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GOVERNMENT PATENT POLICY

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HEARINGS
BEFORE THE
SUBCOMMITTEE ON
SCIENCE, RESEARCH AND TECHNOLOGY
OF THE
COMMITTEE ON
SCIENCE AND TECHNOLOGY
U.S. HOUSE OF REPRESENTATIVES
NINETY-SIXTH CONGRESS
FIRST SESSION

OCTOBER 16, 17, 1979

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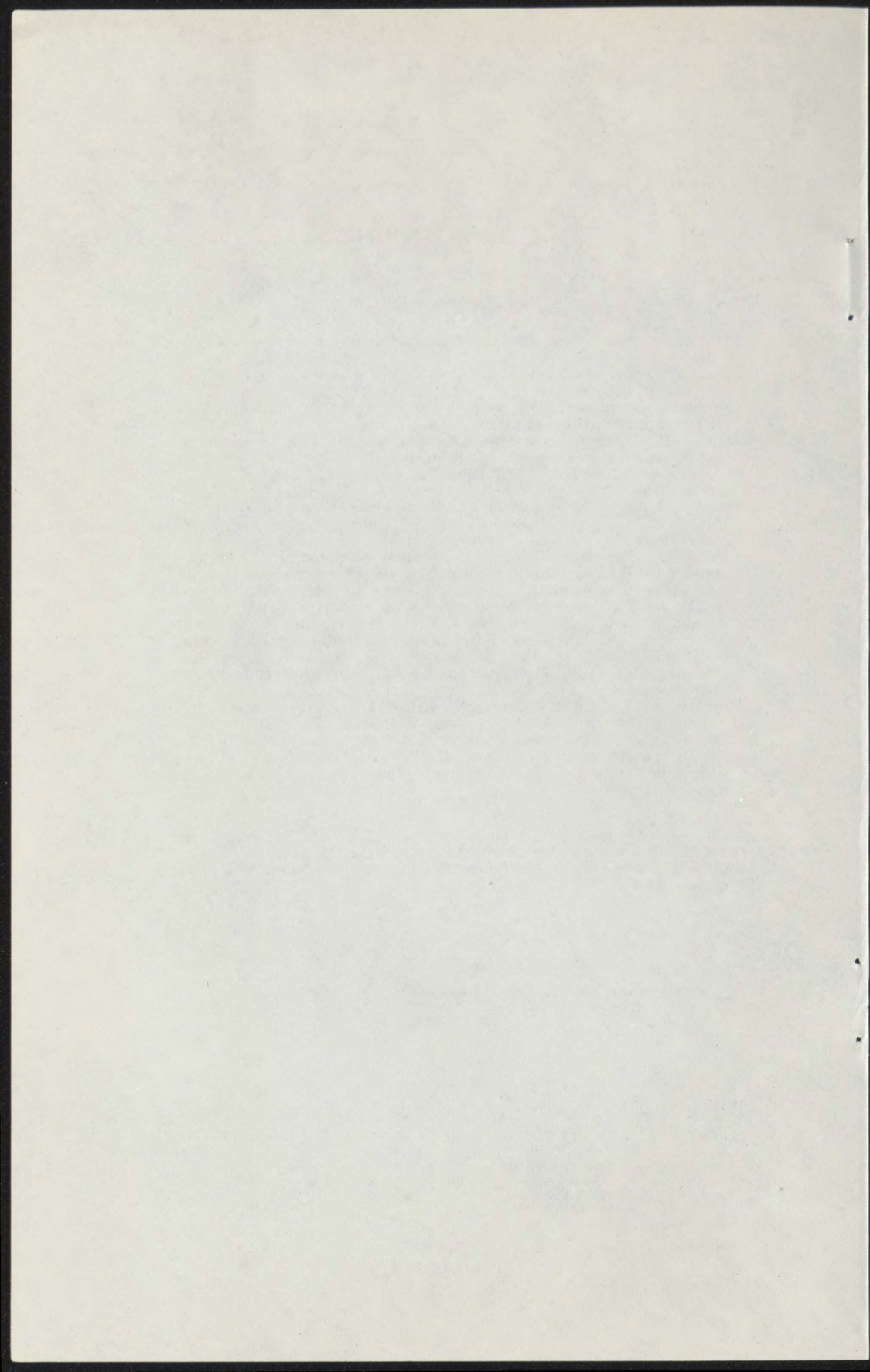
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GOVERNMENT PATENT POLICY

OCTOBER 16, 1979

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY,
Washington, D.C.

The subcommittee met, pursuant to notice, at 1 p.m., in room 2325, Rayburn House Office Building, Hon. Allen E. Ertel presiding.

Members present: Hon. George E. Brown, Jr., Hon. Wes Watkins, and Hon. Donald J. Pease.

Mr. ERTEL. The subcommittee will come to order.

I would like to frame the scope of these hearings and I have a few opening remarks to set the framework for them.

Thomas Edison once said: "Anything that won't sell, I don't want to invent. Its sale is proof of utility, and utility is success." There is no doubt that the potential to utilize the products, processes, and services, which creative genius has brought to light is among the leading incentives to innovation.

I am concerned that, although there are between 27,000 and 30,000 patented inventions in which the Federal Government holds title, only 4 or 5 percent have been licensed for development, and far fewer have been commercialized. I am concerned by the statement made by some in industry that they do not bid for Federal R. & D. contracts because they do not want to take the risk of losing potential patent rights arising out of such work or of associated background rights. I am concerned about the inequities and confusion caused by the hodge-podge of agency patent policies.

Given our Nation's need to strengthen its position in world markets, and the need to do what we can to revitalize the innovative processes in American business, I believe that now is the time to act to reform Federal patent policy. So, today, we begin an exploration into the causes for, and possible remedies to the low rate of utilization of inventions arising out of Federal R. & D. contracts.

There are several key issues which we want to explore in these 2 days of hearings. They might be summarized by the following questions:

One: Should Federal patent reforms be restricted to small businesses and universities or should they cover all Government contractors?

Two: Should these reforms include Government payback measures or royalties?

Three: Assuming that the reforms provide for the grant of exclusive rights to the contractor, should the exclusive licensing or title-in-the-contractor approach be adopted?

Four: What march-in rights provisions would be most effective in preventing or remedying potential abuse of the reforms?

Five: How should background rights be treated?

Six: What rights should the employee-inventor have?

These hearings are oversight hearings but, as many of you know, there are two bills currently before the House and the Senate which propose sweeping patent reforms. They are known as the Bayh-Dole and the Schmitt bills.

