the sale of the resource. Its contract, *sans* exhibits, covered twenty-five pages, inclusive of a signature page. Thus, in a little over a decade twice as many words were required to accomplish the same purpose. There were a number of reasons for this, not the least of which was the dramatic escalation of government involvement in all phases of the business. I will not belabor this point for we are all fully cognizant of the problem.

It is worth noting that the first commercial geothermal operation was conducted upon private lands. It was fortuitous that such lands were available for exploration and development because there was no mechanism under federal or state (any state) law permitting the disposal of public lands for the purpose of geothermal development prior to the midpoint in the last decade. During the sixties two states, *viz*: New Mexico[8] and California,[9] passed legislation permitting the leasing of state lands. Thirteen additional states have enacted the requisite legislation during the present decade.[10]

8. Geothermal Resources Act (1967) N.M. STAT. ANN. §§ 7-15-1 *et seq.* (1973).
9. Geothermal Resources Act of 1967, CAL. PUB. RES. CODE §§ 6902, *et seq.* (West Cum Supp. 1976).
10. Alaska: ALASKA STAT. § 38.05.181 (1973).
Arizona: ARIZ. REV. STAT. §§ 27-651 *et seq.* (1976).
Colorado: Colorado Geothermal Resources Act (1974), COLO. REV. STAT. §§ 34-

By everyone's count, most of the good geothermal prospects are situated in the western states where the federal government is the predominant landholder. While a number of the pioneers in the infant geothermal industry attempted to acquire geothermal rights on the public domain under the Mineral Leasing Act of 1920 or the General Mining Laws, it was the general legal consensus that neither the Mineral Leasing Act nor the General Mining Laws covered geothermal energy per se. Although the physical characteristics of the resource are beyond the scope of this paper, it should be noted that many of the geothermal fluids tested and analyzed contain concentrations of minerals which could well be of sufficient value so as to satisfy the discovery requirements under the mining laws. The lack of a clear-cut authority permitting leasing of geothermal prospects on the public domain was brought to the attention of the Congress early in the beginning of the sixties. Legislation was proposed and one bill was passed by both houses but subsequently vetoed by the President. It was not until 1970 that a bill was finally passed.[11] A brief history of the bill and previously proposed bills is contained in House Report No. 1544.[12] The Report is worth reading in that it contains a history of the industry and a good description of the resource.

The reason for discussing the statutes relating to leasing geothermal rights herein is that they, the regulations promulgated thereunder, and leases and/or permits issued pursuant thereto, have to be studied in detail by both the seller and purchaser of geothermal energy during the negotiations of a geothermal sales contract.

70-100 *et seq.* (Supp. 1976).
Hawaii: HAW. REV. STAT. §§ 182-1 *et seq.* (Supp. 1974) (Government Mineral Rights).
Idaho: Idaho Geothermal Resources Act (1972), IDAHO CODE §§ 42-4001 *et seq.* (1977).
Louisiana: LA. REV. STAT. ANN. §§ 30.800 *et seq.* (West 1976).
Montana: MONT. REV. CODES ANN. §§ 81-2601 *et seq.* (Supp. 1975).
Nevada: NEV. REV. STAT. § 48-534A (1975).
Oregon: Geothermal Resources Act (1971), OR. REV. STAT. §§ 522.005 *et seq.* (1975).
Texas: Geothermal Resources Act of 1975, TEX. REV. CIV. STAT. ANN. art. 54215 (Vernon Supp. 1976).
Utah: UTAH CODE ANN. §§ 73-1-20 *et seq.* (Supp. 1975).
Washington: Geothermal Resources Act (1974), WASH. REV. CODE §§ 79.76.010 *et seq.* (Supp. 1976).
Wyoming: WYO. STAT. § 42-121 (Supp. 1975)—(Geothermal Steam and hot water a water resource).

11. Geothermal Steam Act of 1970, 30 U.S.C. § 1001, *et seq.* (1970).
12. H.R. REP. NO. 1544, 91st Cong., 2d Sess. *reprinted in* [1970] U.S. CODE CONG. & AD. NEWS 5113.

IV. THE CHECKLIST

Let us assume that a geothermal operator has obtained "geothermal rights" embracing federal, private and state lands (using California as the example for state lands) and has discovered and developed sufficient capacity to supply one or more generating units and further assume that the customer (purchaser) will be a public utility, either publicly or privately owned, and not an end user of the electrical energy to be generated. With these assumptions the attorney is charged by the potential seller to point out to seller's management the matters that must be considered in negotiating a sales contract for geothermal energy. The items the attorney should consider are:

(1) *Restrictions Contained in Seller's Title*

It is imperative that all leases be examined to determine if they contain any restrictions upon the sale of geothermal energy or contain provisions that have a direct bearing upon the terms of any sales contract. The sales contract for geothermal energy, of necessity, must have a term coextensive with the expected life of the generating plant. Therefore, it will be a long-term contract. The provisions contained in State of California leases immediately present a problem because such leases provide that:

