issued patents which would give the contractor an excellent opportunity to plan capital investment early in the game. This exclusive license could be limited to a term of years but probably should not be limited to less than ten in order for the contractor to recoup his investment. This intermediate position (between title and non-exclusive license) would be useful where outright title to the contractor might be met with some reservations by ERDA and still might provide the necessary incentive for the contractor to forge ahead in making the subject matter of the contract quickly available to the general public. Such a right of exclusivity for planning capital expenditures in making technology available to the general public is most important.

At the outset of research contracts, many times the question of whether a contractor-conceived invention has in fact been reduced to practice sufficiently to qualify as a background invention rather than as a subject invention can be troublesome I am sure you are aware of the cases in this area. I would suggest that a provision be made for the agency and the contractor to agree in advance where a proper showing is made by the contractor that the invention has (or has not been) reduced to practice prior to the contract undertaking, which agreement would be binding on the agency and create at least a rebuttable presumption in favor of the contractor in any subsequent action with third parties or other agencies.

With respect to the requirement that contractor grant background patent licenses to responsible parties upon written application by the ERDA, I would ask that you consider an amendment thereto whereby the contractor upon such application either agree to the grant or demonstrate to the ERDA that the public interest will be better served if the contractor is given a reasonable time in which to supply the subject matter covered by the background patent in sufficient quantity and at reasonable prices to satisfy market needs. I appreciate that your proposed section takes into account some of these factors but it does it in a retroactive manner rather than a prospective manner. That is to say, if the contractor at the time of the request felt he was able on his own or through a licensee of his choosing is able to produce the subject matter in sufficient quantity and at a reasonable price to satisfy market needs, he should be given the right to do so. As the regulation now stands he must already have been doing this or otherwise is subject to the grant of the license to others. The contractor thus loses control over exclusivity of his background patents. If he takes a government contract under those conditions, any prospective licensee must be advised that his exclusivity would be marred by a possible request from someone else in the future if at the time of the request the subject matter covered by the background patents was not in the form of a commercial item. The contractor should have at least the right to reduce the subject matter within a

Organizations within the Government currently address computer software differently in their respective procurement regulations. Not all are satisfactory from the CBEMA standpoint. For example, Defense Procurement Circular (DPC) No. 74-3 (issued in November, 1974) contains a procurement regulation relating to the Government's rights in computer software which is causing serious problems for the commercial ADP industry. This regulation applies to Government funded software as well as existing and future privately funded proprietary software which is normally commercially oriented. Application of this regulation to commercial ADPE procurements has most serious consequences adversely affecting proprietary software property rights in the commercial markets of the entire industry.

The General Services Administration (GSA), which it is understood has Government-wide procurement coordinating authority over commercially available, general purpose ADPE, has recently developed and issued a Standard Solicitation Document for ADP Systems after extensive consultation with Federal agencies and the ADP industry. GSA is currently promulgating regulations which will provide formal guidelines for its use. This document includes a Standard Form contract provision for Government Rights in Computer Software. Its adoption for procurement of Contractor proprietary software will avoid such industry problems as arise from the application of such procurement regulations, for example, as adopted in DPC 74-3. We submit this matter to you for review and consideration with respect to ERDA related procurement of Contractor proprietary software.

Subsection (c)(1)(ii) within the aforementioned Rights In Technical Data clause requires the Contractor to grant to the Government and others a royalty-free license to reproduce, dispose of, etc., "any and all copyrighted or copyrightable work not first produced or composed by the Contractor in the performance of this contract...." Since it is currently a common marketing practice for computer software developers to make their respective proprietary computer software available as a copyrighted work, and under an agreement not to provide or make such software available to others, CBEMA recommends that protection of private sector investments in computer software design and development calls for insertion of the following phrase after "work" in the quoted language "(c)(1)(ii)" above :

", other than computer software,"

CBEMA recommends a similar amendment to subsection (d)(1)(ii) within the clause entitled "Rights in Technical Data-Special" so that the subsection with amendment (see underlined) reads as follows:

The background patent provisions of the patent policy is another aspect which could be a deterrent to contracting with ERDA. We generally have no problems with the requirement that U.S. background patents be licensed royalty-free to the Government for research, development and demonstration purposes. Also, the situations under which the contractor is required to license third parties under U.S. background patents would not appear to be overly unreasonable although problems could arise in the determinations as to what is a competitve alternative and a reasonable price. The problems we have with this "compulsory licensing" provision is the mechanism by which "terms reasonable under the circumstances" are to be determined and who is to make the determination. Since the injuctive relief is no longer available to the contractor, he is not negotiating with the third party with the same strength he would be if it were not for the compulsory licensing. With respect to foreign background patents, it can be seen that this compulsory licensing provision could be a serious detriment to a contractor's ongoing foreign licensing activities.

The Technical Data provisions of the ERDA proposed policy create some additional problems with respect to entering into ERDA contracts. A company such as ours which has a long history in both the fossil and nuclear energy areas naturally has a large background of data and information some of which is highly proprietary and confidential. One reason for ERDA's contracting with a company such as C-E is this background data and expertise developed over so many years. Some of this data we would not be willing to make publically available. One example is highly sophisticated computer programs which it would be advantageous to use in the course of an ERDA contract but which we would not be willing to make

One of the serious defects of the ERDA Patent Policy as viewed by our company is the provision that the contractor will retain only a revocable license to Subject Inventions. We understood ERDA's reasons for wanting revocable licenses but it is still considered to be inequitable that the contractor's rights to use a Subject Invention can be terminated even in the limited situations provided for in the policy. First of all, it is not clear just what level of activity or contemplated future activity will prevent the revocation of the license. Secondly, it often occurs that a contractor will have a number of different alternative approaches being considered as a solution to a particular problem. There may be an extended period of time, perhaps extending over a period of years, for example, in the nuclear area, during which these alternative approaches are being periodically evaluated for application but not otherwise actively pursued. Thirdly, it is sometimes difficult to have a new idea accepted by the purchasing public. We would consider it inequitable that the contractor's rights to use Subject Inventions could be foreclosed in these instances. We would hope that the wiaver provisions as they might apply in obtaining irrevocable licenses would be liberally applied. However, as earlier expressed, we fear that this will not be the approach that is taken by ERDA. Only time will tell. If the contractor cannot obtain an assurance of the right to use the invention by way of an irrevocable license, the uncertainty will make it difficult to plan future activity based on that invention.

The second area of major concern about the ERDA Patent Policy is the disposition of foreign patent rights and the serious limitations placed on the foreign patent rights which the contractor does retain. C-E has, for many decades, been very active in the foreign licensing area.

The most significant contract currently under way is the contract entered into in 1974 with the Office of Coal Research to design, build and operate a 5-ton-per-hour coal gasification process development unit. This project is funded jointly by C-E and OCR with OCR bearing two-thirds of the estimated $20.6 million cost. In this instance, we were able to negotiate a contract in which patents are to be owned jointly by C-E and the Government with adjustments being made in royalties to account for this joint funding. C-E is currently in the process of proposing to ERDA two cost sharing projects, one relating to an industrial fluidized-bed boiler demonstration project ($15-$25 million) and the other relating to a coal gasification demonstration plant ($20-$40 million). The contracts which C-E has entered into with the Government have related to both nuclear and non-nuclear energy.

Since C-E has been and wishes to continue to be a significant Government contractor in the energy area, it has a substantial interest in the patent policies under which ERDA will operate. We agree with ERDA that these policies should stimulate the best available contractors to enter into energy related contracts with ERDA as well as to stimulate the utilization and commercialization of the inventions derived from such contracts. It is our opinion that certain aspects of the proposed ERDA policy do not foster these goals in the best possible way.

Addressing first the subject of the allocation of the principal rights to Subject Inventions in the U.S., C-E would prefer that title be retained by the contractor with the Government reserving an irrevocable, non-exclusive, paid-up license for Governmental purposes. Also, such a provision could provide for a liberal licensing policy on the part of the

certain "march-in" rights to assure that if the contractor did not exploit the invention within a reasonable period of time, title to the invention could be obtained by the Government so it could be licensed to another.

ERDA patent policy could, of course, preserve to the Government a royalty free, nonexclusive license for governmental purposes without seriously detracting from the advantages of leaving title to the inventions to the contractor.

IS MANDATORY LICENSING OF ENERGY RELATED PATENTS NEEDED TO CARRY OUT THE PURPOSES OF THE FEDERAL NONNUCLEAR ENERGY RESEARCH AND DEVELOPMENT ACT?

No, definitely not. This is a remedy for an ill that does not exist and would be a dangerous first step toward destruction of the incentive of the patent system.

If any invention really would be of benefit to the public there would inherently be a potential market which the patent owner would not ignore and industry would surely bring the invention to the market place.

In those very few instances where Courts have found that public policy necessitates licensing of competitors they have been able to remedy the situation under existing law. It is sufficient, therefore, to leave the law as is. There is no general ill that requires, or even suggests, the drastic remedy of mandatory licensing.

If there were mandatory licensing, the incentive to invest effort and risk capital to bring an invention to the market place would be seriously eroded. No one company could be expected to make such an investment if faced with the prospects of its competitors subsequently obtaining a mandatory license to take advantage of the effort and expense already expended.

CONCLUSION

The patent provisions of the Atomic Energy Act and the Federal Nonnuclear Energy Research and Development Act are too rigid and do not permit the Administrator the flexibility needed to assure participation of the most highly qualified potential contractors in assisting ERDA to accomplish its objectives. Changes in those patent

ly high in relation to cost-benefits of conventional apparatus.

Second, a business venture that reaps an extremely high profit derived from a high price coupled with a potentially large market demand will encourage potential competitors to divert their R&D funds to the area of the innovation in the hope of coming up with new technical approaches not infringing the patent rights. Although the pioneering company and the ERDA may have spent five to ten years in research, development, and preparation for production and commercial introduction of a synthetic fuel, it is amazing how fast this lead time can be drastically reduced by a dozen other companies, each spending perhaps as much or more money than the innovator in a crash program that has the benefit of starting out from a proven technical approach and market reaction thereto as opposed to just a concept and a forecast of a possible unsatisfied need.

Third, the company must be careful to establish a strong foothold in the mass market so that a reasonable market share can be assured despite subsequent stiff competition, and this can normally only be accomplished by penetration pricing (in other words, at a reasonably low price per unit) encouraging purchasers to switch from the closest-substitute conventional products.

Fourth, at any given time, there normally are several if not many firms conducting R&D in a particular problem area regardless of whether some are government contractors. Chances are, the first company to introduce solar energy on a widespread scale will be forced to meet the price competition of the next entrant into the market with a competitive process that does not infringe the first innovator's patent because of the use of a different technical approach. Let's face it. We are no longer in the age of James Joule, energy R&D pioneers, James Watt and / when a patent on a solar device literally meant a seventeen / year monopoly. Today, the solar energy prior art would prevent anyone from monopolizing this energy source with broad patent claims.

In addition to spurring utilization of government-funded inventions and stimulating competitive R&D by other companies that design around the exclusive rights granted to the government contractor, who has pioneered a new technology or opened up a profitable new market application; the exclusive licensing proposed in this testimony / more widespread

iods of exclusivity is that many entrepreneurs and small businesses will not be able to achieve market introduction and meet market demand for their discoveries right away because of limited funds and production resources. It is not uncommon for more than a half dozen years to pass by while capital is attracted to finish development and expand the facilities and then finish all of the many things which must be attended to prior to full-scale production and distribution.

Even if the small or medium sized business does have available the resources for rapidly expanding to meet the requirements of the national market, the pricing facts of life in industry dictate that prices be set high on new products and equipment, thereby delaying widespread market satisfaction. There are several reasons for this.

First, the energy R&D company will be forced to set a certain minimum price per unit in order to recoup its total R&D, marketing research, and start-up investment within a certain maximum number of years based on anticipated sales volume and profit margin after operating expenses and taxes are deducted from gross revenue received at the set price. It cannot be expected that the initial price per unit set will be at all in the same ball park or range as the price per unit of the closest substitute products which presumably are no longer as desirable as the patented innovation and whose price per unit has been driven down by competitive forces as well as mass production techniques or market saturation.

Second, not only does the initial price have to be set high in order to recoup the investment in the new product being introduced, but also to recoup capital invested in designs and products possibly having no relation at all to the final product development or breakthrough to be commercialized. The reason for this is that the statistics show that as many as /four out of every /five products developed are either technical or market failures. This means that for every innovation that is commercially successful, the profits that are derived therefrom must be sufficient to sustain the innovator's investment in developing and marketing /five innovations, /four of which are abandoned at various stages of development and commercialization. Even a former Commissioner of Patents has recog-

The firms that have little energy expertise and therefore little to lose in contracting with the government will look upon ERDA contracts as another source of revenue rather than as the start of an R&D venture which could mushroom into a possible commercial application. Because there would not be a strong motivation to commercially apply the energy solutions contracted for by the ERDA, such contractors would lack entrepreneurial incentive and enthusiasm to put in peak performance for innovative results, thereby short-changing the ultimate goal of the ERDA funding.

A GOVERNMENT PATENT POLICY THAT MAKES SENSE

If we are more interested in commercial utilization of government/contractor inventions then the personal equities of who should get exclusive rights; and Congress is more interested, then the logical policy to establish is one that will encourage the companies with energy expertise to deal with ERDA and commercialize the discoveries stemming from ERDA contracts after their completion. The positive incentive needed for such encouragement cannot be supplied merely by holding out a lot of money for R&D and demonstration projects involving nonexclusive rights.

The government should allow contractors to have exclusive rights, with the government retaining a nonexclusive grant without the right to sublicense, as long as the contractor is diligent in expending money and effort to convert the work product of the ERDA research, development or demonstration project into a commercially feasible energy solution. One practical way of implementing this approach is described briefly below in concept only.

Large corporate contractors would be able to exercise an option to receive exclusive rights on discoveries for three years after actual reduction to practice or contract completion, whichever occurs first. Within said three year period, they are expected to introduce these energy breakthroughs to the marketplace. They would be required to give biannual reports showing their progress and the fact that they have not abandoned their diligent efforts. If there is no market introduction at the end of three years, the government could exercise its option to make the contractor's exclusive license nonexclusive and give one other nonexclusive license to another promising candidate, who, in turn, would be given three years to introduce the energy device

tection;however, the small companies will not be able to risk their or their backer's capital for commercialization of any breakthroughs on a nonexclusive basis.

But does it really matter whether these government contractors commercialize the discoveries they made during performance of their government contracts? The government has obtained title and ownership to these discoveries and can license them to other firms. Unfortunately, other firms do not even have the original expertise that the government contractors did and they will not have sufficient incentive to commercially introduce the discoveries to the marketplace because of immediate competition from other companies asking the ERDA for a nonexclusive license. This is the reason why commercial utilization of patents in private industry is five to ten times that of government patents and the reason why 7/8 of government patents are never licensed at all.

If the firm bidding on the bioconversion contract has already conducted its own R&D in this area of technology, it risks having its existing patents and trade secrets licensed to its competitors if an irrevocable waiver is not obtained and such rights are required to practice the work product developed during the contract. For many established companies in the energy field, the revenues received for a government contract are only a fraction of the expected commercial benefits to be derived from background patented discoveries and trade secrets. The venture capital decision is a gamble at best, based upon certain facts from which objective conclusions can be reached, but in the end a subjective judgment. A fundamental factor in the psychology of such a risky decision is first considering the critical variables, those that by themselves can spell failure for the venture. Nonexclusive licensing would be just this type of psychological or irrational, if you will, factor that would make venture capitalists think twice about putting money into applied research and development. The average company or inventor does not care that exclusive licenses are sometimes granted and are not revoked. It does not know that,chances are, its background rights will not be compulsory licensed. It only cares about its own particular circumstances, its innovation, its sweat, its risk and its money.

ment contractor to invest his private funds in bringing the results of energy R&D for ERDA to the marketplace.