In addition, the past chairman of this subcommittee, Mr. Thornton, introduced a Federal patent reform bill during the 95th Congress. We have asked the able witnesses who will testify today and tomorrow to address the issues I enumerated in light of these three bills. A great deal of thought and effort has gone into the drafting of these three bills and we are happy to be able to build upon their foundation.

At the conclusion of these 2 days of hearings, the subcommittee hopes to be in a position to decide upon its future course of action regarding Federal patent policy. I am delighted to introduce, first, the author of one of the three bills, and one uniquely able to testify, Senator Harrison Schmitt of New Mexico. Senator Schmitt has requested that he testify before the subcommittee and we are most happy to accommodate him. We are looking forward to your testimony.

STATEMENT OF HON. HARRISON H. SCHMITT, A U.S. SENATOR FROM THE STATE OF NEW MEXICO

Mr. SCHMITT. Thank you, Mr. Chairman. It is a pleasure to appear before this committee as it begins this extremely important set of oversight hearings which hopefully will become the forerunner of legislative hearings on the Federal Government's patent policies and the impact of these policies on innovation and productivity. It is clearly appropriate as I look around this room, that you begin this process in a room dedicated to probably the greatest explosion of technological innovation that any one nation has ever experienced, that of our space program. One of the saddest parts of that program for a wide variety of reasons, not least of which is patent policy, is that the public has yet to benefit as fully as they could from the technologies and innovations that characterized the space program.

I am encouraged by the willingness of the committee members, and in particular you, Mr. Chairman, who I understand is heading the task force on patent policy, to address this most difficult issue. I am hopeful that in the coming months our two committees will work closely toward what I am confident is a common objective of maximizing the return to the public from our annual investment in science and technology research and development.

For the past 2 years, the Senate Science, Technology, and Space Subcommittee, on which I serve as the ranking member, and which is chaired by Senator Stevenson of Illinois, has conducted an extensive review of the state of American technology and the role of the Federal Government in promoting technology utilization. These hearings have included joint hearings with Senator Stevenson's Subcommittee in International Finance.

Clearly, there is a direct tie between policies related to domestic innovation and the question of our international export and financial stature. Witnesses before the Senate Science, Technology, and Space

Subcommittee have repeatedly underscored the need to stimulate the development, application, and diffusion of new products and processes to the marketplace if we are to reverse the alarming downward trend in our economic growth and productivity.

Admittedly, the problems are varied and complex—overburdensome and costly regulations, lack of an overall trade policy, repressive tax policies, and inadequate funding of basic research and technology—to name just a few. Yet, too often we seek solutions which require new and expensive programs, rather than taking the time to reexamine and adjust existing policies which have been ineffective and oftentimes counterproductive.

The time to reexamine and evaluate the Federal Government's policy for managing the fruits of the billions of dollars of national expenditures on research and development is long overdue. For more than a decade, Federal agencies have funded nearly two-thirds of this Nation's expenditures on research and development. During this past fiscal year alone, the Federal Government provided more than \$29 billion in R. & D. support.

As a result of this huge national investment, one which is going to have to increase if we are going to in fact survive, thousands of inventions are identified each year which have formed a valuable source of new products and processes. Unfortunately, Federal patent policies which were originally designed to protect the public interest by preventing the so-called give away have in fact, operated to discourage contractor bidding, eliminate incentives to innovate or disclose new ideas, and delay the commercialization of inventions developed under Federal contracts. Ultimately, it is the American public who suffers from these misguided policies through the failure of potentially significant technological inventions to reach the marketplace and the failure to accelerate the growth of goods and services, which in turn accelerate the availability of national resources through our basic tax structure.

My own interest in the subject of Government patent policy stems from my years at NASA and the many problems encountered in attempting to work with the diverse Federal patent policies. NASA's own statutory patent policy, while in my view fundamentally sound and implemented in an equitable manner, still has inherent flaws built into its waiver system which have given rise to a disappointingly low commercialization rate of less than 1 percent of the agency-owned patents.

One example of the type of problem I experienced was when I tried to get NASA and the Department of the Interior to initiate a program of advanced coal mining technology. After nearly 1 year of trying to negotiate an interagency agreement, most portions of which were relatively simple to negotiate, we finally gave up and decided we couldn't do it because of conflicting and unresolvable patent and background rights policies.

As a consequence, the new technology base that exists because of space and other activities by the Federal Government is being applied only very slowly to a very fundamental area of critical national interest, and that is the acceleration of the coal mining from underground deposits.

This is not a new problem. For the past 30 years, debate has flourished over the most appropriate Federal policy for determining ownership of the products of Government-funded research. Typically, the debate, and any hope for substantial policy reform, becomes bogged down in the title versus license arguments. National Commissions, interagency studies, and two Executive orders have failed to achieve the long-desired goal of a uniform Government patent policy. Individual agencies commonly operate under varying statutory policies and procedures which have proven to be both costly and confusing to administer. The nature of the controversy clearly demands a legislative solution.

I might add although I am concerned about the direction in which the current studies within the administration are headed with respect to patent policy, nevertheless those studies do recognize that a uniform Government policy is important and should be instituted.

Today, the vast majority of Federal research contracts and grants include the so-called title policy provisions which require the funding agencies to obtain the patent rights to any inventions made in the course of the contract. While the agencies typically offer to license these inventions on an nonexclusive basis, that data which is available confirms that Federal agency efforts to transfer this technology to the private sector have been generally unsuccessful, even where there has been a quality technology utilization program such as at NASA.

For example, a recently released report on Government patent policy prepared by the Federal Council for Science and Technology concluded that there has been a steady decline in the rate of inventive activity by both Government contractors and Federal employees. The number of inventions resulting from the Government's R. & D. effort has dropped nearly 50 percent over the period 1968 to 1975. Fiscal year 1975 marked the lowest number of inventions reported since data collection began, and I am afraid that number has declined further since that year.

Even more disturbing is the data which confirms that very few Government-acquired inventions find their way into commercial use. In testimony before our subcommittee, NASA's deputy counsel indicated that less than 1 percent of NASA-owned inventions are commercialized, whereas up to 20 percent of inventions to which the agency has waived title are in use.

Mr. Chairman, I want to emphasize that particular fact in my testimony. That is a crucible of the Federal Government's experience that I don't think can be ignored by this committee or by the Congress.