(a) The sales contract or other method of disposition must be approved in writing by the state; and

(b) The royalties provided for in the leases are subject to renegotiation twenty years after the effective date of the leases at ten year intervals.[13]

Item (a) can be handled in the sales contract by making it a condition precedent to the effectiveness of the contract. It is suggested that staff people from the state agency charged with lease administration be made aware of the

13. Section 4 (e) of the Geothermal Resources Lease issued by the State Lands Commission, State of California, provides: "The royalties specified herein shall be subject to renegotiation after 20 years from the effective date of this lease and at 10-year intervals thereafter based upon recommendations of the Geothermal Resources Board, and such renegotiations shall not be limited by the maximum royalties specified in subdivisions (a) and (b)."

negotiations and the tenor thereof at an early date so as to facilitate approval upon the conclusion of the negotiations with the purchaser. Item (b) presents far greater problems. In the first place, the twenty years from the effective date of the lease does not give ample time to determine the economics of a particular field and plant when one considers that a large part of the twenty year period will be eroded by institutional delays encountered in obtaining the requisite permits and approvals for the operation. It could take more than the first year after the effective date of the lease to obtain the requisite permits for the drilling of an initial exploratory well. If such well is successful, another couple of years would doubtlessly be required in order to obtain the permits for the delineation of the field. After this, perhaps two years would be necessary in order to negotiate and have approved the sales contract. Thus, as a bare minimum, you are at year five before the equipment for the generating plant is ordered. This equipment has a long dead time and two years is probably the minimum time required in its procurement for obtaining and installing the equipment. In fact, I am assured that two years is a very modest and most optimistic estimate of the minimum time required for the procurement and installation. By the time the plant goes on steam almost one-half of the twenty year period prior to renegotiations has occurred. Thus, the seller is faced with renegotiation relatively soon after the commencement of commercial operations. I know of no way for the seller to protect itself other than for it to include in the sales contract a provision that increased royalties or other lease burdens are for the account of the purchaser. The purchaser, being a regulated utility, must make certain that it would be permitted to pass on such increased cost at its rates and the seller must be certain that the requirement for the purchaser to pay the increased amount can be enforced.

Federal leases[14] present similar but not identical problems. The problems are:

14. In all instances reference is made to Form 3200-21 (May 1974) which is styled "United States Department of the Interior, Bureau of Land Management, Geothermal Resources Lease". Below the heading are two squares for marking, one to indicate competitive, the other to indicate noncompetitive. Subdivision (f) of Section

(a) *Limitation on Term.* The lease provides for a ten year primary term and an extended term not to exceed forty years with a preferential right for renewal for an additional forty year term. This presents no real problem in that the time granted is ample, assuming that the project can go on steam no later than ten years after the date of the lease;

(b) *Readjustments of Rentals and Royalties.* The lease provides that rentals and royalties may be adjusted at not less than twenty year intervals beginning thirty-five years after the date geothermal steam is produced from the lease. This thirty-five year term is adequate for planning purposes, at least when compared with the limitations in a State of California lease, inasmuch as it does not start until geothermal steam is produced. Thus, the time consumed by institutional delays, lead time on equipment orders, etc. is not counted against the specified period of thirty-five years;

(c) *Filing Contracts.* Contracts for sale of the resource must be filed with the supervisor not later than thirty days after the effective date thereof. This in itself does not present a problem nor does it solve a very major problem, *viz*: the determination of value for the purpose of computing and paying royalty.[15] A detailed discussion of royalty computation problems is reserved at this point for further discussion;

(d) *Reservation of Right to Control Prices.* The federal lease form provides: "The lessor reserves full power and authority to protect the public interest by promulgating and enforcing all orders necessary to insure the sale of the production from the leased lands at

(3) provides: "*Readjustments*—Rentals and royalties hereunder may be readjusted in accordance with the Act and regulations to rates not in excess of the rates provided therein, and at not less than twenty (20) year intervals beginning thirty-five (35) years after the date geothermal steam is produced from the lease as determined by the Supervisor." With respect to approval of contracts Section (10) provides: "*Contracts for Sale or Disposal of Products*—The Lessee shall file with the Supervisor not later than thirty (30) days after the effective date thereof any contract, or evidence of other arrangement for the sale or disposal of geothermal resources."

15. ROCKY MTN. MIN. L. FDN., 1 LAW OF FEDERAL OIL AND GAS LEASES § 17.6 (1966) discusses the problems and lack of solutions that have occurred under similar language in the regulations promulgated under the 1920 Act.

reasonable prices, to prevent monopolies, and to safeguard the public interest." One does not have to do more than read the headnotes of a small percentage of the decisions of the appellate courts to recognize that the euphonic and high sounding phrases quoted above are pregnant with uncertainty. DeQuincey,[16] in the nadir of his depraved habit, could not have visualized the legion of monsters lurking in and beneath such pious and appealing words. The uncertainty presents great problems to the producer, especially when the reserved power is not exercised because the price dictated and directed under the reserve power could be different, either more or less, than the contract price. From the seller's standpoint the only suggestion that comes to mind is a provision in the contract making it subject to the rights reserved in the lease and with the right of the seller to terminate if the price mandated by the government is too low. The situation is further complicated by the fact that the makeup of the block of land comprising a particular geothermal project could and will probably include lands other than federal lands. Does the federal government, by virtue of the right reserved in the lease, have the right to completely control and regulate the price? This question and the other questions relating to this clause remain unanswered and will doubtlessly remain suspended as a dark cloud of unknown content over the head of the geothermal industry for some time into the future.