What is the ideal combination of incentives to motivate the commercial application of ERDA within the energy industry? The basic motivations for budgeting R&D for ventures in any industry are well established; the prime incentive being a satisfactory ROI.

If the potential rate of return on investment is high enough, the entrepreneur will take a reasonable gamble with his or his backer's capital. The key to decision-making here is what is a reasonable gamble. The risk that ROI objectives may not be reached is dependent on several fundamental factors, the most important, in the mind of the venture capitalist, being the degree of competition.

Now we get into the venture capitalists' mentality. Protection against competition serves as the insurance that the venturer and his capital sources will recoup the investment together with a reasonable profit should the research and development prove fruitful. Without some form of protection, competitors would immediately copy the innovation after technical feasibility and initial marketing success has been shown by the entrepreneur. This would put the venturer at a financial disadvantage since the competitors would be able to underprice the innovator, who must charge enough to recoup his substantial pioneering investment in both the laboratory and the marketplace, in addition to his fixed manufacturing cost.

Competition in America is normally minimized or at least controlled by the new product venturer through the use of a number of well known techniques. Most of these techniques are only available to the giant corporations that have well-financed and agressive R&D, marketing and distribution capabilities. It is unfortunate that entrepreneurs, small businesses and medium sized companies have less options in dealing with com-

THE CRISIS IN COMMERCIALIZING GOVERNMENT FUNDED R&D

November 19, 1975

Testimony by Philip Sperber

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In its future report to the Congress on the patent-waiver clause, we hope that ERDA will be able to make a strong case for providing title to the universities to permit a realistic transfer of technology for the public benefit. It is my understanding that a number of well-qualified university patent administrators will be in attendance at the hearings next week. Since many, if not all of these men were program participants at our conference, I am certain that they will state the case well for the university research community in the U. S.

Very sincerely,

Allen C. Moore
Director

ns

cc: Norman Latker, DHEW

the best way of insuring full commercialization and thus making the result available to the public. Recent experiences have shown that when the Government takes title to patents, it is difficult to encourage commercialization. We are confident that ERDA's proposed patent policy, properly implemented, will work to the fullest benefit of the public.

Very truly yours,

K. W. McHenry

PATENT REWARDS—5

Patent Policy in Government Contracts

Present procedures may work to the detriment of the Government by scaring off the qualified company which can perform the work but doesn't want to lose possible commercial rights to its knowhow.

A. L. Conn, American Oil Co., Whiting, Ind.

FOR THE PAST FOUR YEARS MY JOB WITH THE Research and Development Department of American Oil Co. has been Director of Government Contracts. In this capacity, I have come face to face with a major problem: after finding areas in the government where money is available for contracts and determining where my company's particular expertise can be useful to the government,

mandatory licensing of energy-related patents is not needed to carry out the purposes of the Federal Nonnuclear Energy Research and Development Act of 1974.

Sincerely,

Sheldon Elliot Steinbach
Staff Counsel

Thus, it is clear that Congress intended that those educational institutions having technology transfer capability which desire to maintain patent rights in inventions developed under ERDA contracts should be permitted to retain such rights so that they may exercise their abilities in transferring technology.

In Vol. 40, No. 73 of the Federal Register issued on Tuesday, April 15, 1975, ERDA added a new appendix to 41 CFR Part 9 - 9 relating to Patents and Copyrights. The following statement appears in the section relating to waivers--

> "d. Approval of University technology transfer program. Paragraph (11) of subsection 9(d) of the Federal Nonnuclear Energy R&D Act provides that in waiver determinations, consideration should be given to the extent to which universities have technology transfer capabilities and programs approved by the Administrator. Pending the development of an approval process within ERDA for university capabilities and programs, consideration may be given to the approval of such programs of a university [sic] approval by another agency will not meet the statutory requirement of approval by the Administrator, approval by other agencies will be relevant information to be considered by the Administrator."

In spite of the express language of the Bill, the interpretation in the Conference Report and the statement quoted above from the Federal Register, ERDA now proposes a new policy and procedure relating to patents, data and copyrights. Its proposed procedure does not implement section (d)(11) of the Act, although the proposed policy notes the fact that nonprofit educational institutions with technology transfer capabilities may have their programs approved by the Administrator.

It appears from the proposed procedure that the Administrator intends to impose on nonprofit educational institutions not only the requirement that they have an approved program for technology transfer but the further requirement that all other criteria noted in the legislation be met by the institution. This is totally inconsistent with the intent of the Congress to give special treatment to nonprofit educational institutions, in recognition of the fact that they cannot meet many of the other criteria.

A solution to this problem has been proposed by the University Patent Policy Ad Hoc Subcommittee of the Executive Subcommittee of the Committee on Government Patent Policy of the Federal Council for Science and Technology. In July 1975 this Subcommittee issued a Report stating that--

A. Creation of university technology transfer capabilities should be encouraged.

B. Agreements permitting qualified universities to retain title to inventions would create an incentive to develop university technology transfer capabilities.

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Is there any comment that any member of the panel wishes to make?

Well, with that, I want to thank everyone here, members of the task force.

The public hearing is adjourned.

(Whereupon, at 5:35, the hearing was adjourned.)

I think that is a right determination. I am no sure I am responding to your question, but what we are saying to you is that in our view, exclusivity in the contractor is a desirable thing in order to obtain exploitation of worthwhile inventions.

MR. GOODWIN: I am really asking the question whether the ERDA patent policy doesn't accomplish in substance the objective that you have, disregarding the fact it may put an administrative burden upon the contractor to obtain this kind of exclusivity and, perhaps, technically reduce his enforcement capabilities.

MR. MCKIE: I am not sure I am really competent to answer your question. I am not that acquainted with the details of operation of ERDA patent policy so I could actually answer that question.

MR. GOODWIN: Thank you.

MR. POTEAT: I would like to address a question toward what kind of royalties under your system, where you say the exclusive rights reside with the contractor -- Have you given thought to where ERDA spends money, inventions are made, title rests with the contractor, in the area of energy, what kind of royalties would be extracted from the owners of the patent at that time?

MR. MCKIE: I think I am missing your question, sir.

MR. POTEAT: When you gave us what you felt was the best policy, it was one in which exclusive rights were residing in the contractor with title, with the right to obtain foreign patents and the right to license others. You did not go on to elaborate or discuss the royalties that may be exacted from the licensing of others.

MR. MCKIE: No, I did not; and I think that is best left to the normal operation of the marketplace. Royalty rates vary from case to case, depending upon what is felt by the parties and what is negotiated by the parties as a reasonable amount of the royalty.

One of the difficulties in trying to set any kind of an arbitrary rate, is that it will not match any situation, let alone all.

the right to grant licenses to others and the right to obtain foreign patents. Appropriate safeguards against non-use could be provided by march-in rights or a requirement to license other after expiration of a reasonable period of exclusivity or lack of interest of the contractor in exploiting the invention.

With the title in the contractor, administrative burdens of both the government and the contractor will be minimized. Moreover, independence in enforcement of any patent rights will be assured.

It is our understanding that a particular matter of study for this group is the question of what is called mandatory licensing. APLA feels very strongly that any provision for mandatory licensing is contrary to the public interest because it diminishes the incentive to invest and the incentive to exploit inventions. If the inventor or his assignee is faced with the possibility that a license to use his invention can be forced from him by government fiat, he will have considerably less incentive to make and publish inventions through the patent system. Moreover, his incentive to invest the time and money necessary to exploit his invention commercially will be diminished by the possiblity that someone not having invested that time and money will be able to copy the product of his investment by obtaining a mandatory license. The provision for a right to exclude provided by a patent is a part of a pragmatic approach to incentive to invent and incentive to exploit inventions. These incentives should be maximized in the public interest. They should not be emasculated by mandatory licensing, or by governmental ownership of patent rights.

As I have said, APLA is most grateful for the opportunity to appear here and present its views. Thank you.

MR. DENNY: Thank you, Mr. McKie.

You make reference to divesting the contractor of his prior background data rights, patent rights, and the contractor losing his background patent and data rights. Requesting the contractor to license both of those for reasonable royalties only when it is necessary in order to practice the results of the contract that ERDA was attempting to get, does that fall within your definition of divesting or losing?

Since it may be of interest to you to assist in interpretation of my remarks, I will state that I am in the private practice of patent law in Washington, D. C., and have been for nearly 25 years, in various firms. I have been active in the American Patent Law Association for nearly all of that time, having served as chairman of several committees, and as an officer or board of managers member for some nine years.

APLA is governed by a board of managers consisting of 22 lawyers from various areas of the United States. Our board includes corporate and private counsel, as well as one law professor.

We are most appreciative of the opportunity to testify today on a subject of extreme importance to our association and, we think, to this country

The basis of my testimony will be a statement of general principles which was adopted by the board of managers of APLA at its regular meeting yesterday, November 18. I will not seek to go into detail about legislation, current or proposed, and certainly not about rules and regulations. My testimony will deal with policy which we think should be adopted for ERDA's efforts, in the national interest.

A fundamental basis for our position, and what we think should be ERDA's position, is that the patent incentive should be employed as an important element of the efforts to solve our current energy problems. Throughout the history of this country the opportunity to obtain a patent has furnished an important incentive to development of new inventions. This incentive should be preserved in respect of inventions within ERDA's field of particular interest.

The opportunity to patent not only encourages invention but also encourages exploitation of inventions, once made. It is notorious that most inventions require a great deal of work and time before they can be successfully exploited on the commercial market. Without the right to exclude granted by a patent, one seeking to exploit an invention would be deterred from making the necessary investment in commercial development of that invention, because the copyist would be able to come in, without the investment of the original developer, and take over part or all of the developer's market.

technology to the marketplace. Would this three years be a good number for all technologies, or would it have to be negotiated on a field-by-field or area-by-area basis?

MR. SPERBER: Later on in my testimony, I was going to also tell you that for small business, I would recommend an initial period of five years for them to introduce the R and D technology to the marketplace. And if they are successful, give them another five years of an exclusive license to satisfy the nation's needs for the energy solution.

I have picked three years for large corporations and five years for small business as arbitrary terms to get them to diligently work towards those deadlines to introduce the technology to the marketplace.

I am talking a concept now. Surely, in the ERDA provisions there could be a clause providing for an exception at the discretion of ERDA to extend the three-year period if they felt that the former contractor had been making an extremely diligent effort, but because of the technology, he has not been able to introduce to the marketplace the technology yet.

MR. WEINHOLD: I guess I have trouble seeing the relevance of a three-year period with some of the technology that takes seven or eight years to build the first plant, or something like that.

MR. SPERBER: All right. Now you are talking about -- There is a distinction between prototype production right in the laboratory of the R and D firm, and gearing up for full-scale production and perhaps the construction of plant facilities for full-scale production.

Introducing the invention to the marketplace is, in my view, still in the prototype phase. Three years is enough to show that they have made something into a commercial feasible thing that can be introduced to the marketplace.

Full-scale production; they would have six years for it: The second three-year period to satisy the needs of the marketplace.

Now, this is just the concept. Maybe the terms are too short. I don't know.

personal equities of who should get exclusive rights -- And I know Congress is more interested in commercial utilization -- then the logical policy to establish is one that will encourage the companies with energy expertise to deal with ERDA and commercialize the discoveries stemming from ERDA contracts after their completion.

The positive incentive needed for such encouragement can't be supplied merely by holding out a lot of money for R and D demonstration projects involving non-exclusive rights. The government should allow contractors to have exclusive rights with the government retaining a nonexclusive grant -- without the right to sublicense, as long as the contractor is diligent in expending money and effort to convert the work product of the ERDA research, development or demonstration project into a commercially feasible energy solution.

One practical way of implementing this approach will now be described briefly in conceptual form.

I am not going to get into details. Large corporate contractors would be able to exercise an option at the time of either bidding on the contract or at the time of identifying an invention or discovery during the contract, an option to have exclusive rights on such discoveries for three years after actual reduction to practice, by which time they are expected to introduce these energy breakthroughs to the marketplace.

They would be required to give bi-annual reports showing their progress and the fact that they have not abandoned their diligent efforts. If there is no market introduction at the end of three years time while they have had this exclusive right in the discovery, the government could then exercise its option to make the contractors' exclusive license nonexclusive and give one other nonexclusive license to another promising candidate who, in turn, would be given three years to introduce the energy discovery to the marketplace before any other nonexclusive licenses are granted by the government.

In this manner, each licensee would be assured a limited period of time in which competition could be limited to a small group of previous nonexclusive licensees who have failed to employ enough diligent effort to effect commercialization of the discovery.

competition from other companies asking ERDA for a non-exclusive license.

This is the reason why commercial utilization of patents in private industry is five to ten times that of government patents, and the reason why 7/8 of government patents are never licensed at all. If the firm bidding on the bio-conversion contract has already conducted its own R and D in this area of technology, it risks having its existing patents and trade secrets licensed to its competitors if an irrevocable waiver is not obtained and the background rights are required to practice the work product developed during the contract.

For many established companies in the energy field the revenues received for a government contract are only a fraction of the expected commercial benefits to be derived from background patents, discoveries and trade secrets. The venture capital decision is a gamble at best, based upon certain facts from which objective conclusions can be reached, but in the end, a subjective judgment. A fundamental factor in this risky decision is first studying the variables. Nonexclusive licensing would be just this type of psychological or irrational, if you will, factor that would make venture capitalists think twice about putting money into applied R and D.

The average company or inventor does not care that exclusive licenses are sometimes granted and not revoked. The average company does not know that its background rights will not be compulsorily licensed. It only cares about its own particular circumstances, its innovation, its sweat, its risk, and its money. Thus, the mere presence of a nonexclusive licensing policy by ERDA, regardless of how infrequently used it may be, will become the critical factor in the minds of many venture capitalists that will cause a high risk venture evolving from an ERDA contract, to become an unjustified gamble having too many unknowns that could prevent not merely a return on the contractor's investment, but also return of the investment itself.

Conversely, in the presence of exclusive licensing, financial backers and top management of government contractors will continue the confidence they have exercised in the past in the energy field while they were funding their own private research because of their unaltered expectation of meeting their goals once they have decided to take the risk of technical, market or patent failure.

venture capitalist being the degree of competition. Protection against competition serves as the insurance that the venturer and his capital sources will recoup the investment, together with a reasonable profit, should the R and D prove fruitful. Without some form of protection, competitors would immediately copy the invention after initial marketing success has been shown by the entrepreneur. This would put him at a financial disadvantage since competitors could under-price the inventor who must charge enough to recoup his investment in both the laboratory and marketplace in addition to his fixed manufacturing costs.

Competition in America is normally minimized or at least controlled by the new product venturer by the use of a number of well-known techniques, most of which are only available to the giant corporations that have well financed aggressive R and D marketing and distribution capabilities. It is unfortunate that entrepreneurs, small businesses, and medium-sized companies have less options in dealing with competition because our nation must rely more heavily on them than the giants for our energy solutions.

It is a fact that more than 60 percent of the major innovations of the 20th century are based on inventions of individuals and small business. It, therefore, becomes vital that small business in America be given other forms of protection against competition if our country is to have an adequate supply of energy innovators and financial backers willing to gamble on profits from energy technology.

The best form of protection for small business is patent protection, the limited, exclusive incentive. Trade secret protection comes in as close second.