An extensive study conducted by Harbridge House in 1968 reported a doubling of the commercialization rate when contractors with commercial background positions were allowed exclusive rights to their inventions. As a result of past Government patent policies, the Federal Government presently holds title to nearly 30,000 inventions, of which less than 5 percent have been effectively utilized. There is, of course, a commonsense explanation of these statistics: An inventor has more economic and personal motivation to push his invention into public use and recognition than does anyone else, most of all the Federal Government.

Even the more flexible policies which permit a case-by-case waiver of the title to the contractor have proven to be unsatisfactory because of the high administrative costs and the uncertainty for the contractors. Delays attendant to the processing of normal waiver applications average between 10 and 20 months at the Department of Energy, with extreme cases having been reported to take over 3 years.

Agency officials concede that the waiver policies by necessity involve substantial burdens for both the Government and the prospective contractors with respect to the petitioning, negotiating, and determining waiver requests, and that the delays experienced in the contracting process as a result of this policy can affect the commercialization of the inventions involved.

Mr. Chairman, as you may know, several bills are currently before the Senate which would address many of the problems I have outlined today. I wish to thank you publicly for the introduction at my request of the Schmitt, Cannon and Stevenson bill that has been the principal vehicle for our hearing in the other body.

Senators Bayh and Dole have introduced a bill, the University and Small Business Patent Procedures Act, which would allow university and small business contractors to acquire title to inventions made in the course of Federal contracts or grants. As a cosponsor of this bill, I believe it represents a significant first step toward a comprehensive Federal patent policy and its adoption will undoubtedly alleviate many of the special problems facing these critical sectors of our national R. & D. base.

Yet the problems this Nation is experiencing in technological innovation go well beyond small business and universities which together comprise but a small percentage of all Federal contracts. We cannot afford to ignore that segment of private enterprise consisting of medium-size and larger businesses which account for 90 percent of our federally sponsored R. & D. effort, more than one-half of U.S. industrial employment and 85 percent of U.S. exports.

Together with Senators Stevenson and Cannon, I have introduced a bill, S. 1215, which would provide the framework for the establishment and implementation of a comprehensive, Government patent policy, which is entitled "The Science and Technology Research and Development Utilization Policy Act". This bill was drafted with the following objectives in mind:

One: The Government patent policy, as well as the implementing regulations, must be uniform in the sense that all agencies and contractors operate under the same general rules and procedures. The Government-wide policy should not differentiate as between research and development results which are intended for the Government's own use and those which are intended for civilian purposes. In either situation the objective should be to facilitate the rapid development and commercialization of new technology.

Two: There must be some flexibility in implementing the policy guidelines because of the differing missions and statutory responsibilities of the various agencies engaged in R. & D. activities, but this need does not negate in any way the requirement for a general overall policy.

Three: The policy must be as simple as possible and avoid the heavy administrative burden and delay experienced by both the contractor and the Government under current Federal policies.

Four: The policy must provide the necessary incentives for private sector participation in Government contracts and for the rapid development of new technology in order to increase the benefits to the public from its R. & D. investment.

Mr. Chairman, I would say once again we very often forget that there is a benefit to the public beyond the mere possession of an invention or the fruits of an invention. The increase in goods and services produced through the innovation of our private sector as well as the Government sector provides an increase in the tax base, which in turn provides us the kinds of resources we need in order to do many of the other things that we need to do for this country.

Experience has shown that the better-qualified contractors are less likely to enter into a Federal contract and make the necessary investment without the guarantee of exclusive rights. The principle of granting exclusive rights to an invention in return for public disclosure of an invention is at the foundation of the U.S. system, and I can think of no reason why it should not be extended to Government contracting situations, as it is already extended to the private sector.

Five: The policy should foster competition and prevent undue market concentration. In any debate on this issue, one always hears claims of suppression of technology by Government contractors and the use of patent rights in an anticompetitive manner. Government-sponsored studies, however, have failed to substantiate these charges. A recently completed analysis by Harbridge House confirmed its earlier conclusion that little, if any, anticompetitive effect resulted from contractor ownership of inventions because contractors normally licensed such technology, and even, Mr. Chairman, if we could find a few examples of such anticompetitive effects, they would be isolated and that is no reason to avoid giving the public the benefit of a reasonable patent policy just because a few people abuse the system.

Finally: The policy must protect the legitimate rights of the taxpayer to any inventions developed under a Federal contract where the specific nature of the research being performed demands full public access to the resulting inventions or precludes the granting of exclusive rights of ownership to the private contractor.

Undoubtedly, there will be instances where it is in the interest of the public for the Government to hold title to an invention arising out of a Federal contract. Where the nature of the research vitally affects the public welfare or national security, resulting inventions may be of such great importance that it would be unnecessary and perhaps inappropriate for the contractor to retain exclusive rights. The same may be true where the contractor's role is limited to the coordination and direction of others, or where the principal purpose of the contract is to develop products which will be required for use because of Government regulation.

Mr. Chairman, I firmly believe Americans have lost neither their willingness nor their ability to innovate. Hearing after hearing before the Senate Commerce Committee, before the Banking Committee, and before the Small Business Committee of the Senate, have again and

again affirmed this willingness and ability to innovate. Rather it is the system within which the innovation process functions which must be restructured to provide a more favorable climate for our traditional innovative spirit. The reform of our Government patent policy is a beginning of that process, but by no means the end of it.

This concludes my prepared statement and I once again commend this committee for its wisdom and foresight in scheduling these timely hearings. They are indeed timely and I look forward to working with you on this common endeavor in any way I can and I hope you will call on me whenever I can be of assistance.

I will be happy to answer any questions.

Mr. WATKINS. Thank you. Senator Schmitt, we are deeply honored with your presence and pleased by your interest in this subject.

I have a few things I would like to ask you.

One, of course you and I are aware that we are falling behind in technology in both the private and public sectors. I think we have the innovative skill and creative, visionary people, but it seems like the system is locking us in because of the patent laws.

The thing we are searching for is how to break down these barriers so we can encourage more innovation and more creativity and more new products and services.

The subcommittee is working on technology transfer and, as you know, NASA has done a lot of it and we try to look at the technology transfer and innovation center approach. One of the things is to try to get a lot of these Federal patents commercialized and let the taxpayers reap the return on their Federal R. & D. investment.

One approach might be to allow a royalty from the commercialization of a Federal patent to accrue to these technology transfer centers or innovation centers. This money could be put into a revolving account to promote technology development and product commercialization which in turn would stimulate more productivity.

The taxpayers would get a return on those Federal R. & D. dollars. An invention sitting on a shelf at a Federal lab is useless unless it is commercialized and the public can benefit from it. It is not doing much good.