It is not intended by pointing out these problems to sound the tocsin of doom but to make everyone aware that the uncertainties exist and the power to work great mischief has been reserved contractually. This reserved power could be over and above the normal, if there be such, federal regulatory powers, *i.e.*, limited by neither the commerce clause nor the lack of Congressional action.

(2) *Consideration of Problems Involving the Lease Term*

Most of the geothermal resource leases have habendum clauses comparable to those found in generally used oil

16. DEQUINCEY, CONFESSIONS OF AN ENGLISH OPIUM-EATER (various editions).

and gas leases, *i.e.*, they provide for a stated term and so long thereafter as the resource is produced. Some specify produced in "paying quantities". It must be assumed that paying quantities is implied even in those cases when it is not expressed because of the preponderance of gas law on this subject in the oil and gas field.[17] The lease forms generally contain a number of provisions relating to the manner of perpetuating the lease subsequent to a discovery and prior to the commencement of actual production. These provisions utilize such devices as:

(a) Shut-in royalties;

(b) Extension by signing a contract for the sale of the resource. Extensions of this type are generally for a specified number of years;

(c) Payment of minimum royalties;

(d) Force majeure which, if properly drafted, should extend the lease during all periods when production is precluded and/or delayed due to institutional delays such as obtaining permits.

The attorney representing a seller must be fully cognizant of the term requirements in the leases and, to the extent possible, have provisions in the sales contract which will permit the perpetuation of the leaseholds and pass on to the purchaser any financial burdens occasioned by the purchaser's failure to take the resource as provided in the contract. The precautions can take the form of "take or pay" clauses being certain that the amounts received are sufficient to meet fully the financial requirements of the leases.

While not strictly germane to the heading of this section, the provisions that can be found in the leases relat-

17. This subject could be, has been and is the subject of a number of legal writings in which the case law has been collected and is discussed. A concise summary of the problem, well supported by citations of authority, is set forth by Professor Hemingway in HEMINGWAY, THE LAW OF OIL AND GAS § 7.4 (1971). Geothermal energy has or appears to have a number of similarities with liquid and gaseous hydrocarbons. However, it is sufficiently different that one can visualize a different treatment in the law. This different treatment, however, will only evolve with the elapse of time and until it is finite reference will have to be made to the closest analogy which is the law of oil and gas. Therefore, attention will have to be given to that body of law in analyzing lease terms, etc.

ing to development, offset drilling, rates of production and related matters must be examined and provisions made in the sales contract whereby the seller can meet the obligations or withdraw the particular property from the contract and sell the resource to another party. Admittedly, this right to withdraw and sell to another can, in most instances, be illusory if the principal purchaser already has constructed the basic infrastructure required for the conversion of geothermal energy to electricity and transporting such electricity to the point of utilization. It is doubtful if another purchaser could justify the cost of the requisite facilities for a relatively small block of power potential. Even though at first blush the right to withdraw a block of acreage and to sell the production therefrom to another party appears illusory, such right should be reserved by the seller. In reserving the right to withdraw a block the seller should exercise extreme care in preserving all of the obligations of the purchaser under the contract. In other words, the seller would be ill-served by a contract under the terms of which seller's sole remedy against the purchaser would be to sell the resource to another party. This could be an intolerable situation, especially if there is no other probable purchaser.

(3) *The Problem of "Other Minerals" Produced with the Geothermal Fluids*

The geothermal lease forms generally, if not universally, cover, in addition to geothermal energy, minerals produced in connection with geothermal energy. Many of the geothermal prospects have tested geothermal fluids rich in entrained minerals. These minerals may or may not be commercial in the sense that a profit can be made by extracting them. If the minerals are extracted, royalty will be due thereon. It is not inconceivable that a producer may be required to extract the minerals for environmental reasons even though such extraction is noncommercial. The prospect of such requirement should be considered in drafting the contract and the burden of the requirement, including the obligation to pay royalty on the extracted minerals allocated by agreement be-

tween purchaser and seller. If the extraction is commercial on its own, it is assumed that the seller would reserve it all. The reservation by the seller is not as simple as one would suppose, due to the fact that a portion of the minerals could well be extracted while the geothermal fluids are in the custody of the purchaser. This is especially true with respect to noncondensable gases. Unfortunately, some of the geothermal prospects have yielded noncondensable gases which contain noxious substances, such as hydrogen sulfide. Venting the gases will doubtlessly be prohibited in most instances if such venting degrades the ambient air standards. There is no doubt that the sulphur and any other noxious or allegedly noxious components will have to be extracted. In all probability the extraction process standing alone will be noncommercial and made further burdensome by the possible imposition of royalty payments on any proceeds received from the sale of the extracted minerals. As above mentioned, proper attention to this possibility (probability) must be given in the sales contract.