How will the proposed policies and procedures of ERDA on patents and data affect commercialization of energy R and D? Well, in a nutshell, the proposed ERDA policy is that the contractor will normally get a nonexclusive license, the government gets full title and ownership, and the government will have the right to license third parties on the patent and trade secret rights conceived and reduced to practice under and during the course of the contract, as well as any background rights necessary for practicing the work product developed during the contract.

The contractor has the right to apply for a waiver to obtain a revocable exclusive license, provided it can persuade ERDA that numerous conditions involving the

[26]322 U.S. 471, 484 (1944).

[27]323 U.S. 386, 415, 64 USPQ 18 (1945).

[28]383 U.S. 1, 9 (1966).

[29]210 U.S. 405, 1908 D.C. 594 Feb. 15, 1974 492 F.2d 1317 182 USPQ 1 (2nd Cir. 1974).

[30]Supra., n. 17.

[31]Supra., notes 11-14.

[32]The Supreme Court has continuously held that a patented invention is exclusively owned by the patentee, who may use or not use it as he chooses. As with any property owner, if he wishes to license or sell his property, it is his right to use his exclusi ownership (or threat of injunction) as negotiating leverage to strike the best deal he can, based upon the infringer's cost of designing around the patent and the relative advantages and disadvantages of conventional products or a redesigned non-infringing product. As already mentioned, in connection with n. 15, the Second Circuit held that equity demanded that the patentee be forced to give away his exclusive ownership because the patent is not property that the patentee can use to enhance his negotiating stance.

[33]President Nixon's Science and Technology Message to Congress, March 16, 1972

[34]Supra., notes 8-10.

[7]Atomic Energy Act, 42 USC 2183; Plant Variety Protection Act, 7 USC 2404; Clean Air Act of 1970, 42 USC 1857 (h)(6); Helium Act, 50 USC 167(b); Tennessee Valley Act, 16 USC 831(r); Whitaker, "Compulsory Licensing - Another Nail in the Coffin" II APLAQJ 159-162, Summer, 1974.

[8]Thatcher v. Mayor of Baltimore, 219 F.909 (D.Maryland, 1915); McCreery Engineering Co. v. Massachusetts Fan Co., 180F. 115 (D.Mass., 1910); Ballard v. City of Pittsburg, 12F. 783 (W.D. Penn. 1882); Bliss v. Brooklyn, 3 Fed. Cas., No. 1,544 (E.D. N.Y.1871)

9. ——————————→ 69 F.2d 577, 593 (7th Cir. 1934).

10. ——————————→ 146 F.2d 941, 945 (9th Cir. 1945).

[11]14F. 914, 915 (CC. D.Mass. 1883).

[12]27F. 204 (CC. N.D. Ill. 1886).

[13]166F. 555 D. Mass. 1909.

[14]200F.Supp. 656,647, 161 USPQ 527, 530(N.D. Ill. 1969).

[15]492F.2d 1317, 182 USPQ 1 (2d Cir. 1974).

[16]Goldsmith, "The Case for Restricted Compulsory Licensing" II APLAQJ 146, 150, 151, Summer, 1974.

[1]The decision to employ venture capital by an outside financial backer or by top management, as the case may be, and to do so profitably depends primarily on the extent that the following conditions exist: (1) an existing and unfulfilled need for a product or service in the market place; (2) an innovation in the form of an idea, working model, rough prototype, or finished item or system that has a high probability of technica feasibility for satisfying the unfulfilled market need at a price that is not cost prohibitive; and (3) the means to appropriately price the product or service so that it will be desired by the market while at the same time maintaining a suitable profit margin befor taxes, a minimum satisfactory ROI (return on investment) throughout the venture life cycle a maximum satisfactory payback duration, and a minimum satisfactory discounted cash value of the total pre-tax net profits to be derived from the business venture over an adequate life cycle of a satisfactory number of years.

[2]Whether profit goals are achieved depends upon: (1) R&D, start-up, and operating expenses for successful planning, designing, experimenting, building, testing, prototype production of, test marketing, and finally full scale manufacture and sale of the product or service; (2) the optimum price/unit that the product or service will be bought for over the closest substitute on the market resulting in a volume of sales at such price level that will produce the greatest net earnings; and (3) existing or potential competition.

[3]The most common methods employed to keep competition down are: (1) a highly skillful, aggressive, and successful, but not predatory, marketing strategy; (2) a high cost of entry of the selected product/market area thereby eliminating all potential competitors not having or capable of obtaining equally large financial resources and necessary facilities and personnel for the venture; (3) a short life cycle of the venture selected for investment due to rapid product obsolescence, quick saturation of the target market,

CONCLUSION: AMERICAN INGENUITY IS OUR ONLY SHOT AT ENERGY SURVIVAL — IT NEEDS OUR SUPPORT

There is a highly delicate relationship between the patent incentive and the cautious, slow-moving gears of high-risk venture capital financing. The right to exclude for a limited duration is the impetus for R&D competition, discouragement of suppression and low prices in the energy field. The mere appearance or taint of an emasculated patent incentive will upset this delicate balance and result in technological stagnation, industrial secrecy and suppression, and high prices. It is significant here to point out a former president's conviction that "The mere act of scientific discovery alone is not enough. Even the most important breakthrough will have little impact on our lives unless it is put to use — and putting an idea to use is a far more complex problem than has often been appreciated . . . . Excessive regulation, inadequate incentives and other barriers to innovation have worked to discourage and even to impede the entrepreneural spirit."[33]

If some entrepreneur in the next few years stumbles upon a form of energy as new to us as atomic energy was in the past century, patents the breakthrough, and suppresses it for whatever reasons he may have, there is no cause for alarm. The courts have shown their willingness in the past to refuse injunctions against infringers where the public welfare is at stake.[34] Judicially sanctioned compulsory licensing pursuant the police powers of the nation will ensure that the nation's needs for the new form of energy are adequately fulfilled long before America is brought to its knees in the Middle East. On the other hand, enactment of a compulsory licensing statute may very well be the subtle negative incentive that will prevent tomorrow's entrepreneur from discovering that new form of energy. Who knows? Whether we have compulsory licensing legislation could mean the difference between war and peace at some point in time. Let's not worry about American inventors suppressing their patented solutions to our energy problems. The first and most important concern is to discover those solutions and soon!

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rise to whatever point the market could bring. These large companies would not fear that high profits from high prices would bring in new entrants because big companies could again use their large financial resources to price the new entrants out of the market.

IS COMPULSORY LICENSING SANCTIONED BY OUR CONSTITUTION?

This paper has just treated the economic arguments as to why compulsory licensing legislation, no matter how well drafted and how rarely enforced, will inevitably be abused in one way or another and will lead to a reduction in energy R&D financing, the opposite result desired by Congress. But, how does the judiciary view compulsory licensing legislation and what is its interpretation of what was intended by our Founding Fathers?

First, let's take a look at the issues involved. Section 8 of Article I of the United States Constitution provides that "the Congress shall have power.... To promote the progress of science and useful arts, by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries." The men who drafted this provision of the Constitution were solely interested in promoting the progress of science and useful arts through dissemination of technological progress with the incentive of rewards to inventors, without strings attached other than the mandate of public disclosure of the invention.[24]

This constitutional provision does not require inventors to use their discoveries in the marketplace for the benefit of the public. If the draftsmen and framers of the Constitution had any such intent, would not they have changed the provision to " the exclusive right to use their respective writings and discoveries"? The draftsmen did not want to qualify or restrict the reward to inventors with the requirement of use because they were interested in a strong incentive for the sole purpose of disseminating technology upon which further progress could be made for the general benefit of the country's economy The reason why the framers of the Constitution did not restrict the reward to the condition of use is that a strong incentive is needed to convince the inventor to disclose his secret for once it is disclosed, the discovery is no longer owned by the inventor unless he has an exclusive right thereto for a limited period of time. This exclusive right continues the inventor's ownership in the property, which, as the exclusive owner for a limited period of time, he may or may not commercially exploit.

because businesses will rely on trade secrecy as opposed to patent protection for excluding competition. Without patent protection, there is no public disclosure, and it becomes a simple matter to put a new product development under wraps with neither the government nor competition the wiser (since no patent will issue describing the breakthrough). The reason why a company would be more likely to suppress an invention that is kept as a trade secret is clear enough; fear that the secret will be cracked once the product is introduced to the market and that there will be immediate copying and stiff price competition before the innovator has had a chance to recoup its investment. In this situation, extending the life cycle of the existing product being sold by the innovator becomes an attractive alternative.

WILL COMPULSORY LICENSING REDUCE OR INCREASE THE COST OF ENERGY SOLUTIONS?

Capitalism and the patent incentive work hand in hand to increase competitic and lower prices, contrary to the beliefs of many compulsory licensing advocates. Let's get into the nitty gritty of the real world, for reliance on sweeping generalizations will not convince anyone of their truth.

First, although the new product may be superior, there is always a breakever point where the high price of a new product will still make the old inefficient one more desirable to stick with or purchase. Thus, the new product or energy facility must be reasonably priced in relation to the existing methods of satisfying the market need. This is especially true in the energy field where, unlike a consumer-oriented market, professionals are too shrewd to make capital expenditures that are excessively high in relation to cost-benefits of conventional apparatus.

Second, a business venture that reaps an extremely high profit derived from a high price coupled with a potentially large market demand will encourage potential competitors to divert their R&D funds to the area of the innovation in the hope of coming up with new technical approaches not infringing the patent rights. Although the pioneering company may have spent five / to / ten years in research, development, and preparation for production and commercial introduction of a synthetic fuel, it is amazing how fast this lead time can be drastically reduced by a dozen other companies, each spending perhaps as much or more money than the innovator in a crash program that has the benefit of starting

failure. President Kennedy summed it up well when he stated that the incentives and protection available in the patent system that are exclusively afforded to the owner of a patent are the bulwark upon which he can risk existing capital and attract new capital for development of markets for products, marketable products, the construction of plants, the employment of labor, and increasing the gross national product.[22]

WILL COMPULSORY LICENSING RETARD OR PROMOTE SUPPRESSION?

In a free market environment where the patent incentive is intact, the competitors in any given industry or technology will generally invest in a certain amount of research and development in order to improve existing products and innovate new products to take the place of the old ones before the competition / makes . the old products or improvements of the old products obsolete or undesirable in the eyes of the marketplace. Given the fast pace of technology today and the accelerated cost of R&D per new product improvement or new product venture, the company that has made a breakthrough cannot afford to delay commercialization of the innovation merely because it may make an existing product obsolete or undesirable to market.

Businesses today conspicuously avoid the carriage industry syndrome. At the turn of the century the horse-drawn carriage industry belittled and ignored the entrepreneurs of the times who were experimenting with automobiles. Carriages were big business and the profitable firms in that era were not about to promote anything that would replace carriages as the primary mode of transportation. Within a few years, the carriage industry vanished from the face of this country along with the carriage firms that refused to face reality and the inevitable obsolescence of their products. Businesses today strive to be able to bring out the products of tomorrow that are better than the products of yesterday, obsolescence being the very reason, because they know that if they don't bring out a better product, their competitors will. If there should be a conspiracy between competitors to suppress, then this is a job for the antitrust laws, not compulsory licensing (which would hurt nonconspirators and the nation's energy goals as a whole).

The venture capitalist must meet his ROI, payback and product life cycle goals. The time between product development and market acceptance of a new breakthrough takes years for the average innovation and, as time passes, increases more and more due

greater funds for financing expansion into the larger volume market sectors that will subsequently be hit with tempting prices lowered from initial introduction price.

Since the compulsory licensing proposals all, in one form or another, address themselves to the situation where the public need for the invention is not reasonably satisfied due to high prices that cannot be afforded by most that have the need in the first few years, it is almost inevitable that the innovator's need to recoup his investment as fast as possible in the early years will clash with the risk that the innovation will be compulsory licensed to competitors. This situation becomes one more barrier facing the venture capitalist in the energy field should compulsory licensing legislation be enacted. Money will either flow to non-energy ventures or things will be done in secrecy without reliance on patent protection.

In a Hart-type compulsory licensing statute, businesses, small and large, face additional negative incentives. Not only would a patented energy solution be subject to compulsory licensing, but also the know-how necessary to commercially work the patented invention, notwithstanding that it might comprise trade secrets that have significant value to other aspects of the innovator's business.

If the statute does not specifically require compensation for the capital expended on research, development, market introduction and customer education, the award of some standard nominal royalty such as 5% of the sales price of each facility installation or equipment sale is almost a certainty. The innvoator's venture will have been a failure because its payback, profit, and ROI goals will not be reached.

A further disadvantage of a compulsory licensing statute in the energy field is that no matter how well drafted and how good-intentioned the statute is, because of its inherent nature, there will be abuse. The mere fact that there is a compulsory licensing statute in the energy field will encourage its use whenever expedient or convenient Its existence will also make it seem like the new and approved way of avoiding infringement in the eyes of the energy industry. Seeking a compulsory license could become the thing to do and could promote a flurry of litigation as opposed to settlement by arm's length negotiation as has been done up to now.

However, the innovator may not use all of the patented improvements in fulfilling all of the market needs that could be fulfilled thereby. The innovator may also decide that the market is not yet ready to appreciate or utilize the discovered breakthrough for at least another 5 years.

If compulsory licensing legislation exists, such improvements and breakthroug may wind up in the hands of competitors after being patented. The risk of this happening would be a negative incentive to minimize product improvement and research activities for developing second and third generation energy solutions or to keep such activities secret without reliance on patent protection.

The fallacy that compulsory licensing legislation can do very litte harm to anyone other than those at whom the statute is aimed can be illustrated by looking at the circumstances of the small businessman, also.

The compulsory licensing proposals that have been popular to date generally allow the innovator /three years after patent issuance to commercialize the invention prior to subjecting it to compulsory licensing. Many entrepreneurs and small businesses have the capability of making significant contributions in solving our energy problems, but they will not be able to meet market demand for their discoveries right away because of limited funds and production resources. It is not uncommon for a half dozen years to pass by while capital is attracted to finish development and expand the facilities and then finish all of the many /things which must be attended to prior to full-scale production and distribution. The money men know that if they invest in a high risk energy venture, they must provide sufficient capital to carry the project for a number of years. If a compulsory licensing statute would permit others to receive a license on the energy solution /three years after it was patented because market demand is not being adequately satisfied by the business venture, venture capital and/the receptiveness of small business management to energy ventures will surely dry up.

Even if the small or medium sized business does have available the resources for rapidly expanding to meet the requirements of the national market, the pricing facts of life in industry dictate that prices be set high on new products and equipment. There are several reasons for this.

forth in detail by Tom Arnold and W. Brown Morton, Jr. with in-depth reasoning for specific provisions that would prevent abuse of the compulsory licensing law.[18] For instance, legislation would have the safeguard that the patentee has not been able to reasonably satisfy the public need for the invention for at least a /three year period and the invention or discovery patented must be of primary importance in a general field of endeavor.

HOW WILL ENACTMENT OF COMPULSORY LICENSING REALLY AFFECT ENERGY R&D?

The basic premise of the /proponents, who advocate compulsory licensing in order to weed out suppression and who feel that such legislation is a logical and practical extension of the case law and the end purpose of the Constitution, is that small and large businesses alike have nothing to worry about as long as they do not try to suppress an energy innovation. Therefore, there is really no harm done by having the compulsory licensing law and something definitely to be gained if suppression does or will exist in the energy R&D field.

Let's take a look at the fallacy of this basic premise of compulsory licensing advocates, using the large corporate R&D laboratory as an example.