Would you share your thoughts on that? Do you feel it might be a way to get some of these benefits to the people?

Mr. SCHMITT. I think we need to certainly examine that as one of the options, not only for funding of these technology centers, as you referred to them, but as one way in which we assure the public that they are in fact receiving all of the benefits that they fairly should receive because of the expenditure of taxpayers' dollars that stimulate the innovation or inventions that come out of Federal R. & D.

On the other hand, the royalty approach takes effect at the beginning of the pipeline and in that sense will tend to constrict the pipeline to some degree. We discussed this with the small business people in particular in the Senate Small Business Committee and there was a general feeling that would make it more difficult to attract investors because you are not sure the invention is going to be successful, but you have already committed yourself to a royalty based on it.

What is the profit margin going to be if it is successful? There is a general feeling you are much better off to take the revenue at the end

of the pipeline, particularly among small business people, that is at the end of the pipeline where you have been successful and you have not dampened the enthusiasm of the invention because of the existence of the royalty and you take it as a tax.

Mr. WATKINS. I can see that in small business, there are a lot of times though when Government policies stifle innovation before it starts. I am trying to find some way in which the Government can help these small businesses commercialize innovations and we can get refunded on that investment.

Mr. SCHMITT. One of the options is to say, "We will help you if you agree to this kind of royalty". If the particular inventor or company feels they would like to do it themselves and without the help, they can then do that. Based on the testimony we have received, there is I think a general feeling of resistance to a mandatory royalty because the entrepreneur does not know what he is going to get and it is an immediate early disincentive for him to attract investors and know what his profit margin will be.

Mr. WATKINS. There are certain areas they are reluctant to invest in, some that they hear advertised over the radio as a kind of "fast buck", "fly by night" because they have been stung a number of times. But if there is a credible innovation center, inventors and entrepreneurs could get the assistance they need to commercialize innovations.

For instance, one of the things you have to check out is the technical feasibility of a new product or process, if it is feasible, the innovation center could then help determine if it is marketable.

Someone with some legitimacy and credibility, if he answers those two questions for them, can speed the innovation on its way to commercialization.

Mr. SCHMITT. Our bill, S. 1215, does maintain its support of technology utilization activity by the agencies under whose auspices the innovation may have occurred. We would expand that concept and actually mandate there would be TU centers within the agencies that have significant R. & D. underway. That is for the very reason you articulated, that is it can be of assistance to the commercialization of the invention.

Even though its success has been limited because of the absence of title for many of the inventions out of NASA research and development, the NASA technology utilization program has been a generally successful effort. Yet even with respect to NASA, as you recall from my testimony, only 1 percent of NASA's inventions are utilized, where any time they grant a waiver they can count on about one-fifth of those being utilized.

Mr. WATKINS. NASA is the only agency that has the statutory mission of technology transfer. Federal agencies spend \$35 million or somewhere in that neighborhood on research. Sometimes they don't set up their hypothesis in the beginning of the R. & D. project by asking, "What will be the technology transfer benefits from this research." We don't even assess the technology transfer potential at the end of the project. If we had that assessment and had some Federal agency to coordinate dissemination of that information a lot more innovations developed through Federal R. & D. would be commercialized.

Mr. SCHMITT. I think it is important that each agency be directed to encourage the transfer. That would further reinforce what is a self-enforcing transfer of technology, which would be a patent policy such as that as we envisioned in S. 1215. That in itself will clearly give you more technology transfer. But that does not mean it can't be further encouraged by technology utilization activity and a mandate within each agency to encourage it.

Mr. WATKINS. Thank you, Mr. Chairman. I will give the gavel back to you.

Mr. ERTEL. Thank you, Mr. Watkins. Senator Schmitt, I am sorry I had to leave but I had to vote. I wanted to continue to hear your testimony, and I was not able to, but I have a couple of questions. No. 1, you indicated in your testimony that one percent of NASA's patents are utilized if they are held by NASA, and 20 percent if they have a waiver provision. Can you turn that around and make that in absolute terms: How many? As I understand there are few waivers negotiated by the Government agency and, therefore, the 20 percent in fact could be the same number as the 1 percent in absolute terms. Do you have the figures?

Mr. SCHMITT. I do not have them. I noticed that Mr. Mossinghoff is here today, and I think he would have the figures at the tip of his tongue.

Mr. ERTEL. I think sometimes it is confusing.

Mr. SCHMITT. It is always dangerous to use percentages, unless they are for a worthwhile purpose.

Mr. ERTEL. Sometimes they prove things and sometimes they are good for argument's sake.

Second: We don't know whether the people who may have negotiated waivers realized when they started that this is a commercially viable area whereas the ones that didn't bother to negotiate, might have said, "This is going to be special to the space program and probably not have community utilization."

Mr. SCHMITT. The negotiation process sometimes in itself is a disincentive. You just have to get into that.

Also, unless you know at the beginning of the contracting process that you are going to have the waiver or title there is a disincentive even to bid on a particular contract. You discourage the competition in that respect by not knowing whether the waiver will be granted. Mr. Mossinghoff can better discuss NASA's specific policy than I can.

Mr. ERTEL. I might ask for the record how your bill would give a preference to small business and "nonprofits"?

Is there any special thing in your bill?

Mr. SCHMITT. No; but it basically the philosophy of the Bayh-Dole bill and extends it governmentwide. The preference is there. It is also there for everybody else.

Mr. ERTEL. In other words, you treat all contracts equally?

Mr. SCHMITT. We would treat all equally because approximately 90 percent of the federally sponsored R. & D. effort is conducted by entities that would not come under Bayh-Dole or the small business definition. That is the most persuasive reason why we should not only do what is clearly necessary and proper, that is, provide small businesses and universities with title, but for the sake of the entire economy we are

going to have to look at the bigger problem and that is the medium-size and larger businesses.

Mr. ERTEL. They have the same consideration if they want to develop their invention into a marketable product. They still have the same concern that a small business would have and anyone else, is that right?

Mr. SCHMITT. They do. In the process of developing the details of these concepts, particularly if regulatory interpretations are required, it might be wise if there is going to be a regulatory burden associated with having title, that it be made differentially less for a small business or university than it would be for a larger business.

As we know, and I think almost everybody admits, the regulatory burden that our economy has to bear, being it is a blanket that covers everybody, is anticompetitive. It does hurt small business more than large businesses because they do not have the basic cash flow and financial resources to handle the cost of regulation and the time that is required to adhere to the regulatory policies.