(4) *A Word About Water*

While I shall continue to eschew the temptation from delving into the esoteric question of the juridical nature of geothermal energy, it is necessary to note that water is the primary component of most of the geothermal fluids presently under consideration as an energy source. Because of this attention must be given to the applicable water law in preparing the sales contract. This subject is broached at this point because the lease terms may well have a bearing upon the use and dispostion of water. Without belaboring the point or delving into that area of great uncertainty, "Western Water Law", a simple caveat to the parties negotiating a geothermal sales contract, to examine the leases as to any requirements relating to water, as well as to pay due homage to the applicable water law, is in order. Federal leases, and doubtlessly others, contain royalty requirements on "commercially demineralized water which have been produced and sold or utilized by the lessee or is reasonably susceptible to sale or utilization by the lessee." The last used words are

almost an exact quote from the royalty clause of a federal geothermal resource lease[18] and even though the term "demineralized water" is modified by the term "commercially", the possibilities presented by the clause are numerous and must be considered.

(5) *Other Lease Clauses That Must be Considered in the Negotiations of a Sales Contract*

The importance of being fully cognizant of *all* of the lease requirements during the negotiation of a geothermal sales contract cannot be over-emphasized. The contract will be for a long term, during the course of which all of the provisions in the leases will come into play. There is no such thing as a "boiler plate" if one uses that term as meaning a part of the standard provisions which no one reads and which never come into play. All provisions come into play over a period of time and the time to solve the problems is when they are potential and not actual. Potential problem solving is easier, or at least possible, on privately owned lands; that is, if the problem is anticipated there is a possibility that a lease amendment can cure the potential problem. This solution is not readily available with respect to government leases.

Some of the problems that give major concern in connection with the sale of geothermal energy are those relating to commingling, surface use, injection rights and water utilization. These problems, in the main, can be solved by a properly drafted unitization agreement under the terms of which property lines within the unit can be ignored. Short of unitization there are real problems if the producing block is composed of a number of parcels. Pipelines, transmission lines and roads will, of necessity, cross lease lines thus surcharging the leasehold estate. Specific permission must be obtained from all lessors for the operations of both the seller and the purchaser. This problem could be and often is further complicated by the severance of estates (again I will avoid the temptation to discuss in what estate—surface, miner-

18. The federal lease form cited in note 14, *supra*, provides in Subdivision (3) of Section 3, in part: "A roya'ty of 5 percent of the value of commercially demineralized water which has been produced from the leased lands, and has been sold or utilized by the Lessee or is reasonably susceptible of sale or utilization by the Lessee."

al, water or other geothermal rights are encompassed) thus necessitating consent from all possible claimants. Some geothermal leases have been drafted anticipating these problems and contain provisions permitting surface use (using that term as encompassing roads, pipelines, transmission lines, injection rights, plant sites, etc.) of the leased lands for operations thereon and in connection with geothermal operations on other lands owned by the lessee in the vicinity or adjoining the leased lands. Even where the problems have been anticipated the clauses must be examined to be certain that they cover all anticipated operations of both the seller and the purchaser. It is possible that a mere reference to lessee's operations would not encompass the operations of the purchaser.

(6) *The Royalty Problem*

The fact that geothermal sales contracts will, of necessity, be long-term contracts has been mentioned as well as the fact that some leases, federal and state, provide for renegotiation. It should also be noted that some leases (again including federal and state) have royalty clauses seemingly requiring the computation of royalty on value rather than on proceeds. The problem created by such royalty clauses is not unique to the geothermal industry. It is a major problem in the natural gas field. There have been a number of cases on the problem and much has been written on the subject.[19] It is not necessary for the purposes of this paper to discuss in detail the natural gas royalty problems resulting from both the necessity for long-term contracts and the fact that a part of the sales made by natural gas producers are regulated as to price. The matter of royalty determination is present in geothermal leases and should be considered in connection

19. As indicated in note 17, oil and gas law may or may not be strictly applicable to the geothermal industry. However, until the body of geothermal law is finite oil and gas legal principles must be examined. The problems encountered in computing royalty are infinite and with increased government regulation on price, exceedingly complex. This matter is well discussed in Ashabranner, *The Oil and Gas Lease Royalty Clause—One-Eighth of What?*, 20 ROCKY MTN. MIN. L. INST. 163 1975). All of the standard works on oil and gas law *e.g.*, Summers, Williams and Meyers and Brown, discuss the matter in detail. It is most important to examine the lease royalty clause and, if a government lease, the appropriate statutes and regulations, as well as the case law in each particular jurisdiction, in order to ascertain the nature of the royalty computation problem. SUMMERS, THE LAW OF OIL AND GAS (1954); WILLIAMS & MEYERS, OIL AND GAS LAW (1959); BROWN, THE LAW OF OIL AND GAS LEASES (2d ed. 1967).