It is standard practice for the research administrator to investigate a number of different technical approaches in solving a particular problem or developing a new product for the task to be performed. It is common to see several parallel inventions evolved during the research and development process. At some point, some of the approaches will be abandoned and only the couple that have the best chance of satisfying the market need at a profit will be test marketed. Finally, a single prototype will be selected for full-scale production and market introduction. Eventually even this product will be improved after field reports are received on market preferences and technical bugs during the first year or two.

During this process of research, development and commercialization, patent applications are normally filed on some of the inventive approaches that are eventually abandoned and definitely on the best and second best candidates for market introduction. Afterwards, one or more patent applications will be filed on the changes made to improve

The proponents of compulsory licensing appear to appreciate the value of the patent incentive in promoting R&D and new product introduction. They know new energy ventures won't be financed without some form of protection against copying and near term competition, and they feel that patent protection is preferred over the alternative of industrial secrecy.

In fact, compulsory licensing advocates emphasize that removing the right to exclude would only be in the most infrequent situations, when warranted by the economic evils of suppression or inadequate supply of an energy innovation very much needed by the public.[6] To support this view, the track record and experiences with other compulsory licensing laws both abroad and in this country are cited.[7]

Various legal positions have been set forth to lend credibility and a purpose to the logic for compulsory licensing. First, there are cases going all the way back to the 1800's that are precedents for compulsory licensing where the public health or welfare is at stake.[8] In City of Milwaukee v. Activated Sludge, Inc., the court held that if "the injunction ordered by the trial court is made permanent in this case, it would close the sewage plant, leaving the entire community without any means for disposal of raw sewage other than running it into Lake Michigan, thereby polluting its waters and endangering the health and lives of that and other adjoining communities."[9] Likewise, in Vitamin Technologists v. Wisconsin Alumni Research Foundation, the court refused to enforce a patent because "it is the poor people suffering with rickets who constitute the principal market for Appellee's monopolized processes and products."[10] At the present time, U.S. dependence on the Arab nations and others in the world for fulfilling our energy needs is a threat to the nation's welfare and defense. It is no longer practical to rely on courts not to grant injunctions on a case-by-case basis for the immediate and widespread use of energy solutions.

Second, there are those who also feel that legislation is needed to prevent the courts from going overboard in emasculating the patent grant. In Hoe v. Boston Daily Advertiser Corp., the court concluded that granting an injunction against infringement would not be of any advantage to the plaintiffs, "except to coerce a settlement."[11]

THE QUICKEST WAY TO ENERGY INDEPENDENCE

The end product desired by Congress is readily available low-priced solutions to our energy problems. This end result is attainable only after commercialization of the most promising of many different technological approaches and innovations in the energy field. The means by which this end result can be achieved in the fastest possible manner is none other than good old-fashioned research and development competition among firms within the energy industry. If hundreds of small businesses and dozens of major corporations are all enthusiastically trying to develop their own technological solutions to our energy goals, with each of said firms improving upon the innovations and efforts of others and hoping to be the first to present the public or ERDA with a commercially feasible breakthrough, then this is the ideal atmosphere for expediting energy independence

What is the ideal combination of incentives to motivate R&D competition within the energy industry? The basic motivations for budgeting R&D for ventures in any industry are well established; the prime incentive being a satisfactory ROI.[1]

If the potential rate of return on investment is high enough, the entrepreneur will take a reasonable gamble with his or his backer's capital. The key to decision-making here is what is a reasonable gamble. The risk that ROI objectives may not be reached is dependent on three fundamental factors, the most important, in the mind of the venture capitalist, being the degree of competition.[2]

Now we get into the venture capitalists' mentality. Protection against competition serves as the insurance that the venturer and his capital sources will recoup the investment together with a reasonable profit should the research and development prove fruitful. Without some form of protection, competitors would immediately copy the innovation after technical feasibility and initial marketing success has been shown by the entrepreneur. This would put the venturer at a financial disadvantage since the competitors would be able to underprice the innovator, who must charge enough to recoup his substantial pioneering investment in both the laboratory and the marketplace, in addition to his fixed manufacturing cost.

My testimony does not represent the official position of any organization of which I am a member. These are my personal views only, based upon my previous research, experience and responsibilities in industry and the patent profession.

Respectfully submitted,

Philip Sperber
Manager
Legal Department

PS:MWC
enc.

MR. DERMER: It is our position that handling it by the regulations would be satisfactory. If you would like to have the Act amended, that would be fine, too.

MR. DENNY: One of the problems, when you solve one problem you get into another. Our six months was created as the result of all government agencies trying to help contractors by having the same set of regulations and time limits. This six months you will find in the FPRs. It is one of the things we thought was a problem to the contractors. There was an attempt to get it uniform throughout the government.

But you are saying we have a uniform problem now.

MR. DERMER: The problem is the same.

MR. DENNY: Thank you very much, Mr. Dermer. We appreciate it.

Is Mr. Sperber here?

MR. SPERBER: Yes, I am.

Good afternoon, gentlemen. My name is Philip Sperber. I am counsel and an officer of the Cavtron Corporation, and I am an officer and director of the Ultrasonic Industry Association.

However, the views that I am going to express today are personal, based upon my experience as a lawyer and businessman in industry.

A couple of weeks ago I submitted a 20-or so page statement on whether mandatory licensing is desirable in the nonnuclear energy field, and subsequently, I received a call and was invited to come down to perhaps summarize that statement and subject myself to questions.

It is a very complex area, and I feel that since you do have this lengthy statement from me, that we can better make use of our time by allowing me to apply the concepts of my statement on mandatory licensing to the specific proposed policies of ERDA on patents, data and copyrights. So, with your indulgence, I would like to do this. Then you can question me on either issue, either mandatory licensing or my views on ERDA's patent and data policies.

(The complete statement follows.)

government won't want the data, but might want you to license third parties which might be a little bit different.

Someone mentioned we are not going to be the user of much of this non-nuclear technology ourselves, so our regulations were intended to provide for that possibility, too.

Earlier I was talking about on page 7 of your testimony. "Views have been expressed by some lawyers in government to the effect that even though a contract is negotiated between ERDA and the contractor, and executed by authorized officers of both, negotiated patent data terms and conditions on the contract are still subject to judicial review pursuant to the language in the ERDA Act or the Atomic Energy Act."

MR. DERMER: I was referring, in that section -- I apologize. I did comment on judicial review. I was referring there to a determination at the outset of the contract that a given invention is a background invention. Absent the matter of fraud, if a determination is made during the contracting stage, it should be lived up to by both parties. A contractor then enters a contract with knowledge that one of his inventions is deemed a background invention, rather than a subsequent review perhaps under Section 152 of the Atomic Energy Act, to the effect that it may not meet the statutory standard, but is a negotiated resolution of this question during contract stage.

MR. DENNY: I see. Does the panel have any other questions?

MR. BLASEY: I have sort of a two-part question. Does Westinghouse have a policy now for the time required from conception of an invention to reporting it to management?

And the second, if ERDA was to accept your proposal in that area, would it be appropriate to establish a time which is, as I have described, from conception of idea to reporting?

MR. DERMER: We have no established internal time period within which we instruct our inventors to submit disclosures. Our encouragement system is something we use for our own inventions, as well as government contract inventions. We feel that we should not have a

think we have focused on that, probably not to the extent that I am sure we will now.

I might add one point. One of the reasons why we changed the past language for licensing third parties from upon request of the third party to upon request of ERDA was the foreign company issue, with the idea that it is very likely that if a domestic company was doing an appropriate job there would be no need for a request from a foreign company.

However, I am sure you suggest we put that in there a little more directly.

On your comment about foreign licensing, I assume you were talking about the title, licensing of foreign government.

MR. DERMER: A waiver of foreign rights can frequently be subject to a reservation of rights to foreign governments.

MR. DENNY: You are right. Okay. In the regulations, a positive ERDA decision would have to be made before that could be applicable. I hope that is accurate.

MR. DERMER: It is our view that consideration by the U. S. Government toward the cross-licensing of foreign governments in those countries where the electric utilities are owned by the government should be done only under very stringent standards.

MR. DENNY: We don't have our standards labelled, but a positive decision would have to be made under our regulations, first.

MR. DERMER: Yes, I am aware.

MR. DENNY: One of the reasons I am relatively delighted with section 9 myself was the response to your comment about court challenge. With the suits that have been instituted against the government for various decisions on excluseve licensing and granting of waivers, I believe in our legislation it is definitely put to rest. It states that the decision on waiver is in the Administrator.

In the conference report it states that hearings are not required in order to do this. At least I believe

1. There is no technical or economically available substitute for the excepted item.

2. The excepted item is deemed necessary for the effective implementation of the agency's program and,

3. The contractor has the right to appeal the question of necessity of licensing to the highest levels of the agency, and that determination will bind the contractor.

It is submitted that the latter category of proprietary information has withstood the test of time and is a practical resolution of the requirements of the government, the national interest, and the contractor's private position. It is recommended that either the ERDA Act or regulations be amended to permit specifically the use of terms and conditions respecting proprietary information that I have just mentioned.

I feel compelled to comment on just one additional aspect of the ERDA regulations relating to the time limits for reporting inventions, for requesting waivers and for the institution of forfeiture procedures.

The ERDA Act calls for the reporting of inventions "promptly." The proposed regulations call for reporting of inventions within "six months of the conception or the first actual reduction to practice." Westinghouse has continuously exerted substantial effort to ensure that government contract inventions are promptly submitted and reported.

Certain of our facilities employ full-time patent liaison personnel whose primary function is to ensure compliance with our contractural commitments created by our government contracts. Westinghouse also employs an internal award system to reward inventors through monetary payments for the submission of invention disclosures that are worthy of patent protection.

Despite these efforts, it is clear to us that Westinghouse will not be able to comply with the reporting requirements called for by the proposed Regulations in most cases. It should be noted in this respect that Westinghouse's record for promptly reporting inventions has been acknowledged, albeit informally, by several government offices as being among the best in the industry.

technology without giving mandatory access to privately owned foreign patents. We find no basis for extending mandatory licensing regulations to the foreign arena in any act of Congress or under the regulations of any governmental agency. The government has no compelling need for such a requirement, which only functions to reduce the value of a contractor's commercial assets which were developed at private expense.

It is important to emphasize that we are addressing privately funded assets of the contractor. We strongly urge that if mandatory licensing is retained in the proposed ERDA regulations with respect to background patents, it should be limited to licensing of United States patents.

We note that the proposed regulations provide for the licensing of foreign governments under foreground patents and data pursuant to a treaty or agreement between the foreign government and the United States government or an agency thereof. It must be recognized that in the electric power area, certain foreign governments own the electric utilities. Examples of such government ownership are Italy, France, England and Sweden. For the United States government to license the foreign government in a country where the electric utilities are an arm of government is in effect the licensing of the entire market in that country to use the fruits of United States government funded technology. A foreign manufacturer in that country receives United States government funded technical data under the United States Freedom of Information Act and its customer, the government-owned utility, under the proposed regulations, would in addition have a patent license to insulate it from adversely owned patent rights.

In order to give American industry an advantage in competing in those foreign markets by virtue of the investment of United States tax dollars in the ERDA program, we strongly urge that licensing of foreign governments under patents obtained from ERDA programs be entered into by the United States only when the most urgent needs of the United States are fulfilled by such licensing programs.

Another area of the law that we believe requires clarification relates to patent and data contract terms and conditions that are negotiated by contractor and ERDA personnel.

We believe that our patent system is successful because it functions in the following manner:

Mr. "A" brings a new design of a circuit breaker to the market after filing patent applications to protect it. Competitors "B" and "C" begin to lose sales because their customer is impressed with "A"'s new design. "B" and "C" look at "A"'s patent protection and design new and improved circuit breakers of their own -- hopefully avoiding "A"'s patents.

As Dr. Ancker-Johnson indicated in her testimony in the House Energy Bill hearings in February, 1974, invention is a step-by-step process -- the opening of successive doors. The net result -- new and constantly improved products -- a lead in technology for the U. S.

What will compulsory licensing do for us? In our opinion, the stifling of invention is what it will do for us. Under a compulsory licensing system, "B" and "C" copy "A"'s design with the knowledge that no injunction can issue against them and that, at the worst, they can have a license on reasonable terms. This assumes that "A" bothered to improve his product in the first place.

If we must have compulsory licensing of background patents, it is our opinon that such licensing must be confined to U. S. patents under the exceptional circumstances set forth in the proposed ERDA regulations and, thus, not include foreign patents as is set forth in the proposed ERDA regulations.

No one to date has noted that the proposed ERDA regulation define a background patent to include not only domestic patents but foreign patents as well. It is in this area that Westinghouse asserts that the ERDA regulations have exceeded the intent of the Act, especially Section 5b(1) of the ERDA Act, and have gone entirely too far.

It is well known in business circles that American companies have extremely difficult times competing in today's foreign marketplaces. Our successes in such foreign markets occur mainly where the American companies are technologically ahead of their foreign counterparts. This technological lead is normally based upon a strong patent position in the countries in question and results in substantial entries on the plus side of the United States balance of payments ledger.

frequently happens. Small business is interested in getting into new areas. Large businesses reluctantly so.

That is all.

MR. HILL: So you would justify the two-tiered system, then, on the flexibility and speed of reaction that you think small business has?

MR. SCHELLIN: That is correct, yes, sir.

MR. EDEN: Where large firms have no intention of utilizing their inventions, a small business would get the rights?

MR. SCHELLIN: That is correct.

MR. EDEN: If a small firm had an invention and had no intention of commercializing it, would you allow a large firm to come it?

MR. SCHELLIN: Yes. I don't differentiate on the contractors being small or big in that regard.

MR. DENNY: Thank you very much.

MR. SCHELLIN: Thank you.

MR. DENNY: It is now about five minutes after 4:00. I think it might be appropriate to take about a ten-minute break.

We will reconvene at 4:15.

(Recess.)

MR. DENNY: Our next speaker is Mr. Dermer, who is a patent attorney with Westinghouse Electric Company.

Mr. Dermer, glad to have you here.

MR. DERMER: Thank you.

My name is Zigmund Dermer. I am a member of the Westinghouse Electric Corporation Patent Department.

On behalf of Westinghouse Electric Corporation, I should like to express our appreciation for the opportunity

MR. SCHELLIN: It depends on the relative market and control over it.

For instance, the Anderson Company, for example, is a relatively small company. As you may know it makes the Anderson Company windshield wiper blades. ANCO is the trademark they operate under.

That is considered a large business because they control a large portion of the market. Yet employee-wise they are quite small.

I can tell you only of three or four companies that make windshield wiper blades. Just look at the rubber inserts.

So this is important, too, as far as SBA is concerned.

MR. EDEN: A firm can be considered quite large, but nevertheless is a small business by SBA definition, though?

MR. SCHELLIN: Not by small business. But the query, saying very few companies would be excluded, this may be true.

If you look at the fact that we are living in an oligopoly and the large businesses are few in number but are in major control of the economy.

MR. EDEN: If our sole concern were utilization of the R and D results, should we still have a two-tiered approach? Would you still justify making a distinction between a large and small company if utilization were the only objective?

MR. SCHELLIN: On the basis that small business is innovative, I would say yes, we should begin with a two-tier utilization -- waiver rights, whatever you are talking about, a two-tier government patent policy.

MR. EDEN: In other words, with utilization being the only criterion on which we made decisions, we would give patents to the small firms, or exclusive licenses, but deny them to the large firms? Is that your answer?