So any time we look at implementing regulations, or transfer our legislative responsibility to an agency and allow them to promulgate regulations we should consider directing them to make sure that the burden is not such that it is going to discourage small business or the universities.

Mr. ERTEL. That brings me to the final question that I have or maybe the next to the final one. You have provided for title to the contractor. The title would benefit the contractor. I know you don't have an answer, but I want this on the record, the title situation to me generally does not mean a lot because we can give incidences of title, certain rights to whoever we want, whether it is called a license or not, whether it is a title at this point, but would it make a difference, in going for a foreign patent application who has title?

Mr. SCHMITT. I do not have the answer to that. As a result of your question, we are going to look into it at our hearing on October 25. I would encourage you to address it and my intuition tells me it would make a difference.

Mr. ERTEL. I brought it up because a witness will be testifying later today and I want him to think about answering that question.

Mr. SCHMITT. Good. Even though you can do a theoretical analysis, and I know some in the administration have advocated this, there is no substantive difference between having title and having exclusive license. The fact is that there is, at the minimum, a psychological difference. That can be very important in the innovation process.

The psychological difference of ownership of property is a very strong human motivation. We should not ignore it. You can do all the theoretical analysis you want, but most of the testimony you will hear I believe will be very similar to what we have heard when asked that question.

There will be many reasons given as to why exclusive license is not the same as having title. One of the basic assumptions that goes with exclusive license is that the Government somehow is going to go out and market the patent to entities not included under that exclusive license.

There is nothing in the history of this Government which supports the conclusion that it will market that patent any better than the

company would if they had title. The fact is most evidence is to the contrary, that is that they would not do it as well.

Mr. ERTEL. Let me turn to one further issue. Your bill does not have any provision in it for the Government to get any kind of royalty or payback if you have provided for title in the contractor; he has exclusive rights then. Now, this may be a superfluous argument, but I don't think so, the Government had probably paid a lot of money for research and development. Now, one person who has gotten a contract award will now reap all of the benefits; not the benefits of what they performed for the Government, but they will probably profit in their initial effort because they are building profit motive in the bidding on the contract. Also, they would get a subsequent real advantage if they come up with a patentable invention in the process.

That patentable invention may be the most important part of their whole contract and they will come out with a tremendous income item and probably a profit on top of it. If that is true, then it certainly seems to me the Government ought to participate to some degree in the benefits which ensue from that because that person would never have been able to do it if it had not been for yours or my taxes as an input.

Now, doesn't it seem likely to you that we could set up a statutory royalty provision which would be set as a standard policy matter? It wouldn't be a disincentive for someone to come in because when we commercialize he has to consider the royalty payments as part of his operating cost when he goes into the commercial invention. I wonder what your reaction is?

Mr. SCHMITT. My reaction, Mr. Chairman, is that the statutory provisions for payback already exist, because profits are taxed. If the invention results in an increase in profits for a particular individual or company, those profits are going to be taxed. The public realizes their return because the invention reached the marketplace. If it does not get out there, the public does not get anything.

Mr. ERTEL. You have a little more confidence in the tax system than I have.

Mr. SCHMITT. I think that is something that probably should be looked at in these hearings in both bodies. But it is clearly true that as our gross national product increases because of increases in goods and services, the total Federal take increases. I don't think that can be argued with. Now, in a case-by-case basis we would have to look at it and look at each company and how their profits are taxed, and so forth.

But my inclination, obviously by these remarks, is that we should not add a constriction, and I spoke of this earlier, at the head of the pipeline that the inventor, the entrepreneur or the financiers of that inventor or entrepreneurs would say and would know that exists at the end of the pipeline already other than the normal tax structure.

A royalty payment agreement would be such a restriction. Now it could be we might develop an optional arrangement, for a royalty payment you get certain Federal services to help in the analysis of marketability and commercialability, and so forth. I think that is worth exploring.

I would be reluctant to include a mandatory royalty without a great deal more consideration because I think the mandatory royalty in a sense already exists in the tax structure.

Mr. ERTEL. Thank you very much. I appreciate your testimony and appreciate your coming over and helping us with our hearings on this particular matter.

Mr. SCHMITT. Thank you.

I appreciate the opportunity and again thank you for introducing our bill over here so it can be considered and looked at. I wish you well in the hearings and we will follow them closely.

Mr. ERTEL. Thank you.

Mr. SCHMITT. Thank you.

Mr. ERTEL. Our next witnesses will consist of a panel: Mr. Gerald Mossinghoff, Deputy General Counsel of NASA, Mr. James E. Denny, Assistant General Counsel for Patents, DOE and Mr. Donald R. Dunner, president of the American Patent Law Association from Virginia.

We will ask Mr. Denny to begin because his testimony seems to lay a foundation for the rest of the testimonies and we can probably utilize that to ask questions of the other parties in the panel.

We appreciate your being here. I have your detailed statement, Mr. Denny, which will be incorporated in the record, without objection, and I understand you have an abbreviated statement.

Mr. DENNY. Yes, I do, Mr. Chairman.

STATEMENT OF JAMES E. DENNY, ASSISTANT GENERAL COUNSEL FOR PATENTS, DEPARTMENT OF ENERGY

Mr. DENNY. Mr. Chairman, members of the subcommittee, I am James Denny, Assistant General Counsel for Patents of the Department of Energy. As I have been deeply involved in Government patent policy for over 15 years, I very sincerely appreciate the opportunity to appear before this subcommittee and comment on this issue.

As I am sure you are aware, the administration presently is reviewing its own position on the issue of Government patent policy and I cannot, therefore, bring to you an administration-approved position. What I can do is to provide the subcommittee with information regarding the patent policy of the Department of Energy and our experience under it. In addition, I would like to comment on the most critical patent policy issues based upon my own experience as patent counsel in several Government agencies and while holding positions on several interagency committees that have dealt with this issue.

This issue was not a problem prior to World War II primarily because most Government research and development efforts were performed by Government employees in Government laboratories. Since World War II, however, the Government has steadily increased its commitment in financing this country's R. & D. efforts to the point where in 1978 the Federal Government's R. & D. expenditures amounted to approximately one-half of the R. & D. supported by this country.

The approach to resolving this issue has varied considerably depending upon the agency involved, upon the mission of the R. & D. program, and upon the type of research being conducted. The approach varied depending upon whether support was directed to basic research with a university, through a grant with the National Science Foundation,

or basic or applied health research by the National Institute of Health, a military weapons system developed by the Department of Defense, or a synfuels program by the Department of Interior.