with negotiating a contract for the sale of the resource. A simple solution is to have the purchaser agree to pay for any additional royalty burden resulting from a determination that the value referred to in the leases is in excess of the amount provided for in the contract. Due to the fact that a large percentage of the potential purchasers will be regulated utilities, there could well be problems in having a contract with such indefinite escalations. If such problems are encountered the suggested solution is, at least in part, illusory. Other solutions or partial solutions include approval by the lessors of the sales contract. Such approval would have to be, in essence, an amendment to the royalty provision of the lease. I do not think that a document in the nature of a division order would necessarily suffice. As is always the case, solutions readily available, at least conceptually, with private land owners are not as readily available with governmental lessors. In these days of high inflation, energy scarcity and ever-increasing regulatory schemes directed at the energy producer the problem of excess royalty cannot be overemphasized. All possible avenues should be explored in an attempt to solve the potential problem before it becomes real. It does not tax one's imagination to any great degree to visualize a situation occurring in the very near future in which the value of energy could be far in excess of the price stipulated in a contract negotiated today with the effect that when the royalty is computed on value it approaches or exceeds the total proceeds received by the producer. Further, it is not inconceivable that the producer would find himself regulated and not permitted to abandon the operation. These are, indeed, frightening prospects but they are possible and it behooves counsel for a geothermal operator to press for solutions.

(7) *Conditions Precedent to the Effectiveness of a Contract*

(a) *Those Relating to Reserves and/or Producing Capacity*. A prudent operator will not invest in the delineation and development of a geothermal field unless and until such operator is assured of a market.[20]

20. In a prospectus issued for a participation agreement McCulloch Oil Corporation stated: "*Market for Geothermal Energy*. Since the principal market for Geothermal

The corollary to this is that a purchaser will not irrevocably commit itself to purchase the resource unless and until it has relative assurance that there is sufficient energy potential available to warrant the construction of generating plants and ancillary facilities. We thus have two opposing views. To reconcile the position of the seller and purchaser, the purchaser will commit to drill a specified number of wells, conduct tests and have studies made, all of which are to be provided to the purchaser and if they satisfy the purchaser that the power potential is present, the purchaser will then be obligated to proceed with construction of the plants. It is recognized that due to the infancy of the geothermal industry it is virtually impossible to draft a clause that would be self-operating and satisfactory to both the purchaser and the seller. The parties will just have to rely on the good faith of the other party at this point. I know of no other solution, or at least no fully satisfactory solution.

(b) *Conditions Relating to Contract Approval and Permits to Construct, Develop and Operate*. In any particular situation it can be assumed that an environmental impact statement, public hearings and numerous permits, variances and approvals will be necessary in order to proceed with the contemplated transaction. At the present time at least a score of permits is required for the lessee-operator alone. This does not include the permits required for the operations contemplated by the purchaser. Plant siting requirements vary, as do the requirements for approval of contracts by regulatory agencies. The parties must determine and specify in the contract the permits and approvals required. While the failure to obtain such permits may well be covered by a force majeure

Energy appears to be its use as a source of energy for the generation of electric power, a Partnership will not explore a Geothermal Block unless it has received from a utility company or industrial end-user an indication of interest to purchase Geothermal Energy from the Geothermal Block. While such an indication of interest will not be binding, it will reduce the risk (which is present) that a market will not exist for any Geothermal Energy which may be discovered. McCulloch has opened negotiations with three companies for the construction of a power plant to purchase Geothermal Energy from the Francisco Geothermal Block. *See* 'Proposed Activities—Utility Purchase.'"

clause, such is probably not the best practice for a number of reasons, not the least of which is the fact that the management of both the seller and the purchaser should be apprised of the problems and burdens of obtaining the permits and the delays that will be incurred in connection therewith. It is admitted that even the most astute and pessimistic lawyer really cannot predict with any great degree of certainty what new and onerous impediments may be placed in the paths of the parties prior to the commencement of a commercial operation. This inability to predict with certainty frustrates the party's planning and results in inordinate delays in the utilization of the resource. These delays, because of the uncertainty, are often consecutive and not concurrent, *i.e.*, the parties, seller and purchaser, cannot in most instances, take the business risk of making investments, ordering equipment, etc. until they are assured that they will be able to proceed with the endeavor. These problems are not unique to the geothermal industry, although the infant industry has attracted attention due to its uniqueness which has resulted in everyone's trying to get into the act. By everyone, I mean all levels of bureaucracy. It is hoped that as the newness of the industry wears off the permitting process will develop finite guidelines so that reasonable planning can be accomplished. As mentioned in (1) of this part, approval of sales contracts is required under the terms of some leases, *e.g.*, State of California leases. The satisfaction of such requirements must be made a condition precedent to the effectiveness of any sales contract.