MR. SCHELLIN: You are giving it to a qualified small business, say, to the detriment of a large business, if

licensed third party would lie if he has shown that he meets the test of use under the first recommendation whether or not the third party is small or big business, or unless demonstrated by the ERDA licensed third party that the practice of the invention constitutes a material necessity to the benefit of the public.

5. We recommend that ERDA have broad general statutory authority to purchase or license patent rights which may be the background patents of a contractor or may be the patents of a third party.

We also recommend that ERDA be given authority to settle infringement claims administratively out of any available funds. Concomitantly with the latter, ERDA should promulgate informal procedures for administering patent claims to insure fair, prompt, and equitable treatment of claimants.

Of course, overall coordination of administrative claims procedures should be assigned to the Government Patent Policy Review Board, recommendation number 3 in the above, to achieve prompt and equitable settlement of claims.

6. We believe that the present various statutes allocating to the government all rights to the information or data resulting from its contracts should be repealed, and there should be enacted, in their stead, a uniform data policy setting forth broad statutory principles governing the allocation of such rights.

This uniform policy should (a) provide for uniform concepts for all government contracts, defining the technical data and protectable technical data and prescribing the government's and the contractor's rights in each type of data; (b) provide for uniform handling of proposals and restrict their use for evaluation whether or not such proposals contain restrictive markings; (c) permit contractors to obtain adequate copyright protection in foreground data when such copyrights will be an incentive to achieve commercialization or the publication and dissemination objectives of ERDA.

7. Specific statutory provisions should be enacted to give the owners of background data, a judicial remedy for compensation when such data is misused by ERDA, provided such data has been submitted to ERDA with proper restrictions on its use or disclosure.

It is to us ridiculous for the government to assume that because it picks up the cost of only one-tenth of the cost of innovation, someone would be willing to spend the rest to bring an untried product to an untried market without a degree of exclusivity.

Having in the foregoing stated that it is essential to maintain a climate for small business because of our belief of the philosophic concept of liberal capitalism, we must now state that just as NSB and NPC has proffered the concept of a two-tier government policy at other hearings at other times on many issues including taxes, NSB and NPC also recommend a two-tier government patent policy.

Just as there are set-asides for small business as defined by the Small Business Administration, there must also be a policy of set-asides to licensing small business only, for patent royalties if found desirable. Such licensing must have some attribute of exclusivity for a period of time which need not be the entire life of the patent. The license granted may encompass a field of use or may be limited geographically.

There are many who would urge against exclusive licenses for any time period to anyone, small business or big business. Such people feel that what all of the taxpayers paid for should belong to all. What is overlooked is that research performed by the private sector is also partly financed by other taxpayers in a way, as such costs are usually tax-deductible, so the taxpayer winds up absorbing the costs for a major portion of research anyway.

1. We therefore recommend that legislation be enacted to make entirely clear the authority of ERDA to give cognizance to a two-tier government patent policy. This would be accomplished by giving ERDA the authority to waive rights amounting to a grant to a contractor of a non-exclusive royalty free license up to exclusive license for a reasonable royalty for a period less than the life of the patents with a right to sue.

Further, that qualified small business be given special preference who may or may not be the contractor in acquiring an exclusive license, which may be for a field of use or geographic, for a reasonable royalty for a period of time less than the life of the patents with a right to sue.

entrepreneurial aspect and spitit. But even at its best, the large corporation will never be as enthusiastic about innovation as its tiny competitors.

It has a huge investment in existing products and procedures that it would prefer not to write off too quickly. It usually makes more economic sense for it to seek incremental improvements in productivity rather than to concentrate on a new product that may or may not work. Its vast internal bureaucracy is always, to some extent, a conspiracy against innovation.

We at NSB and NPC believe and talk about liberal capitalism. We are referring specifically about a political-economic system in which small business is given the opportunity not only to survive, but to prosper. If the Soviet Union were, tomorrow, to permit their major nationalized industries to sell shares to the public, in order to raise capital, it would not involve any grand reformation of their system. On the other hand, if they gave entreprenurial freedom to small business, it most certainly would.

Now, turning to patents, it is known that underlying the patent system are three fundamental assumptions. First, it is believed that the patent system promotes the making of inventions.

Second, it is believed that the patent system provides the necessary incentives to develop inventions commercially once they are made.

Finally, it is believed that the public disclosure required by the patent law promotes scientific and technological knowledge.

It should readily be apparent that of these three assumed benefits, only one would appear to be significantly affected by ERDA patent policy. Public disclosure of inventions made under government contracts can take place under the contract terms no matter what policy is chosen.

The effect of the incentive to invent would also appear minor since the government, in paying for research and development work, has supplied much of the incentive for invention. In addition, there are many other motivations than the present system which lead to invention.

I am here as a member of the Board of Trustees of the National Small Business Association, a Washington-based organization with more than 40,000 members and affiliates throughout the United States. My function with the National Small Business Association is to keep them informed and abreast of matters that affect the intellectual property interests of the membership.

I am also here on behalft of the National Patent Council of which I am the Executive Vice-President. This organization has as its membership individuals and generally smaller companies who are the owners of patent rights.

For the reason of the diversity of economic interests involved in the membership of the National Small Business Association, and the National Patent Council, this statement as well as the other matters with which we are concerned is necessarily of general import. That is to say that we do not deal in this testimony with special considerations or developments that concern one industry only.

Such matters are best left to the voices and interests of the traditional trade associations, each of whom are expert in their own area.

As a prelude to our recommendations, we at NSB and NPC are continually dismayed and chagrined at how little interest there apparently exists in the condition of small business in the United States today. Big business is in the limelight to such a degree, and is in the center for such passionate debate, pro and con, that the smaller business is an invisible figure not taken into account or reckoned with.

Please bear with us as we develop our thesis further. We believe it is necessary as what we say now explains our recommendations.

We would indeed agree with the textbook authors that big business may be designated "quasi-public" institutions. We must in all fairness state that big business is certainly far more important today economically and politically than it ever was. Economically, because the over-all health of the economy in terms of investment, economic growth, employment, hinges very much on the health, or lack thereof, of big business. This also affects thousands of suppliers to big business.

I think the real answer is that we need to worry about such a thing. We are pleased to license it to get maximum revenue.

MR. GOODWIN: I notice you are concerned about the delay involved in negotiating waivers. I am wondering if you have any suggestions as to how that might be accelerated or decreased.

MR. HAUGHEY: Oh, yes.

DR. SMITH: I think it would be helpful to have a finite, fairly small set of options that are worked out so that each case doesn't have to be handled on an individual basis. I think that may be part of the learning process as we begin to do business with you.

If there are some blanket arrangements that can be assigned for broad classes of contracts, that would be very helpful. Actually, we run into no difficulty at all in negotiating license patent policy under the terms and conditions of the Defense Department. We find their arrangements quite acceptable. I suspect that some part of the delay and the time it takes to negotiate an ERDA contract is due to the fact that we are in an early stage of the formulation of policy and practice.

MR. DENNY: I would like to welcome to the panel Mr. Poteat.

MR. POTEAT: In your prepared text, you said broad royalty rights to ERDA are required in our contracts. We are talking about a nonexclusive license for research, demonstration and development.

Would you care to comment on that in regard to your statement of a broad background right to ERDA?

Secondly, with regard to third parties, what is required is a license, background license to responsible parties, and the term "reasonable under the circumstances."

I would like you to comment with regard to that part of your statement.

DR. SMITH: I think what is called for here is some flexibility. That is the point we made earlier. Perhaps my prepared statement is a little strong.

MR. EDEN: We heard virtually the same thing from General Electric this morning.

Does this seem to be the patent licensing policy of larger firms generally?

MR. HAUGHEY: I think that is true. We have less need for exclusivity. We can compete.

I think it is not out of order to say we are a fairly large organization. We anticipate this year about $1.3 billion worth of sales. Nearly one-half of that is R and D work.

We have about 9000 members of technical staff throughout the company. We are a fairly large operation in high technology.

MR. EDEN: Would you agree with the view, therefore, that complusory licensing constitutes the greatest disadvantage to the small- or medium-sized companies?

If the larger companies have an open-door policy, compulsory licensing can't hurt them at all.

MR. HAUGHEY: I think that is true. It can't hurt us as much as a small company. With us it is a procedural matter of negotiating something we are already willing to negotiate.

It is just a matter of getting the job over with and making a reasonable profit on the technology we spent so much to develop.

MR. EDEN: There are several reasons why you might have arrived at a policy of liberal licensing. First, you may decide that you are not vulnerable to competition from licensees of the patents that you hold.

MR. HAUGHEY: May I ask what you mean when you say, "You are not vulnerable"?

Sometime ago I was part of a decision to accept a patent indemnity for an $86 million commercial contract where maximum liability was the total cost of the contract of $86 million.

on the courts against someone who is inclined to infringe first and negotiate later, you have destroyed our opportunity for a licensing negotiation, or at least very seriously disturbed it.

MR. DENNY: The comment was made that as far as licensing is concerned, the contractor would prefer to have the first option to supply the marketplace. Concerning our background clause, in essence, on of the objections I have heard to it is that it's up to us to decide what we would have. This is a step in that direction.

You mentioned the contractor would like to have foreign rights as a first option. I would just comment that foreign rights that are set forth in the statute and regulations which you may have, if we don't file, is not considered a waiver.

Someone asked me earlier, that is one of the reasons for all the complicated provisions attached to it, because it is not considered a waiver. The possibility of asking for that first option in foreign rights is available under waiver possibility. So that is an approach to that. As you say, whether or not we work these things out depends on both of us.

Any questions from the panel?

DR. FUMICH: I just have a kidding comment. I just want to say if we can deal with the Hughes Company, we can deal with anybody.

DR. SMITH: As far as our business is concerned, we are like anybody else. We are a profit-making, taxpaying organization. We try to be competitive.

MR. WEINHOLD: You made comments about your not doing a lot of business in the energy area now and you hope to, depending upon the incentive.

What are you saying about the past regulations and stuff like that?

Has it been patent regulations and things like that that have kept you out of the energy business, or has it just been otherwise not seeing a particular market potential or profit?

At the very best, the delay means that it takes a while before you get on with the job. That is bad. At the worst it may mean that you have to dismantle a team of scientists and engineers because you just don't have any means of supporting them during the period of negotiation. Very possibly, if some of the earlier topics we have touched upon are properly resolved, it won't take so long to arrive at suitable terms and conditions. But I think it is very important if at all possible to be able to expedite the negotiation of these contracts.

I have not listed contractor ownership of foreground patent rights as a primary concern. As the people from General Electric mentioned this morning, it is too early for us to see how well the waiver policy will work. We will be quite happy to give it a try. It would be nice to have foreground title, but I don't know if it is really necessary. We will take a wait and see attitude on that.

Another point that has been touched upon is the matter of our own ability to use data that is generated in the course of a contract for our own purposes. It does look like the proposed regulations take care of that matter satisfactorily.

In conclusion, we are most concerned about the protection of our background patent rights and data; and we urge that the policy allow easy vesting of foreign patent rights in the contractor. We vigorously oppose mandatory licensing and we hope that policy and practice can be developed to allow expeditious negotiation of the contract terms and conditions.

The Hughes Aircraft Company has a good deal to offer here, and I think the job of getting on with developing new energy alternatives is a very important one. I would like to see us more involved. I think if the incentives were improved a bit, we would very likely plunge right in.

Thank you.

MR. DENNY: You mentioned disbanding research teams. A friend of mine was working with Hughes and was on such a team that was disbanded. It was not the government's fault, however. It was yours. It was on the lunar lander, and the product you produced was so successful we didn't need the backup systems that had been planned for and broke up your team early.

The purpose of the present hearing, as I understand it, is to determine how well the policy and regulations are accomplishing the balancing job of providing incentives for industry on the one hand, versus protecting the public interest on the other. It is our view that the incentive end of that balance needs to be strengthened. There are many scientists in my laboratories and throughout the company who would love to work on energy problems. Frankly, we have had to discourage them somewhat because we do not see where we will be able to profitably invest the company resources to obtain an adequate return for that investment. I think the trend as I detect it through the course of these hearings is in the right direction. I hope it does work out that way.

For the remainder of my time, I would like to concentrate on four specific topics, the first one being background patents and data; the second, foreign patent rights; the third, mandatory licensing; and the fourth topic, (which is a little different), the time and energy it takes to negotiate acceptable terms and conditions with ERDA to do a job.

You have heard many times yesterday and today about the problem of background patents and data. In practically every negotiation we have had with ERDA we have gone round and round on this issue. In our experience, the tendency is for the ERDA organization to ask for very broad, far-reaching background rights,although over a period of time it may be possible to negotiate something that is acceptable. We have one particular example I might relate as a kind of case history.

We have developed a new proprietary high power electric switch over the last decade or so. We have spent several million dollars to bring this switch along. It turns out as we talk with people in the various ERDA laboratories around the country and also with some people who are working in the fusion game abroad, that it may be possible to apply this switch to help solve some difficult switching problems in nuclear fusion research.

So we have tried to come together to develop a subcontract with one of the ERDA-sponsored organizations to apply the technology we have in this area. Frankly, it's been very difficult. We have a good patent position. The primary product is going to be used in the electric utility

We believe our market system can best serve the public interest by maintaining the historic function of the patent system and the traditional roles of government and industry in the functioning of that system in connection with government contracts.

Thank you for your consideration. Bob Teeter and I will be happy to answer any questions you might have.

MR. DENNY: Thank you. I hope, as I have heard several times during these hearings, the fear of there not be a waiving, the fear of giving up data rights, or the fear of this or the fear of that, will not discourage industry under this new set of reulations from at least giving us a try. We are, in fact, here trying to do a little bit of a balancing act. We want to encourage industry to cooperate with us. There is a real concern on the part of some members of Congress that technology might be suppressed and misused. This perhaps has caused us to add in some insurance, or as a previous speaker referred to it, castration, where the need might not be as strong.

For example, our background patent clause has been identified as something which may cause a problem. I hope you will read that very carefully. That clause was very carefully drawn.

If I may paraphrase it in nonlegal language, I think it says, if you have technology that is necessary in the energy field, then we will ask you to license for reasonable royalties. Beyond that, I think it does not become involved. That is what we are hoping to establish. Under our new data policies, we have tried a little bit different approach. And please do not hesitate to submit proposals to ERDA because of that data policy.

I think generally what that says is, number one, we don't want your proprietary data as a general rule. If you have some that should be involved, let us know. Then we will decide whether or not we think it is necessary. I think this is a legitimate job for ERDA. If we feel the program mission needs certain data, then we need certain data. All I hope we can expect to give industry is beforehand notice: "This is what we need. This is what we do not need."

Then you can make up your mind whether you want the contract or not. I have seen several contracting

contract. This means that contractors most capable of contributing constructively to the energy R and D programs may be deterred, and in some cases dissuaded from participating, because of obligatory licensing provisions. Such provisions may not permit a reasonable profit or royalty, when government funding of further development is appropriate.

The stated objective of ERDA's patent policy is to provide an incentive function to stimulate commercial industrial development in energy fields, and in doing so to protect the public interest.

Industry conducts R and D to develop superior products or to develop more productive less costly processes. The purpose of this R and D is to obtain an advantage in the marketplace. The advantage is lost when it must be shared without an adequate consideration.

To support ERDA's mission, contracts with industry for development of energy saving alternatives are desirable. Alcoa and others like us are most interested in obtaining ERDA funds to conduct R and D in those areas where we have competence. However, these areas of competence, in Alcoa's case, for example, have been our business success since the company's founding. Our background knowledge in these areas is invaluable. We do not believe it equitable to relinquish this to the government and all our competitors in return for contract support alone.