As the committee knows, the debate on the Government patent policy issue has gone on for over 30 years and is one in which both the executive branch and Congress has failed to date to agree upon uniform policy guidance. On the one hand, the title policy advocates argue that the Government should acquire title to inventions resulting from Government-supported R. & D. because the inventions are the same as the end product of the research and it should be owned by the Government, that allowing contractors to retain title to an invention is tantamount to requiring the public to pay twice in order to utilize the invention, and that such inventions should be freely available to the public for all to use.

On the other hand, supporters of a policy that would allow the contractor to retain title argue that inventions are not paid for by the Government, but were incidental to the contractor's performance, that these inventions were based upon the contractor's background knowledge, that the most capable contractors will not accept contracts under a title policy, and that where an invention is free for everyone to use, no one will invest the capital to commercialize the invention.

The guidance provided by Congress has not been consistent, and has sometimes applied to a single agency, sometimes to an individual agency program, and sometimes to an R. & D. program that crosses agency lines. Also, this policy guidance has varied from an inflexible policy requiring an agency to always take title to inventions, to policies which provide substantial flexibility. The executive branch has attempted to establish a consistent Government-wide policy approach through Presidential policy statements that are applicable in situations not covered by legislation and which are flexible depending upon the agency mission and intended end use of the technology being supported.

One of the most detailed and recent expressions of congressional policy was that developed for the Energy Research and Development Administration, or ERDA, in its nonnuclear act. That policy, now applicable to the Department of Energy, normally requires the Government to take title to inventions made under R. & D. contracts and provides the flexibility to enable DOE to waive these patent rights subject to certain limitations.

DOE's nuclear patent policy is controlled by the Atomic Energy Act and this policy also requires the Government to normally take title to inventions and similarly provides the authority to waive this right. These two policies have been harmonized in DOE's procurement regulations.

Congress requested ERDA to report to the President and to Congress on applicability of its existing patent policies and such a report, entitled "Patent Policies Affecting ERDA Programs", was submitted to the President and Congress in January 1976. This report indicated it was preliminary in nature due to the fact insufficient experience had been obtained under the new patent policy. The final report is in the process of being prepared, so it is somewhat premature to provide you with DOE's full conclusions regarding these issues. The report will

indicate, however, that the nuclear and nonnuclear patent policies applicable to DOE are technically sufficient and appropriately flexible to allow DOE to undertake the wide variety of R. & D. activities that must be undertaken in literally every field of technology and with a wide variety of private, industrial, and university entities.

Our policies are not, however, without problems. DOE's patent policies provide the flexibility to grant waivers, and we have made use of this flexibility. DOE has utilized its ability to grant both advance waivers at the time of contracting, and identified waivers to individual inventions on a case-by-case basis. We have granted waivers to all inventions to be made under a contract, and only to inventions which fall within a particular field of use. We have granted waivers covering both domestic and foreign rights to inventions, and waivers only to foreign rights.

We have granted waivers to individually identified inventions, as well as to all inventions of a class of contractors undertaking a particular type of work. We have granted waivers to the largest corporations in America and to firms which employ six people. Our waivers have been limited in fields of technology, fields of use, and periods of duration. We have also denied waivers where it was believed to be in the public interest to do so.

In my prepared remarks submitted for the record I have provided the formal statistical information that we have on our waiver activity. The three most relevant pieces of information I would like to give you regarding our waiver policy are first that we have granted advance waivers to approximately 3 percent of the prime contracts and major subcontracts to which they could have been made applicable. Second, we granted identified waivers to approximately 1 percent of the individual inventions which are reported under contracts and subcontracts and, third, the whole waiver process is a substantial administrative workload for both DOE and its prospective and actual contractors.

Those advance waiver requests that are holding up contract actions of necessity obtain priority treatment, and are the ones to which we give our major attention. We attempt to negotiate these waiver requests during negotiations of other contract matters so as not to delay the contracting effort. Other advance waiver requests have been delayed as much as 10 to 18 months before formal DOE action has been taken, and our present backlog is 66 waivers.

Waiver requests for identified inventions made under a contract are also relegated to a lower level of priority because they do not delay the R. & D. contracting effort. As a result, action on these waivers have frequently taken between 10 and 20 months although more recently the average pendency has been reduced to about 12 months. The present backlog of identified waivers is 123.

Although not all delays are caused by DOE, there is concern that in at least some cases the delays may well affect the commercialization effort of the inventions involved. At present, the delays caused by DOE are simply due to the lack of sufficient personnel to promptly and properly process them.

The above statistics will indicate that DOE policy is not without problems. First and foremost, the administration of a policy where the Government acquires title subject to a waiver involves substantial

burdens for both the Government agency and prospective contractors with respect to petitioning, negotiating, and determining waiver requests. This, in turn, can create delays in the R. & D. contracting process and may cause delays in the commercialization process because ownership of the patent rights is frequently an important issue in both areas.

Additionally, a patent policy that provides for Government ownership of inventions places the burdens and responsibilities upon the Government to see that the resulting technology is utilized. These responsibilities include reviewing inventions to assess their importance, operability, feasibility, and commercial potential; obtaining protection on the most important inventions, both domestically and in appropriate foreign countries; advertising their availability; negotiating licensing; promoting utilization; and enforcing the patents obtained on them against uncensored infringements.

Those responsibilities impose a tremendous and burdensome workload which should not be left with the Government unless there is also provided sufficient funding and staffing to carry out these responsibilities. As a Government employee responsible for implementing policies passed in this area, I have a particular concern on that point. We frequently find ourselves with policies that we don't have the personnel or staffing or resources to carry out, and we find ourselves going through the motions. It is a discouraging type of concept and I really think that consideration must be given of this workload of administration if any legislation is passed which requires the Government to obtain title. Otherwise, consideration should be given to allowing industry to assume this primary responsibility with the Government taking a monitoring or overseeing role.

Additionally, consideration must be given to the question of whether industry will or will not participate fully in Government R. & D. programs under a Government title policy. There is a frequently stated position that there are always companies and corporations standing in line waiting for Government moneys. This, of course, is true. It does not address the issue, however, of whether those corporations or segments of corporations, with the most advanced expertise in the fields of technology of interest to the Government agency, will accept R. & D. contracts under such a policy in areas where the contractor has an advanced, highly proprietary, commercial position.

In view of the DOE mission to assist in development of commercial energy alternatives, we are working in areas that have the highest commercial sensitivities. We know there are corporations or divisions of corporations which will not work with us or will not even approach DOE in a contracting situation because of our patent policy.