(8) *Rights Committed to the Contract*

The attorney for a geothermal producer-seller must determine the legal effect of including geothermal rights in a sales contract to a public utility so that his client is not surprised to find out at a later date that the rights are "dedicated" in the public utility sense of the term. I do not wish anyone to think that I am of the opinion that such is the case in any particular jurisdiction; in

fact, I am purposely refraining from giving any opinion on the subject in this paper. It is brought up because it is one of the things that must be considered.

The geothermal rights dedicated (using the term in this instance without any inference of a dedication to the public but merely as a shorthand expression for referring to the rights encompassed in a contract) can be described by leases, specifying amounts of energy yielded, either in pounds of steam or kilowatt hours of electricity generated, or a combination thereof. As the industry develops many variations of the above will doubtlessly be utilized. Ancillary to the problem of dedication is the question of whether or not the sales contract creates a covenant running with the land. It is assumed that both parties would prefer such a characterization. The purchaser's reason is that he would not wish to lose the energy supply because the seller had transferred the geothermal rights. The seller's reason for having the sales contract appurtenant to particular lands is that it is an indication on the source of supply and if the specified source of supply fails the seller would not be required to furnish substitute supplies from another source.

The only reported case[21] on a geothermal sales contract involves a question of antitrust law, *i.e.*, does the fact that the contract covers a large area, developed and undeveloped, create an antitrust issue? The California Supreme Court held that the California Public Utilities Commission was required to consider the anti-competitive provisions of such a contract when the question was raised. The CPUC on remand of the case found there was no violation based in part upon the provisions in the contract permitting a sale of the resource to others if the initial purchaser did not proceed with the utilization of the resource when tendered.

(9) *Taxes*

The sales contract should provide for each party to pay taxes on its own facilities. In addition, consideration must be given by the seller to the possibility that new

21. Northern Cal. Power Agency v. Public Util. Comm'n (Pacific Gas and Electric Co., real party in interest), 5 Cal. 3d 370, 486 P.2d 1218, 96 Cal. Rptr. 18 (1971).

and/or higher taxes will be imposed upon the resource and/or seller's operations. Seller can only protect itself against such exactions, rendering its operation less profitable or, even worse, converting it to a loss operation by having the new taxes passed on to the purchaser. Here again, the problem of the utility's ability to either (a) agree initially to an open-ended payment or (b) pass such additional payment on to its customers, appears and the solution of the problem is, in large measure, dictated by the rules, regulations, policies and practices of the regulatory agency having jurisdiction over the particular utility.

(10) *Price and Measurement*

As stated above, no mention will be made of price other than to note that the seller is not the master of its own destiny as to royalty, taxes and inflation. Escalation of the contract price is required just for the seller to stay even. Escalation formulae can take many forms, but whatever form they take the parties are faced with the problem of the possibility of obtaining approval from a regulatory agency. Suffice it to say, that the possibility, or even probability, of regulatory approval of prices is fraught with uncertainty.

The price or payment clause may well contain provisions for minimum payments, take or pay payments, advance payments, or combinations thereof, in addition to the payment for a per-unit of the resource delivered or the power derived therefrom. The possibilities of combinations are virtually unlimited and no legal preference is expressed in any one of the components or combinations thereof. In deriving the price formula, both as to amount and timing of payments, due consideration must be given to the producer's obligations to make payments to others based upon the production and/or receipt of funds. Consideration must also be given to the characterization for tax purposes of the various components. The matters that should be considered in the tax analysis are not just the characterization for income tax purposes but for local transaction taxes.

The technical aspects of determining, testing and measuring the quantity of the resource and/or the energy derived therefrom must be included in the contract. As yet there are no standard clauses for such purpose. In drafting these clauses assistance of technical experts will be required. Further, each particular geothermal field may well have different characteristics and doubtlessly different systems will be developed for the conversion of the geothermal energy into electrical energy. These differences and new developments will require new forms of testing and measurement clauses. At this point I do not see a time when we will have standardized testing and measurement clauses as we have for contracts for the sale of other extracted resources, *e.g.*, oil, gas and other minerals generally.

(11) *Equipment for Conversion of the Geothermal Energy to Electricity*

If the seller's payment is based upon the quantity of geothermal energy delivered, it is essentially immaterial to seller what type of conversion equipment is utilized by the purchaser. This is especially true if the purchaser agrees to pay for a specified quantity irrespective of actual take. If, however, payment to the seller is computed on the basis of electrical energy produced, the seller has a direct and vital interest in the type of equipment. This interest encompasses both the on-line reliability of the equipment and the equipment's efficiency in converting the geothermal energy to electricity. Different geothermal systems will doubtlessly require the utilization of different types of conversion equipment. Future technological breakthroughs may evolve equipment with conversion efficiencies and reliability factors far in excess of anything presently available or, for that matter, contemplated. Agreed to specifications for the initial unit should be included in the contract. The type of equipment for future units should probably not be specified. The purchaser should be obligated for all future units to procure the most efficient and reliable equipment available. Unfortunately, it is not possible to specify all of the requisites for future equipment with the precision

one would like in order to make the obligations specifically enforceable. Here again, the parties have to rely, in large measure, on good faith.