The ideas for investigation of energy-saving alternatives in industry will largely come from the companies in each industry -- after all, they are the experts in their field. In order for ERDA to be successful, these companies must then use those ideas which are successfully developed. The products of ERDA's R and D programs will not be used by ERDA, but by industry in the marketplace for the benefit of the public. I think this is a key point. It is a departure from the way the Department of Defense and NASA operate their patent policies. They use the products that they fund R and D for.

To enhance the early application of these successful developments -- to reduce the R and D to practice and save energy -- the incentive of awarding title to the corporate contractor should be the rule, not the exception.

justified it. It is merely that the present ERDA policy makes no mention of it. I would just assume that this will be the same practice that has gone on before and will be carried over into the new policy.

MR. GOODWIN: Are you saying there are no situations under which the government should attempt to obtain patent rights to inventions developed under its contracts in connection with the ERDA field of operations?

MR. TABIN: We were taling about ERDA taking title here. What are you referring to here?

MR. GOODWIN: I am trying to find out just how far you carry your view that patent rights in the hands of the government have no potential for the government getting commercial utilization of the patent rights.

MR. TABIN: The government is not a commercial entity. I mean, it fostered the development of a specific area. It can fund money for basic research. Somehow, it must get these rights transferred over to industry some way so that industry can carry them forward. These rights could be transferred on a nonexclusive or excluseve basis.

All we are saying is that in certain situations, nonexclusive rights are all that is required. In certain situations where a small company may not be willing to put in the risk capital, an exclusive license may be required.

In certain situations, certain rights which are developed should be licensed on a nonexclusive basis, irrevocably. In other situations, it should be revocable. I say the system must have a certain flexibility to take care of various situations and various needs.

I think one has to look at the objective which you are seeking and try to frame a policy which meets that objective.

MR. GOODWIN: In effect, you are stating that in some situations, at least, the government should acquire patent rights?

MR. TABIN: Certainly. I have never said anything to the contrary.

MR. DENNY: Thank you very much.

promising for the moment. He wants this simply as backup.

MR. TABIN: You have to remember another thing. That is an invention which was made by that company, not by someone else. It is his own invention. He is working on a particular system; he has made an invention. It may be important for him in the future. He doesn't know. You are saying the government should be able to withdraw it. I think that is wrong.

MR. EDEN: I recognize the difficulty, both equitably and otherwise. My objective is to expand utilization. I am suggesting that your solution is an impediment to that objective.

MR. TABIN: I quarrel with that. As I say, I think it is very inequitable in any event. I say that company, having made that tremendous investment, deserves to have that, if you want, in his hip pocket in the event it is needed in his development of the system.

I think if he goes out, drops development of the system, you have a different situation.

MR. DENNY: Further questions?

MR. RITZMANN: Mr. Tabin, could you briefly describe the ownership of General Atomic?

MR. TABIN: Yes. General Atomic presently -- General Atomic Company is a partnership which is 50 percent owned by Gulf Oil Corporation and 50 percent owned by Royal Dutch Shell.

MR. RITZMANN: In your statement you say "ERDA should protect prime contractors by seeing that subcontractors include such provisions as may be necessary to assure that results of the work of the subcontractors are available to U. S. contractors, their affiliates and licensees."

Do you also mean through U. S. affiliates and U. S. licencees?

MR. TABIN: I mean both U. S. and foreign. I have indicated earlier, the only way a U. S. contractor can exploit his technology in certain countries is by way of either licensing or by minority positions in foreign companies. Normally, U. S. companies involved with advanced

risking that much. And I can't see ERDA taking away their rights in this area, making the license -- canceling their license in order to foster some peripheral utilization of the invention. They can still do that, as I say, in other fields of use.

They can give an exclusive license to a small company that wants to develop that for some specific purpose.

MR. EDEN: Presumably you are asking for a change in the statute which would have the effect of providing in every case that the license granted to the contractor would be irrevocable for his particular field of use.

The difficulty to which this gives rise is that it precludes an exclusive licensing program later; whether it is a small firm or a large firm makes little difference. If a prospective licensee perceives that he has a potential competitor in GE or some other firm, would he then take that exclusive license, put in his capital, develop the invention to the point of marketability, knowing that GE could step in at any moment?

MR. TABIN: You are trying to tell me that there is one specific invention GE needs and they are not going to risk their hundreds of millions of dollars in developing it unless they have exclusive rights in that invention.

I don't agree.

MR. EDEN: No. There are 26,000 patents that already exist. With respect to virtually all of these, a nonexclusive irrevocable license is retained by some contractor.

Before we can attempt to license these exclusively, we are going to have to revoke the existing nonexclusive license.

MR. TABIN: You are going to have to weigh your priorities and what you want, whether you are interested in developing new ways to utilize our energy sources, or you are interested in some other purpose.

I think the primary purpose of ERDA is to develop new ways for utilization of our energy sources. I think there should be no impediments in that direction.

justification for it. There is no need for it. It seems to me any inroads you make on our own system downgrades the system.

I for one don't see the reason for doing so. As I have said, there are remedies in the remote situations where the government has to act in the public good.

MR. DENNY: Do other members have questions?

MR. RITZMANN: Following that a little bit, do you think the existence of a compulsory licensing provision has been a deterrent to performing research and development in a field even though it has not been used?

MR. TABIN: It has not been a deterrent to General Atomic Company. I can tell you whether it has been a deterrent to some other companies, smaller ones.

On the other hand, as I say, the inventor who makes an invention that is important to the national good will commercialize it, will utilize it, will license it for his betterment. He is going to try and exploit that every possible way he can. There is no known case of any situation where he has made an invention and blocked industry, blocked the invention from coming to the public.

Certainly, if you have an invention and you license that invention, you deter others from inventing, somebody said leap frogging, from making better inventions or improving the technology. That in itself is detrimental. If one can point to any specific good that would be good by compulsory licensing, I might agree, change my views. But I can't see any.

DR. FUMICH: The Office of Coal Research is funding a coal research project with you for some time now. What is your reaction and what is your opinion regarding whether the proposed ERDA policy compares favorably with the Office of Coal Research patent policy that was at the time under the Department of Interior?

I am just curious.

MR. TABIN: I think the present ERDA policy is probably an improvement.

other governmental agencies. Its mandate, to make the patent policy of ERDA conform, to the extent possible, with the patent policy of other agencies, is not that compelling. There are examples of overreaching suggest in the proposed rules.

For example, the examination of records provision which is designed to permit ERDA to identify subject inventions, actually goes far beyond what is necessary and even beyond what would be permitted by way of discovery in the courts for such a purpose.

Thank you.

MR. DENNY: Thank you.

As we had discussed before, we are interested in your comments about acquiring rights to the inventions of the subcontractors. Again, as I mentioned to you, those were first developed by the Department of Defense and Armed Forces Procurement Regulations, at the request of industry.

I only mention that to identify that this is a many-faceted problem area.

Yesterday we had testimony, I think, by Mr. Snyder, who made a comment that nuclear energy was only five percent of the energy now produced in the United States. I think in the context in which he made the comment there was an implication that this might have been because of AEC's patent policy.

You made mention at the beginning of your testimony about the problems of huge investment and safety, long lead times.

Would you like to comment as to the effect AEC's patent policy might have had on the commercialization of nuclear energy?

MR. TABIN: I would say that the policy itself has had little or no effect other than the amount of funding put in by the AEC. It takes an enormous burden of money to develop new systems. I think we have been faced with a changing economic situation which has vastly altered various predictions in the development of systems.

a contractor in connection with subcontracts which it lets in the course of the performance of a government contract. It is clear that a contractor should not use its ability to award subcontracts as economic leverage to acquire rights for itself in the inventions resulting from a subcontract.

However, one must keep in mind the purpose of the subcontract, and ERDA should protect prime contractors by seeing that subcontracts include such provisions as may be necessary to assure that the results of the work of the subcontracts are available to U. S. contractors, their affiliates and licensees.

For example, a contractor such as General Atomic Company, who is using its best efforts to develop a new power system, often finds that a particular subtask which is necessary for the development may best be done by an outside organization. Accordingly, it engages a subcontractor for performance of the specific task desired. The objective is to develop a small link in the over-all system being developed by the contractor.

Each link in the system is of equal importance to the contractor in attaining its over-all objective. It is important to the contractor that the results of the subcontract work be made available to it for evaluation and use. The benefits of this subcontract work must also be made available to the contractor's licensees and affiliates.

As indicated earlier, the only way a U. S. company can enter certain foreign markets is by either licensing its technology or taking a minority position in a foreign company. However, under the usual foreign rights accorded to a subcontractor, the subcontractor would not be required to make the invention available to the foreign licensees or affiliates of the prime contractor.

Clearly in this case, the U. S. prime contractor should be protected and considered, if you will, as a third party beneficiary to the contract between ERDA and the subcontractor. This can be accomplished by ERDA's obtaining a suitable commitment from the subcontractor which would assure that the benefits resulting from the work under the subcontract would be made available either by the sale of equipment or by a license to the contractor, its affiliates and licensees, both in the United States and abroad.

When seeking a particular component such as a safety device for a system, a heat shield, a steam generator design, a new fuel element design, et cetera, one is likely to consider various alternative concepts and eventually select for the first major effort that concept which appears most promising. The other concepts which are not pursued at that point are not dropped. If they are worthwhile, they are maintained as backup devices, for economic changes which make the selected system less desirable, et cetera.

Not only are the rights to all of its inventions needed by the contractor, but also be its licensees. It would be much more difficult for a company to make licensing arrangements if the licensees did not have the benefit of exploring all concepts considered by the licensor.

It might be argued that the foregoing considerations will be taken into account by ERDA in handling any request made by a contractor for an irrevocable license. Our answer is that in our limited experience to date with ERDA's policy, particularly in the requirement that the justification be similar to that of a waiver, it would appear that this is not the case or if it is, puts on the contractor a very large burden which is not necessary,

Understanding the desire of the government to have the public obtain the benefits of new technology developed under government funds, we suggest that contractors be permitted to retain an irrevocable license under inventions developed by its employees under government contracts, but in order to satisfy other considerations of the government, limited to the specific field of use in which the government contract and the contractor's program is directed.

The license granted would be revocable in other fields of use. For example, the irrevocable license could be limited to use in connection with high temperature gas-cooled reactors, fast gas-cooled reactors, et cetera, depending on the type of work involved.

The proposed policy states that where necessary to practice the results of government financed contract work, the government may acquire the right to direct licensing of a contractor's background patents to insure reasonable public availability and accessibility. With that broad statement we have no quarrel.

A patentee should be entitled to obtain the same reward by means of licensing as he would otherwise make by personally exploiting the patent, in the course of which the reward to the inventor is generally equated to the benefit which he provides the public.

The reward to the patentee is one of the problem areas in compulsory licensing, since there is no fair way of setting the royalties under compulsory licensing. Compulsory licensing is used in some foreign countries, and some reference has been made to that, most being designed to bring new industry into the country, which purpose does not exist in the United States.

We can see no other benefit from such foreign compulsory licensing practices. If one looks at the foreign compulsory practices one finds it is really not necessary, that it is very little used except in the one instance which I indicated in order to encourage companies to start new businesses within that country.

What is clear is that the United States preeminently is in the forefront in advances in technology. Such advances have been made more rapidly in the United States where compulsory licensing provisions do not exist.

Under the proposed patent policy, title to inventions developed under government contracts vests in the United States, unless the Administrator waives all or any part of these rights. Under appropriate situations, and when requested by the contractor, ERDA says it will consider waiving of patent rights either at the time of contracting or upon the reporting of an identified invention.

Where the government takes title to an invention arising out of the performance of work by a contractor, the contractor retains a revocable non-exclusive paid-up license with the right to grant sublicenses of the same scope and revocable under the same terms and conditions.

A contractor in special circumstances may request an irrevocable license by submitting a written request with appropriate justification to the contracting officer. From our experience in the implementation of this proposed policy, the request for an irrevocable license must follow the same basic form as a request for a waiver although it may be granted under altered conditions.

follow in order to carry out the purposes of the Atomic Energy Act and the Federal Non-nuclear Energy Research and Development Act of 1974. We realize that a great deal of work has gone into the development of the proposed patent policy by ERDA, with the aid of the interagency task force, with the intent of accomplishing the mission set out for ERDA by Congress and, at the same time, attempting as far as possible to bring the patent policy of ERDA into conformity with that of other agencies.

Looking at the over-all policy, we believe that ERDA has, in the main, done an excellent job in taking into account the needs of industry, particularly big industry. However, there are a few specific areas in which problems exist which we would like to discuss.

Although ERDA's proposed patent policy does not make any reference to compulsory licensing, we understand that this is presently under consideration. As we are all aware, compulsory licensing is included in the Atomic Energy Act of 1954 and in the Clean Air Act of 1970.

This question of extending authority for compulsory licensing to the other areas has been under discussion for many years without resolution. The real question to be answered at this time is whether such legislation is necessary in order to carry out the purposes of the Federal Nonnuclear Energy Research and Development Act of 1974. We believe not.

Much of what I am going to say has been repeated manifold by other speakers, but perhaps it is worth repetition.

No specific patent situation where compulsory licensing is needed has been identified. Without that, no meritorious claim of real need for such authority can be advanced. One hears the argument that, even if one cannot foresee a specific need for compulsory licensing, there is no harm in including a compulsory licensing provision as insurance against the remote possibility that a company obtains a patent which blocks the industry, and that no harm will result, so long as sufficient safeguards are included, such as the requirements of necessity, unavailability of the invention to potential licensees, no reasonable alternative means for achieving the results, and reduction of competition exists, et cetera.

as most of you know, is heavily involved in the development of various advanced reactor systems, including high temperature gas-cooled power reactors, a fast gas-cooled reactor, a gas-cooled direct cycle steam turbine reactor system, and a HTGR coal gasification system.

In addition, General Atomic is working on various other systems for the utilization of sources of energy including systems utilizing solar energy and thermonuclear energy. In the development of these systems, as in other areas of advanced technology, such as new types of aircraft, space exploration, et cetera, the cost of development of new systems is beyond the financial capability of even the largest of corporations in the private sector.

This has resulted in a cooperative effort between the government and industry in the development of such advanced technology, and, in the energy field, has led to the establishment of ERDA, whose primary mission is to assist in the development and ultimate utilization of various sources of energy.

Congress has recognezed that the development of better and cheaper energy will benefit the public and help to maintain this nation as a preeminent force in the world. Neither the government nor industry can do this job alone, but together they can provide a framework for ultimate success in this objective.

We have looked at ERDA's proposed patent policy to see whether it properly takes into account the interest of industry as well as the government and will result in the objectives sought. To properly appraise our comments on the proposed policy, you should be aware of certain facts.

Companies involved in the development and marketing of commercial nuclear reactors are each heavily committed in the industry in terms of money and financial risk. Enormous sums have been spent by the large companies involved in this area. These companies are subject to the vagaries of the nuclear industry, including changing licensing and safety regulations, extended development and construction periods, et cetera.

In order to prove out a new concept or design, one may have to spend large sums in the construction of large-scale equipment and run such equipment through extended testing; or, in the case of nuclear fuel, one may have to irradiate

We will adjourn now until 2:00.

(Whereupon, the hearing in the above-entitled matter recessed at 12:45 p.m. to reconvene at 2:00 p.m. the same day.)

practical engineering approach than a basic research approach, the way they approach the problem.

I wonder if you would have any comments on how you would foresee an Institutional Patent Agreement applied to an agency such as ERDA which will have basic and applied research, development, and demonstration, rather than the agencies that have their mission in basic research.