Notwithstanding these problems, DOE believes its policies are sufficiently flexible to accomplish its mission. Conceivably, the same type of policy might be applied with similar results to agencies having equal or smaller R. & D. programs. The application of such a policy, however, on a Government-wide basis would, in my opinion, be burdensome to the point of becoming a substantial barrier to the Government's R. & D. mission. The most recent data available indicate that over 40,000 contract and grant actions involving R. & D. are awarded by the Federal Government each year, and under these approximately

6,000 invention disclosures are reported on an annual basis. The application of a title in the Government with waiver policy to this volume of contracting and inventing activity would be impossible in any realistic sense.

In any debate on this issue one always hears charges of windfall profits and concerns expressed regarding a Government giveaway, suggestions that valuable technology is either being suppressed by industry or utilized in an anticompetitive sense and beliefs that making inventions available to all through Government ownership will achieve widespread commercial use. Government-supported studies, however, have found no basis in fact for these charges, concerns and beliefs.

Approximately 10 years ago the Federal Council for Science and Technology supported the most comprehensive study ever conducted on the issue of Government patent and policy, commonly referred to as the Harbridge House report. This report made the following findings:

One: Government ownership with an offer of free public use does not alone result in commercialization of research results,

Two: The commercial utilization of Government-generated inventions was low, approximately 12 percent, but the rate doubled when contractors with commercial background positions were allowed to keep exclusive commercial rights to the invention, and

Three: Windfall profits did not result from contractors retaining title to such inventions and little, if any, anticompetitive effect resulted from contractor ownership of inventions.

One final comment in regard to the concept of "march-in" rights. There have been considerable discussions that in the 10 years or more in which such rights have been acquired by the Government, they have not been utilized. The conclusion is frequently drawn, therefore, that such rights are ineffective. I believe this is an erroneous conclusion.

The "march-in" rights were developed to address issues of windfall, suppression and detrimental effects of exclusive patent rights to competition. In my view, it is because these problems have been primarily theoretical and not actual, that "march-in" rights have not been utilized. The primary benefit to the concept of "march-in" rights is that the administrative burden to everyone can be limited to those cases, and only those cases, where an invention is commercially important to two or more parties who cannot settle their differences.

As I previously stated, the administration has not yet taken a position on the three major legislative patent policy proposals. I believe I can state, however, the effect the proposals would have on the patent policies and R. & D. activities of DOE.

I believe S. 414 would have a very minor impact on current DOE patent policies and procedures. DOE presently gives preferred treatment to small businesses and nonprofit organizations in its waiver policies and for the most part waivers are granted either at the time of contracting or at the time an invention is reported.

Both H.R. 8596 and S. 1215 would change DOE's patent policy from one of normal "title taking" with waiver, to one of normally acquiring for the Government a free license and "march-in" rights with exceptions being possible in appropriate circumstances to acquire title. One primary effect this would have on DOE is the elimination of sub-

stantial administrative workload burdens, for both DOE and its contractors, that presently delay waiver decisions.

Also, it would presumably eliminate many problems of contractor participation. Such a change would also place the initial burden of commercializing the contract results with industry instead of placing that burden on the Government.

Finally, I believe that our experience and studies have shown there will be no substantial detrimental effect on competition under any of the proposed policies.

In view of this total experience, it is my opinion that any patent policy whether enacted by Congress or adopted by the executive branch should concentrate on the following three problems:

One: Achieving commercial utilization of the results of Government-sponsored research,

Two: Ensuring that the Government can work cooperatively with those segments of industry having the most advanced technology, and

Three: Reducing the administrative workload to the extent consistent with the overall public interest.

Mr. Chairman, that ends my remarks and if I can answer any questions, I will be happy to do so.

Mr. ERTEL. Thank you very much for your very comprehensive statement. I think we will refrain from asking questions until other members of the panel have completed their statements and then come back and ask all questions simultaneously.

The next witness is Mr. Mossinghoff, Deputy General Counsel, NASA.

Mr. MOSSINGHOFF. Thank you, Mr. Chairman.

STATEMENT OF GERALD J. MOSSINGHOFF, DEPUTY GENERAL COUNSEL, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Mr. MOSSINGHOFF. Mr. Chairman and members of the subcommittee, I appreciate this opportunity to appear before the subcommittee to report to you on the patent policies of the National Aeronautics and Space Administration, on how these policies evolved and how they are now carried out, and on the results they have produced. I hope that my report will be helpful to the subcommittee in its consideration of Federal patent policy. I have provided to the subcommittee a more detailed statement on NASA's patent policies, which includes for the record a number of appendices.

Since early in NASA's history, our patent program has been viewed as an integral part of NASA's overall efforts to stimulate the creation and identification of new technology in our programs and to foster the utilization of this new technology in commercial applications.

The statutory basis of NASA's patent policies with respect to contractor inventions in section 305 of the National Aeronautics and Space Act of 1958, a provision which is unique among the various Federal statutes dealing with patent policy. Under that provision, NASA acquires title to all inventions made under its contracts unless the Administrator decides that the public interest would be served by waiving title to the contractor. No congressional guidelines were pro-

vided for the exercise of the broad waiver authority included in NASA's Act. NASA is required under section 305 to retain a broad royalty-free license to all inventions made under contract, so waiver of title really amounts to a waiver of commercial rights only.

In implementing section 305, NASA's policies have evolved from an early approach, patterned closely after that of the former Atomic Energy Commission, to our present policies which apply the criteria of the 1963 and 1971 Presidential policy statements in determining when the public interest will be served by a waiver of commercial rights to the contractor.

Whenever NASA waives commercial rights to the contractors, we retain what are referred to as "march-in rights" which assure that the invention is not suppressed and that the invention will be reasonably available to serve public health and safety needs. These march-in rights are in addition to the royalty-free Government license to which I referred. NASA also retains the right to void a waiver if the contractor fails to report to NASA on the efforts it is undertaking to commercialize the invention.

Although NASA has granted approximately 75 percent of the requests for waivers, the total number of requests for waivers is comparatively low, and thus, from a statistical viewpoint, I believe it is fair to characterize NASA as being essentially a title-in-the-Government agency. As pointed out in the statistics included with my detailed statement, through 1978, 31,357 contractor inventions have been reported to NASA; title has been waived to 1,254 of those inventions—less than 4 percent.

Rights to inventions made by NASA employees are allocated in accordance with the criteria of Executive Order 10096, issued by President Truman in 1950. Those criteria take into account the relationship of the invention to the employee's job, the contribution by the Government to the making of the invention, and the Government's interest in the invention. I believe there is general agreement that the allocation of rights under the Executive order is fair and that the procedures, which include review of agency decisions by the Commissioner of Patents and Trademarks, work well.