(12) *Surface Rights*

The purchaser will have to have access to the producer's leaseholds and have surface rights for plant sites, power lines and ancillary facilities. As mentioned in Section (5) of this part, the seller *may* have ample rights for both itself and the producer's operations under the terms of seller's leases. If this is true, the problem may be handled quite simply by seller's granting the rights to the purchaser. If seller does not have the rights, the contract should clearly provide whose obligation it is to obtain the necessary rights and to pay for the same. In all probability, the purchaser as a public utility will have the right of condemnation and thus be able to obtain those rights required for its operations. The seller should avoid having the purchaser attempt to obtain any rights necessary for seller's operations by the use of the purchaser's right of condemnation. Such action could have a bearing upon seller's being classified as a public utility.

(13) *Effluent Disposal*

The geothermal energy will be transmitted from the reservoir to the purchaser in some type of geothermal fluid, *e.g.*, steam, super-heated water, hot water or super-heated brines. When the energy is extracted from the fluids some disposition must be made of the fluids. In the original Magma-Thermal-Pacific Gas and Electric contract the purchaser received the geothermal fluids and had the responsibility for disposing of all effluent. In my client's contract with Pacific Gas and Electric the responsibility for disposing of liquid effluents was placed upon the seller with the purchaser paying additional compensation to the seller for effluent disposal. A portion of the geothermal fluids, *viz*: water, may well be utilized by the purchaser for cooling or other purposes. Such utilization is not complete and the parties must allocate the responsibility for disposal in the contract. The allocation of the obligation for disposal can take a number of forms.

Conceptually, the producer-seller is better able, by virtue of technology and experience, to handle the liquid disposal problem; in fact, it could well be that the reinjection of the fluids into the reservoir is beneficial. The purchaser, by virtue of its operation of the power plants, is better situated to handle the problem of noncondensable gases.

As is the case in all other facets of the geothermal industry, future techniques are unknown. It is conceivable and even probable that a number of future projects will utilize closed systems, thus changing the character of the problems relating to disposal.

(14) *Right to Terminate*

Both parties will want to have rights of termination in the event the contemplated operations prove uneconomical to either of them. The purchaser will doubtlessly wish to have the leasehold rights assigned to it in the event seller wishes to terminate. If such a provision is included, any restrictions on the assignability of the leaseholds should be examined and, if necessary, consents of lessors to the assignment obtained. If this is not done the seller must condition its undertaking to assign the leases to the purchaser upon obtaining the requisite consents and/or approvals. The seller should be extremely careful in analyzing both its right to terminate in the event the purchaser is not fully utilizing the resource and the purchaser's right of partial termination. In both cases the seller could wind up with a resource potential too small to interest another purchaser.

(15) *Renegotiation on Changed Conditions*

At the present time essentially all geothermal projects are shrouded with great uncertainties, including the potential future technology and future government action. All of these factors render a long-term sales contract a hazardous undertaking. It is, therefore, in the interest of both parties to include what I commonly refer to as a "loyalty clause". Such a clause is essentially a statement that the parties are entering into the contract for a mutual profit and that if unforeseen changes occur render-

ing the obligations of a party more burdensome and less profitable from those contemplated in the contract that the parties will renegotiate the contract in good faith to the end that to the maximum extent possible the rights, obligations and profits of the parties are continued in the same relative positions as provided in the contract. It is recognized that such clasuses are not self-operative and are perhaps pregnant with misunderstanding and even litigation. In spite of these shortcomings, I nevertheless strongly advocate the utilization of a loyalty clause when dealing in areas of great uncertainty.

(16) *Assignments*

In Section (8) of this part the problem of whether or not the sales contract would create a covenant running with the land was discussed. It was assumed that both parties would desire such a characterization. The same assumption is applicable to the assignability of the rights and obligations under a sales contract, *i.e.*, neither party would wish the other party to have the right to assign without consent. The usual language regarding the continued obligation of the assignor and the freedom to assign to affiliates, etc. can be included.

(17) *Indemnities and Insurance*

The parties will be operating, to some measure, in close proximity to each other and consideration must be given to the problems of injuries to employees, damage to equipment and other problems resulting from such proximity. Ideally, each party would be responsible for its own employees and equipment; however, someone always wants to except the negligence, sole negligence, gross negligence or willful misconduct of the other party. These terms are often improperly used and even abused with the end result that both parties and their respective insurance carriers are enbroiled in disputes from time to time. It seems that there is no real solution to these problems, especially when the legislatures are constantly enacting new laws relating to the subject and the courts are either finding new law or interpreting the new law made by the legislatures. It is, to say the least,

a chaotic situation in most jurisdictions. In preparing the contract particular attention must be given to the then current law on the subject in the applicable jurisdiction and an attempt made to provide fully a functional indemnity clause in the contract. This clause may be backed up by a requirement that specified insurance be carried. If insurance backup is required, consideration should be given to naming both parties as insured and requiring reciprocal waivers of subrogation. Failure to provide for such coverage and to clarify each party's rights under all insurance policies can lead to the indemnity clause being of slight, if any, value.