MR. BREMER: I think you can look at it from this standpoint. If you have in mind that ERDA's approach is going to be to functionalize the fusion reaction, that is very basic. I don't think, as a matter of fact, that any one, because of the public interest in this situation, is going to get any dominant position at all. I think the same probably applies to energy storage, if that energy storage is accomplished in the very substantial amounts that it must be.

However, there are many inventions that can be made even though the nature of the grant or contract tends to be basic where, in order to get the results of that program into public use for the actual benefit of the public other inventions have to be made. A good example of that would be in the situation where you would have, let's say, cryogenic energy storage. You have to have a converter to put the energy into storage and to take it out. (We have already had disclosures of means to do that.) Those are the kinds of inventions that would find their way into the commercial sector and possibly for other uses as well.

I think you have to look at the total picture and not just the basic "how do we generate the energy itself," but rather "how do we generate it and translate it into public use." I think it encompasses many, many areas of discipline.

MR. RAWICZ: I guess what I was coming to is that suppose ERDA in its mission decides to find better ways to generate energy from coal? And its mission was not just to do the basic research and development, but even establish demonstration plants to show that this can be done on a commercial level.

Getting away from what NASA does, getting more towards trying to show a commercialization of the technology we are developing, I wonder how the patent policy, say at the university, doing the basic research, would

as is done through NTIS. If we have people that are willing to accept those non-exclusive licenses, and diligently work in the area and fulfill the public's needs, we will not license other people unless they are in fact willing to enter into the same kind of development program or unless the public's needs aren't fulfilled.

In other words, it becomes a limited non-exclusive in a sense.

MR. EDEN: It is clear from the figures we have heard thus far that universities do a much better job of getting technology transferred to industry than the government does.

The government has less than five percent of its portfolio under license, whereas universities have between a third and a half. There are two reasons:

First, universities have staff people who are attempting to license whereas the government does it very passively.

Second, universities are in a position to offer exclusive licenses whereas the government is not. I am trying to assign some quantitative index to those two reasons.

Am I correct in understanding you to say that the ability of universities to offer exclusive licenses is a very, very small portion of the reason for their success?

MR. BREMER: No, I think you have to categorize that a little bit. The ability to offer an exclusive license may be of paramount importance. Whether you <u>have</u> to offer one is another point. As far as staff is concerned, we operate with three people in our licensing area currently. We are still able to handle the number of inventions that we do per year.

MR. EDEN: That is two more than the Department of Commerce has.

MR. RAWICZ: Anybody else?

MR. WEINHOLD: You mentioned a great deal of statistics were were very impressive. I wonder what fraction of that would be sort of life sciences or things not directly applicable to energy, and what might be more the

field in particular have had inventive concepts and where WARF has already filed patent applications prior to their receiving any federal funding, are looking for other sources of funds, preferably from the private sector, or from the utility sector, rather than working through ERDA because of the potential impact that they see: First, in the background rights picture and, secondarily, in the so-called contamination of the total package.

MR. DENNY: That wasn't exactly what I was driving at. I think I understood your testimony to be that when you were working under grants or contracts with HEW your invention disclosure rate was low for the Institutional Patent Agreement.

MR. BREMER: Yes.

MR. DENNY: And thereafter your disclosure rate was high, both under government support.

MR. BREMER: Yes.

MR. DENNY: What is it, just the reluctance of the inventors?

MR. BREMER: Yes, it is the reluctance of the inventors. When the IPAs came in and we could establish a flow pattern to the handling of the inventions where the Foundation, in our case, did most of the work and people in the University administration also did some of the work. Once that became known, the inventors were much less reluctant to say that an invention had been made. The tendency before that time had actually been to take the easiest way and say no inventions had been made during the course of the grant or contract.

MR. DENNY: Thank you.

MR. EDEN: I may not have heard your figures correctly, but I gather that your outstanding licenses were all on a non-exclusive basis; is that correct?

MR. BREMER: I should qualify that. We generally try to license on a non-exclusive basis if we can. It permits us to retain our options. Thus, in case of potential infringement, we have retained the option to offer a license on reasonable terms.

As another aspect of this university situation, and I recall Mr. Rawicz's comment about the travel monies, let me translate for you some of the activities of the association between WARF and the University of Wisconsin. Since that association began in 1925, WARF has had some 40 inventions which have been licensed and which have produced net royalty income, some very small, some very large. Of those 40 inventions, 14 have produced between $10,000 and $100,000 each; nine have produced between $100,000 and $1 million each; and three have produced more than $1 million each. Those 40 inventions were culled from 1,500-plus, disclosures which were brought to WARF and from which came about 360 patent applications and 240 issued patents. We have roughly between 70 and 100 disclosures still under consideration and, as I mentioned earlier, get new ones at the rate of 60 to 70 per year.

Currently, the pending U. S. unexpired patents which we administer total somewhere between 275 and 300. These patents represent in reality about 165 licensable areas of technology, since, as I mentioned before, the licensable technology is represented by more than one patent in a number of cases.

Using those figures as a base, only about one out of every 40 disclosures considered for patenting and administration during WARF's lifetime have ultimately produced some income. The rate of failure is traditionally high in this kind of operation. We have done one other thing in relation to this which I think you may find interesting. We have taken the income generated by each of those 40 licensed inventions and have tried to translate that via the royalty income into estimated sales which the licensees had to make to generate that royalty income. The results of that translation are these: four of the inventions represent $1.5 billion in sales; nine inventions represent $80 million in sales; 19 represent $20 million in sales; and eight represent $1.5 million in sales.

Keep in mind that is only a single university's impact. That can be multiplied by the university communities throughout this country to the point where the effect upon the economy will be evident, and I should also add that the effect upon the balance of payments, which hasn't been suggested here before, is substantial. I believe there is a Licensing Executive's Society Report that estimates some $2 billion in flow of funds from licensing operations outside of this country back into the country.

The risk is greatly reduced by the certainty that the product is commercially feasible and perhaps acceptable to the public, for that has already been proven by the innovating company. Currently, Institutional Patent Agreements which we have with the Department of HEW and the National Science Foundation contain provisions which amply protect against inactivity by an invention management group via the march-in rights clause. That clause also protects the public interest in the event of collusive arrangements which would tend to concentrate market power with any one or a small group of licensees.

It must be firmly kept in mind that in almost every case where a university-made invention is concerned, development of the invention, and this includes market development, is an absolute necessity. Unless ERDA or another agency itself plans to do such development, a licensing arrangement is called for which will encourage investment of private funds.

The real issue is, then, who can do a better job of transferring the technology, the government through its agencies, or the university through its own use, or through other associated groups? In accordance with the proposed regulations, the burden is now completely on the university communities to demonstrate their technology transfer capability.

I believe we can fairly ask the question at this point whether ERDA or any other agency's capability in transferring the technology can match that of the universities. It is submitted that the mere publication in the National Technical Information Service of inventions available for licensing is not a matching capability. Who will review some of the 4,500 U. S. or 3,500 foreign ERDA patents and cull out from those interesting technology, and who will ask very often for permission to use that technology when the government owns the patents?

The recommendation on behalf of the University of Wisconsin is, therefore, to urge the adoption of Institutional Patent Agreements with qualifying universities and the elimination of the mandatory licensing requirements.

At this point, I think I will jump into some of the empirical data, if you want to call it that. It may anticipate some of the questions, but we will entertain any of those you care to pose.

Agreement is an arrangement which is looked upon at the University and also by WARF, since WARF is the designee of the University under such Agreements, one with HEW and the other with National Science Foundation, as being the most efficient type of arrangement for invention handling.

We should also tell you that as a feature of its licensing policy, which, incidentally, includes a formal agreement between WARF and the University, so that all obligations of the University to Federal agencies are recognized, WARF generally requires a licensee to engage in a development program with regard to the invention licensed, the end result of which is intended to transfer that technology into use for the benefit of the public.

Against the protocol of that development program, the licensee is normally required to make reports. If such reports do not show a significant advance of the technology against the protocol, it is grounds for the cancellation of the license.

In several current situations where inventions are in the development phase, the licensees are currently fast approaching the marketing stage. Since the majority of the University of Wisconsin inventions tend to be in the life sciences, and, therefore, medically or nutritionally oriented, considerable delay has been encountered because of the necessity to prove conclusively the safety and efficacy of such products.

In contrast to the long development times required where human and animal ingestible products are concerned, an invention which is being administered by WARF under a case-by-case determination by the NSF has moved from the point of a patent application being filed into the marketplace in less than one year's time. This invention constituted a real breakthrough in the field of spark spectroscope, and it -- and improvement inventions made thereafter, have literally revolutionized that field.

Even in this situation, however, in order to have a company undertake the necessary development program to place the results of the inventor's investigations into public use, some incentive by way of limited exclusive license had to be offered.

(No response.)

MR. RAWICZ: Thank you.

MR. MC CARTNEY: Thank you, Mr. Rawicz.

MR. RAWICZ: For the next presentation, we have Howard W. Bremer from the University of Wisconsin.

MR. BREMER: Good morning.

MR. RAWICZ: Mr. Bremer, are you representing the University of Wisconsin?

MR. BREMER: Actually, I am here in a dual capacity.

Thank you, Mr. Chairman, gentlemen.

I am representing the University of Wisconsin, with authorization, but do function as patent counsel for the Wisconsin Alumni Research Foundation which really is the invention administration arm of the University of Wisconsin.

It was apparent from the questioning of university representatives yesterday, particularly Mr. Hill, and Mr. Eden, that they were interested in some empirical data. I think one of the other gentlemen asked for "hard" data. Because of those questions, I have altered the format of what I was going to say today; and I think I will give it to you in two parts.

First, the recommendation that the University of Wisconsin has in this situation, and second, some of the data that I have available. Fortunately, I came prepared with some facts and figures that I think may suffice for your purposes.

As I said, I am here on behalf of the University of Wisconsin. The practical information that has been derived from the association between the Wisconsin Alumni Research Foundation and the University will enable me to give you some data which may be either responsive to your questions or perhaps anticipate some of them. I think at the outset we can say the position of the University of Wisconsin can be considered reflected in and to be in agreement with the conclusions expressed in the report of the University Patent Policy Ad Hoc Subcommittee, which

to where we have had an average of 50 inventions per year reported, most of which went to application. We are now averaging 75 to 85 disclosures per year now, most of which are sent for application through selected patent counsel.

For those inventions that are filed and that are issued as patents, our licensing program is very flexible as to the type of invention. We are using every method possible to transfer technology. We employ patent management firms which you are aware of, such as Research Corporation. We also use internal technology transfer staff for our own direct licensing negotiations. We use commission agents for our technology transfer wherein they have a specialty, such as in medical technology, for representation to companies.

We find that by this flexibility, by not having one methodology of transferring technology, our capabilities of getting an invention licensed are greater.

I would say that our accumulated royalty income now is $800,000 total for the last four years. One of these days, we hope that our royalty income will increase a great deal in order that we can expand our research and development in those fields that we feel need expanding.

Many of our inventions have been developed without government funding at all, but we still pour royalty income back into research in areas of scientific discipline that also receive government contracts and grants. So there are benefits to the government as well, resulting from our transfer of technology.

MR. DENNY: Thank you.

MR. MC CARTNEY: Thank you.

MR. KIMBALL: In the absence of the institutional patent agreements which you describe you have with HEW and its existing provisions, would your university consider taking R and D work from federal agencies with patent provisions other than what you have in the institutional agreements?

MR. MC CARTNEY: Yes, of course. We weigh the benefits of contracting with any sponsor we deal with. In the case of the National Science Foundation, they also have institutional patent agreements and we are entering into one with that agency. We have had nothing but very fine

Moreover, the public's interest would suffer, since many worthwhile inventions could not be commercialized. We urge you to consider the exclusion of mandatory licensing of energy-related patents from your rules and procedures.

Thank you for your consideration in allowing the Committee on Governmental Relations to express our views and opinions on your proposed policies and procedures.

MR. RAWICZ: Thank you.

I think this is a rather significant statement because the COGR Subcommittee on patents has been instrumental in developing guidelines in many universities, especially those who have not become aware of this problem, and has taken an active role in developing university patent policy as it relates to development.

Do we have any specific questions of Mr. McCartney?

Mr. Hill.

MR. HILL: I guess, Mr. McCartney, this question is similar to what I asked the other university members yesterday.

As a Committee officer, it occurs to me that perhaps it would be better, if you're willing, to write a letter later. The question asked both by me and Mr. Eden yesterday was how many patents are involved per year -- for the membership as a whole, or for each college? How many licenses are obtained? How many of these are exclusive, and roughly how much money is involved? And who gets it when you get done with it?

Some appears to go for college administration and some for patent costs, some for the professors and so forth.

It would be helpful if in general terms you could outline that for us perhaps by letter later.

MR. MC CARTNEY: I can reply to you for my own institution. We have had patent relationships with the HEW for several years and we provide annual reports to that Department as required by our agreement.

criteria spelled out in the report to retain title to inventions made under agency or administration research awards.

The conclusion of the Subcommittee Report are set forth in brief:

A. Creation of university technology transfer capabilities should be encouraged.

B. Agreements permitting qualified universities to retain title to inventions would create an incentive to develop university technology transfer capabilities.

C. Additional benefits would flow if qualified universities retain principal rights to resulting inventions. Those benefits would be recognition of co-sponsor equities. Many times at universities, the government does not provide the total costs of a research project and funds from other sources must be used.

2. Ease of Administration. (Case-by-case decisions would be eliminated, reducing administrative work for both parties.)

3. Use of Royalties for Support of Scientific Research and Education. (It would be in the public interest for universities to generate and retain income to cover their patent administrative costs and to support education and research from such income.)

As I understand from previous university testimony, the majority of universities retain royalty income they receive and direct it back into research and development.

4. Use of Management Capability for All Inventions. (Universities would be able to use their management capabilities to transfer all their technology, whether government-supported or not, thereby expanding utilization of inventions, rather than having a large warehouse of inventions such as the government has had over the past years.)

5. Training of Further Technology Transfer Managers. (If universities are permitted to retain rights to inventions, more personnel in the area of technology transfer will be trained. And we recognize the need for this.)

Act of 1954 (42 USC 2011 et seq.) and the Administrator determines that...

"(c) Under such regulations in conformity with the provisions of this section as the Administrator shall prescribe, the Administrator may waive all or any part of the rights of the United States under this section with respect to any invention or class of inventions made or which may be made by any person or class of persons in the course of or under any contract of the Administration if he determines that the interests of the United States if he determines the general public will best be served by such waiver...In making such determinations, the Administrator shall have the following objectives.

"(11) In the case of a nonprofit educational institution, the extent to which such institution has a technology transfer capability and program, approved by the Administrator as being consistent with the applicable policies of this section."

We cite for further reference the Congressional intent to this section of the Act.

"The reference in subsection (d) (11) to nonprofit educational institutions with approved technology transfer capabilities and programs is included among other reasons to assure that these institutions would not be disqualified from consideration for a waiver due to a lack of established commercial position or manufacturing capability. The approval requirement in the subsection is designed to assure that such institutions do not become a conduit for avoidance of the safeguards provided throughout the section. There is no intention for other nonprofit or research institutions to meet any lesser standard than required of other applicants."

The proposed policies and procedures that the Administrator has announced in the October 15 Federal

MR. RAWICZ: The point I was trying to get to was that there is compulsory licensing of certain industries based on antitrust.

Your statement states that compulsory licensing in the energy field would not be beneficial across the board for further research and development, there would be no desire to, say, invent around the blocking patent.

I was wondering if there was any experience on consent decrees where the industry, a particular technology was subject to mandatory licensing, did that in fact impede the growth of that technology.

MR. HAZELTINE: I can't really say on that, but I feel that represents a specific instance just as it would in the energy field where the court deemed it appropriate to exercise its discretion by requiring that there be compulsory licensing in that specific instance.

But it is not a broad, general provision covering every patent.

MR. RAWICZ: Thank you.

Are there any questions?

(No response.)

Thank you.

MR. HAZELTINE: Thank you.

MR. RAWICZ: Thank you for coming and presenting a statement of behalf of the Philadelphia Patent Law Association.

Next, we have Clark McCartney coming down.

Mr. McCartney is Director of Contracts and Grants at the University of Southern California.

We seem to have struck a note with universities at this hearing.

MR. MC CARTNEY: Good morning.

MR. RAWICZ: Either that or they have more travel money than we thought.

use of technology which that contractor evolves and, in effect, recommends to the government.

One practical difference between contracting with the Department of Defense to carry out development activities needed by said Department and contracting with ERDA is the fact that the ultimate use of the result produced by an ERDA development contract may be not under prime contract or subcontract to supply equipment to a privately owned public utility.

We believe that a very important question is presented as to whether the government should be permitted to require mandatory licensing of energy-related patents generally and for purposes unrelated to the practice of the technology developed under the contract, and thereby deny to the contractor the injunctive remedy.

We believe that there are very substantial reasons why it should not.

First, we believe that to do so would result in substantial discouragement of independent investigation in the energy field which would not be in the public interest, and, second, we believe that there is no real danger that the absence of the requirement for mandatory licensing would prevent inventions resulting from independent investigations becoming available to the public.

If the owner of such patent refuses to follow a reasonable approach to licensing, this will increase the incentive to others to invent a different or perhaps even better way to accomplish the same result.

Secondly, 35 USC Section 283 gives the court discretion as to whether an injunction should be granted or denied.

It may be assumed that the court in any given instance would exercise such discretion in view of the circumstances involved to ensure a result in the public interest.

As you are aware, there are a number of instances in which this has been done.

For example, Vitamin Technologists, Inc. v. Wisconsin Alumni Research Foundation, and also the

statement this may not be equitable for the government to obtain rights just because there was a reduction to practice in the final step of making the invention, I would like to propose the other situation.

If the government does all the work, builds the model, et cetera, it will get no rights if the exception were granted prior to the contract. It seems it is drawing a line somewhere. Sometimes it will be inequitable for the contractor who had invested his money up to the point where the government completes it. On the other hand, in some cases it will be inequitable to the government because the government would have done the bulk of the funding to bring the invention up to the point of last test so there is a reduction to practice.

In other words, what has happened is that we have a legal test and not an equitable test applied.

You point out a situation where the test may be inequitable to the contractor. The same tests may be inequitable to the government. Would you have a comment on that?

MR. GRATCH: If I understand you correctly, you are referring to the case in which the invention is conceived as part of a government contract --

MR. RAWICZ: Prior to. The contractor proposes that he would like to build this for the government. He in fact gets a contract, it is built but is not successfully tested. So legally we do not have a reduction to practice. The government obtains no rights. The contractor goes on, completes the work. Now he owns the whole invention.

I am pointing that out as perhaps an inequitable situation.

MR. GRATCH: Sir, I am only a dumb mechanical engineer, and this is a legal question. But it seems to me that this should be a matter to be handled in formulating the contract.

If there is a clear-cut chance that a substantial fraction of the monies spent in a contract will be of such a nature, then in that case the negotiating team should have some provisions to give the government some rights.

Would you agree to that?

(Messrs. Spielman and May nodded assent.)

MR. KIMBALL: Approximately how long did it take you to secure this waiver you speak of from the time you made the decision to go after it?

MR. GRATCH: Probably two months, two to three months.

MR. KIMBALL: Thank you.

MR. RAWICZ: Mr. Hill.

MR. HILL: Yes.

Mr. Gratch, I have just a question about Ford Motor Company.

As I understand, Ford Motor Company is in fact a family of corporations. What happens if a government agency contracts with either Ford Motor Company or one of its family corporations? Does that aspect of Ford sub-contract or sublicense to other aspects of Ford, or is it some sort of more informal arrangement?

MR. GRATCH: It is not informal. The normal procedure is that the contract, whatever it is, spells out definitely who is covered.

For instance, it may cover all of our affiliated companies which would then be defined in a certain manner, companies, let's say, in which we own more than 50 percent. That is just an example.

A contract may be simply with one of the sub-sidiaries. In that case, the contract should define exactly what it is.

In the case of patent provisions, since we have some arrangements with some of our foreign subsidiaries, usually we are careful in our patent clauses to define the relationship with foreign subsidiaries quite clearly.

MR. HILL: Thank you very much.

MR. WEINHOLD: One quick question for you.

such means of protection. As I understand, in cases in which the owner of the invention has been definitely wrongful, courts have refused to grant injunctive relief against an infringer. In a case in which the patent owner has not been wrongful, but the infringement of his patent is necessary for the public interest, even in those cases the courts have refused to grant injunctive relief.

I understand there has been a case -- I don't know the details; my colleagues can give you the case -- of a sewage treatment plant that would have been closed; and, again, the courts refused to grant injunctive relief.

There are means to treat the exception. But I urge that one should not impose restrictions that would damage seriously the national interest just to protect against those exceptions.

MR. RAWICZ: Dr. Fumich.

DR. FUMICH: Much of your discussion has been devoted to proposed changes in the legislation. I think some of them have merit. What about the present legislation and our approach in carrying it out?

If you had your "druthers," what would be your major suggestion about making it easier for you to come in and talk to us, within the parameters of the present legislation?

MR. GRATCH: Within the present legislation, so far we have had only one difficulty; and that has been with the interpretation of one of the sections of Paragraph (h), the one in which our interpretation of the Act is that the Administrator has the right to decide whether any license required in case of march in is exclusive, non-exclusive, et cetera, whether that can be decided at the time of contracting or not.

We believe the language allows the decision at the time of contracting. If that is a correct interpretation, we are okay.

We have had a little difficulty on that point. Except for that, so far our problems are with the statutory language, not with the interpretation.

We are concerned by some added restrictions that apparently are proposed in the regulations. Since that is

MR. GRATCH: You raise several points. First, as to the reduction to practice. In areas in which we have sufficient expertise, we often can be quite sure that an invention will work without building a working model (and it may be quite expensive to build a working model), by simply completing engineering designs.

As I understand the Act, such an invention would still be subject to the ERDA provisions because actual reduction to practice means building a working model.

As an example, we have one such invention we are working now on a method of producing ceramic. That method may be useful in our ERDA program. The method was developed quite independently of that in some of our exhaust catalyst programs. Until we apply the method to the making of beta alumina tubes, we have not actually reduced the invention to practice in that application. Therefore, in that case we would have invested much more in the invention previous to the contract, but if we use the invention under the contract we would lose the rights. The loss would be quite sweeping under the present language.

We think that that is unfair. Now, as far as your question, your real question, our answer is flexibility. First, the Federal Procurement Regulations do provide protection for the government. The provide that the government can march in and can, for instance, insure that the licenses are granted to responsible applicants, et cetera. Those provisions would make sure that the government can protect the public.

We are not taking the position that exclusive rights in a subject invention should be left to the inventor without any restriction. If the inventor diligently pursues those inventions, that may be well in the best public interest.

As you know, one of the problems with the 26,000 patents the government owns is that inventors would not touch them because they have to spend a lot of development money and never be sure that after they developed it a competitor would not get the invention on equally favorable terms without expenditure of money. Sometimes the best way to get an invention developed commercially is to leave it to one group or one industry to do it on an exclusive basis. But that would be open. If that industry does not do the proper job, under the Federal Procurement Regulations the Government could still step in and insure that the invention was used for the public benefit.

In conclusion, I would like to emphasize that it is essential that ERDA provide incentives to industry if they wish to encourage its participation in ERDA programs. The patent system is one of the strongest means for providing these incentives. ERDA clearly recognized this in the notice announcing these hearings. There it stated that:

> "The objective of ERDA patent policy is to provide an incentive function to stimulate commercial industrial development in energy fields as well as protect the public's interest."

In our view, the key to ERDA's attaining its objective of providing an incentive function is flexibility in dealing with industry. This flexibility must be permitted by both statutory and regulatory policy so that the agency can treat the equities of each contract on an individual basis.

Our experience with the patent staff of the Chicago Operations Office headed by Mr. Arthur Churm and with Mr. James Denny in negotiations during the past year indicates to us that ERDA personnel are quite capable of representing the interests of the government and the public without being restricted by a policy which denies flexibility.

The maximum incentive which a flexible patent policy can offer to a contractor is the opportunity for retention of title to any invention conceived or first actually reduced to practice under the contract. This will serve both as an incentive for industry to participate in ERDA's programs and as an incentive for industry, once it elects to participate, to commit fully its resources.

It is essential that industry capital as well as its technical, managerial, development, and marketing expertise be dedicated to ERDA's programs if the technology is to be brought to the point of practical application in the shortest possible time.

We have stated in detail the specific problems that we foresee and the solutions we recommend. Certainly, we believe that mandatory licensing would be a deterrent to industry participation and that it should not be adopted. The "subject invention" definition and the march-in rights spelled out in the 1974 Act as administered by ERDA are a

If the proposed regulation language represents ERDA's interpretation of the statutory language, we urge amendment of the 1974 Act. In any event, it is hoped that the Administration will not feel bound to follow a restrictive policy with respect to irrevocable licenses pursuant to Section 9, paragraph (f) of the Act. To do so would restrict the flexibility which the Administrator must retain in order to work effectively with private industry.

It is particularly important to avoid any amendments to the Act that would further curtail flexibility. Specifically, it would be regrettable if statutory provisions or procurement regulations were adopted so as to mandate that a contractor license its background patent rights. Such a change would discourage participation in research and development work by those with the greatest capabilities of achieving the desired objectives.

The potential contractors with the most extensive background would be exposed to the greatest risk by reason of mandatory licensing provisions. Thus, the greater the background, the greater the deterrent to participation.

Substantial corporations, such as Ford Motor Company, are willing to grant licenses on reasonable terms and conditions under their patents. You may ask if that is the case, why should Ford object to mandated licensing of background patents? The answer is that we simply must be in a position to negotiate the matter. Removal of the right to injunctive relief materially weakens a bargaining position established at considerable private expense. Loss of that right certainly makes development at private expense much less attractive.

The 1974 Act directs the Administrator to make recommendations with respect to mandatory licensing. In our opinion, the Administrator should recommend that no mandatory licensing provisions be enacted. Our main concern is that, in general, mandatory licensing would prove to be a counterstimulant to the achievement of the new technology which Congress sought when it enacted the 1974 Act.

The patent system provides an incentive for inventors to invent and disclose their inventions. This concept is clearly stated in Article 1, Section 8, of the Constitution, which states that "The Congress shall have the power...to promote the progress of science and useful

fulfill health, safety, or energy needs, or (c) for such other purposes as may be stipulated in the applicable agreement."

Paragraph (h) (7) provides that the Administrator shall have the right, commencing three years after the grant of a license and four years after a waiver is effective as to an invention, to require the granting of a non-exclusive or partially exclusive license to a responsible applicant or applicants upon terms reasonable under the circumstances.

If these paragraphs are interpreted as we believe they should be, such that the various types of licenses are alternatives available to the Administrator and he, in his discretion, has the flexibility to elect one at the time of contracting, then we are not troubled by this portion of the statute.

It has been our interpretation since first reading the paragraphs in question that the licenses mentioned were intended to be in the alternative so as to give the Administrator flexibility in negotiating with potential contractors at the time of contracting.

Further, unless the statute is so interpreted, the contractor is completely disabled from granting any licenses since he must always hold himself ready to grant an exclusive license at the Administrator's direction. We are concerned about this situation as a result of our experience during negotiations with ERDA.

In those negotiations we sought provisions in the patent clause of the contract under which the Administrator would have elected at the time of contracting the form of license we might be required to grant pursuant to paragraph (h).

Our arguments may have been persuasive since the language of Section 9-9.107-4(e) of the proposed ERDA patent regulations appears to suggest that the Administration has interpreted the language of paragraph (h) as referring to licenses granted in the alternative. If this is not the interpretation which is intended by this language, we urge that the regulations and, if necessary, the 1974 Act be clarified such that ERDA can, within the scope of the 1974 Act, view the various licenses in the alternative.

Third, the conditions under which the FPRs permit the government to march in are very specific, thus giving the contractor a fair opportunity to avoid them if possible.

On the other hand, the conditions under which the 1974 Act permits the government to march in are very vague and uncertain and may lead to significant disputes. It is our recommendation that the statutory title policy of the 1974 Act, and the march-in rights provisions thereof, be changed to those of the Federal Procurement Regulations.

It is interesting to note that while the ERDA patent provisions were purportedly fashioned after the NASA statute, the NASA march-in rights are essentially those of the FPRs.

The risk of losing rights, especially title, for which we bargain at the time of contracting based on our equities is a servere deterrent to accepting ERDA contracts. However, the possibility of losing rights in inventions which are conceived outside the contract, but first actually reduced to practice under the contract, is an even more severe deterrent.

Because the term "made" is defined in the Act as meaning the conception or first actual reduction to practice of an invention, all inventions which are conceived other than under a contract, but which are first actually reduced to practice under the contract, will be subject to the march-in provisions of the 1974 Act even though a valid patent covering the invention may have been obtained.

An invention for which all legal rights have been established and which has been completely developed and engineered by a company with its own funds could thus become the property of the government if the first working model is built under an ERDA contract and a waiver of title to the contractor is refused, or, if granted, is ultimately revoked.

As a result, inventions in which the contractor at the time of contracting has substantial equity and may have licensed to others could be lost. Clearly, this is an area in which the title policy and march-in rights of the 1974 Act place an onerous and unfair burden on the contractor, thus discouraging his participation.

However, the private sector is not particularly pleased to place its well established position at risk for a government contract. The patent provisions of the 1974 Act are sufficiently onerous to cause the private sector to consider long and seriously the risks of accepting an ERDA contract. Mandatory licensing could well drive those private sector companies most qualified and who have the most valuable background information out of the field, leaving all future work to be done at government expense by those who do not have any valuable background to risk.

As a United States company, it is our desire to participate in solving national problems, but we question seriously whether the risks it imposes on an established private position can be prudently assumed. Specific examples will be developed in the course of our comments.

The statutory policy adopted by Congress in the 1974 Act is that the government shall own all rights in any invention conceived or first actually reduced to practice under an ERDA contract. It may, under certain specified circumstances, waive all or any part of those rights to the contractor.

However, the threat to established technology in the private sector becomes apparent in what are commonly called march-in rights under the statute. Paragraph (h) of Section 9 spells out these march-in rights. They are a clear manifestation of a policy based on the rule that what the governments gives it can take away at any time.

Paragraphs (h) (6) and (h) (7) of the Act specify that the ERDA Administrator may terminate any waiver in whole or in part unless the contractor demonstrates to the satisfaction of the Administrator that he has taken effective steps, or within a reasonable time is expected to take steps, necessary to accomplish substantial utilization of the invention in question.

Paragraph (h) (7) also provides that the Administrator may revoke any waiver if the waiver has tended substantially to lessen competition or to result in undue concentration in any section of the country in any line of commerce to which the technology relates.

Thus, even though a contractor succeeds in obtaining a waiver, a sword of Damocles hangs over his head and could terminate that waiver at any time. We assume it is unlikely that a waiver would be revoked