(18) *Settlement of Disputes*

I am not an advocate of arbitration clauses except for the limited purpose of having designated experts determine purely technical matters. A number of such technical matters arise in connection with the sale of geothermal energy; however, there is a dearth of expertise in the field for the simple reason that other than the actual producers there has been very little practical experience gained by anyone. This does not mean that there is an absence of parties claiming such expertise. To the contrary, there is a plethora of self-appointed experts, many of whom have impeccable credentials and can offer a valuable contribution to the new industry. In spite of this, I seriously doubt if they would be of any use in the settlement of technical disputes encountered in operations under a geothermal energy sales contract. In the future a corps of experts will develop and can be utilized for the settlement of disputes. In the meantime, the pioneers, both purchaser and seller, are relegated again to relying upon reciprocal good faith.

(19) *Applicable Law*

Assuming that the transactions contemplated by the contract all occur within a single state, I doubt the necessity of including an applicable law clause. In fact, I doubt the efficacy of such a clause if it is in derogation of the law that would otherwise be applicable, *i.e.*, the law of the *situs*. There are certain laws, rules and regulations to

which appropriate homage may have to be paid in the sales contract. These include, *inter alia*, the laws and regulations relating to equal employment.[22] Particular attention should also be given to any requirements in the leases that must be brought forward and made part of a sales contract. Each jurisdiction has its own peculiar requirements and these requirements must be satisfied in the contract. The requirements relating to the inclusion in the contract of language specifying compliance with statutory or regulatory schemes not only entails the drafting of appropriate clauses, it also requires a diligent compliance program. Both parties to the contract must be made aware of the fact that diligent good faith compliance is much easier than to suffer the turmoil that ensues in the event of noncompliance. I suggest that the attorney, in addition to preparing the clause, also prepare detailed instructions regarding compliance. The language of the clause is, as a general rule, not susceptible to a facile understanding. The lack of clarity in the contract clause is not the fault of the draftsman, but due to the fact that the required language is dictated by the law, regulation, executive order, or whatever.

(20) *Confidentiality*

With the advent of "sunshine acts" and "the people's right to know" the inclusion of a confidentiality clause in a commercial transaction seems either passe or an idle gesture. In spite of this and due to the fact that the purchaser and seller will be working in close proximity and will have, of necessity, detailed knowledge of each other's operations, it is suggested that a confidentiality clause be considered. Such a clause will have to include appropriate exception permitting compliance with laws, regulations and court orders. Additionally, due consideration will have to be given to the inclusion of a provision whereby neither party will make a press release or other public announcement regarding the other's operations without consent. From my own experience I have a re-

22. Currently, the most utilized clause is the Equal Employment Opportunity Clause required in many instances by Executive Order No. 11246 (41 C.F.R. 60-1.4a). There are a number of similar clauses that may be required in particular instances by particular parties. Constant review of federal and applicable state law, including regulations and obligations imposed by contract and/or lease is necessary in order that contracts strictly conform to the requirements.

luctance about the inclusion of a clause referring to press releases. Such reluctance is generated by the ceaseless haggling and nit-picking over the language of press releases. It seems sometimes that more time and effort go into such endeavors than go into the actual preparation of contracts. I know that this statement is going to invoke the wrath of public relations people and that they are going to counter by saying that a lot of the haggling and nit-picking is done by lawyers. I have no counter for their argument for it is all too true.

V. CONCLUSION

I often feel that rank speculation by writers on legal subjects leads to the unleashing of a host of problems where none previously existed. I have attempted to avoid such rank speculation in this presentation and to include on the "checklist" only those matters that I feel are present today. In speculating on the subject I freely confess to having conjured up legal and contractual nightmares of such horrible capabilities and dimensions that they could well be likened to Sherlock Holmes' cases involving *The Giant Rat of Sumatra* and *The Aluminum Crutch;* that is, the world is not yet ready for them. The problems specifically alluded to can be solved. The solutions in a number of instances are not self-operative and depend, in large measure, upon the good faith of both the purchaser and the seller. There are those who will say that such solutions are not solutions at all, but I would disagree with such statements. I feel that clauses requiring renegotiation to preserve the relative equities of the parties to a contract are devices that can yield the desired results.

The geothermal industry has been referred to as being in its infancy. I would disagree with such characterization. The industry is still in the early part of the gestation period. It has just begun to take shape in the womb and hopefully the birth will result in a healthy, vital and productive infant with great expectations. It can be hoped that the problems, real and imagined, can all be solved and the resource developed for the optimum benefit of all. The infant will, of course, have to be subject to proper discipline, but such discipline must not be in the form of unexplained and unreasonable prohibitions and restrictions.