One of the unique aspects of NASA's statutory authority regarding patents is the specific grant of authority to the administrator to issue patent-licensing regulations. In part because of that authority, NASA has been one of the leaders in Government over the past several years in developing and refining a patent-licensing program. Although the resources that the Office of General Counsel applies to the licensing program are limited in comparison with commercial patent-licensing programs, the NASA patent-licensing program is able to rely upon our extensive technology utilization program which disseminates information regarding NASA inventions in many ways.

Mr. Chairman, on that point, I would like to reinforce what Mr. Denny said about the resources that ought to be applied here. In hearings on NASA programs over the years I am sure you heard a lot about the redundancy that we built into our systems.

Just this past week the attorney in charge of our licensing program, Mr. Gayle Parker, retired and I guarantee he was very close to what the engineers would refer to as a single-point failure. We

are currently trying to attempt to replace him, but his wisdom and the knowledge that he has developed over the years is going to be very sorely missed by us in our licensing program. We only have one attorney assigned full time to licensing activities, with a backup attorney and some of the field attorneys helping out, so there is a need to recognize what Mr. Denny says. If we are going to move into patent licensing, there is a question of resources to be applied.

The detailed procedures under which we grant licenses are described in my more detailed statement. Our preference is to grant nonexclusive licenses under NASA patents unless we become convinced that limited exclusivity is required to stimulate investment in commercializing the invention. Exclusive licenses are granted only after public notice, and only after we can negotiate with the licensee a firm plan for the licensee's investment in and commercialization of the invention.

Notwithstanding the efforts of both the technology utilization program and the attorneys in the Office of General Counsel, the results of our licensing program have been disappointing, particularly with respect to NASA-owned inventions which were made under contract.

As documented in the statistics appended to my more detailed statement, 1,134 NASA-owned patents and patent applications on contractor inventions are available for licensing. We have recently requested reports on commercial use under each of NASA's patent licenses in effect at the end of last year. The results of the reports we received are set forth in appendix G to my detailed statement. Based on the reports we have received to date and on a review by Mr. Parker of patent licenses no longer in effect, we have documented commercial use of 13 NASA-owned contractor inventions under patent licenses, 11 under nonexclusive licenses, and 2 under exclusive licenses.

This amounts to a commercialization rate of slightly more than 1 percent of these patented contractor inventions under NASA licenses. We are confident that many more of these are being commercialized, but not through the mechanism of a patent license from NASA and not using incentives of the patent system.

With respect to NASA employees' inventions on which NASA owns patents or patent applications, the results are similar, but somewhat more encouraging. With respect to 2,378 such patents or patent applications available for licensing, we are able to document 47 inventions which are being commercialized under licenses, for a rate of about 2 percent. We believe, however, that several of the NASA employee inventions will prove to be quite significant, including, for example, the energy-saving power factor control system invented by Mr. Frank J. Nola of the Marshall Space Flight Center.

Also, we are now in the process of granting licenses under NASA's patent on Ms. Barbara S. Askins' method of intensifying faint photographic images. Because of that invention, Ms. Askins, who is also from the Marshall Space Flight Center, was named the 1978 Inventor of the Year by the Association for the Advancement of Invention and Innovation.

The data I have discussed refer to the number of inventions which have been commercialized under licenses. In many cases one invention

is licensed to more than one company. There are, for example, 22 companies which have been licensed to practice Frank Nola's power factor controller. Through 1978 a total of 94 licensees have reported commercial use of 60 NASA-owned patented inventions.

As pointed out in appendix C to my detailed statement, the commercialization rate of waived patented inventions—where the contractor has acquired title—commercial rights—to patents—is much higher than that of NASA-owned patented inventions and has been running at a consistent rate of about 18 to 20 percent.

Mr. Chairman, in response to your question of Senator Schmitt, there are reports in appendix C to my detailed statement on 1,046 contractor-owned inventions in which we have waived title, and the number commercialized is 193. So, it is 193 out of a little more than 1,000 and that rate has been consistent over the last several years; 18 to 20 percent has been a surprisingly consistent rate of utilization of waived exemptions.

This concludes the summary statement and I would be pleased to respond to questions.

Mr. ERTEL. We will go to the next person, but answer one aspect of that.

One percent of the NASA inventions were commercialized which did not have waivers and what absolute number is that commensurate with?

Mr. MOSSINGHOFF. The 1 percent refers to the NASA-owned and patented contractor inventions, which is 1,134. We have documented 13 out of that 1,134. There are about double that amount, 2,378 NASA-owned patents on employee inventions and there we have documented 47 inventions that have been commercialized.

Mr. ERTEL. Thank you. Our next witness is Donald R. Dunner, president, American Patent Law Association.

STATEMENT OF DONALD R. DUNNER, PRESIDENT, AMERICAN PATENT LAW ASSOCIATION

Mr. DUNNER. Mr. Chairman, my name is Donald Dunner, president of the American Patent Law Association, and I have sitting on my right, James H. Laughlin, member of the board of directors of that association, and with your permission, he will sit here through my presentation and perhaps answer questions if I cannot answer them.

Mr. ERTEL. Yes.

Mr. DUNNER. One of the disadvantages of being a last speaker on panel, or perhaps an advantage, depending on where you are sitting, is that almost everything you plan to say has been said. I will try to avoid duplication in even my shortened prepared remarks.

First, we would like to commend this subcommittee for undertaking this very important series of hearings dealing with the alarming decline in industrial innovation in the United States. I am sure I do not need to fill this committee's records with statistics demonstrating that there has been a significant decline in innovation and that that decline has led to a Presidential Task Force on Domestic Policy Review that has generated statements from a variety of Senators and Members of the House and a number of bills.

As all of the members of this committee know, there is not now and there has never been a uniformly applied Government patent policy. We are now dealing, aside from some specific areas where we have legislation, with Federal regulations derived from the Executive orders of three different Presidents and on an agency-by-agency basis and these policies are not applied uniformly.

Several years ago the General Services Administration tried to implement President Nixon's 1971 statement by granting a group of licenses. That policy was challenged on constitutional grounds and it still has not been resolved, since the suits were dismissed on other bases. This chaotic state of the law was described in great detail by the Comptroller General of the United States in May 1969, in testimony presented before the Senate Judiciary Committee. This has resulted, in our opinion, in a tremendous state of confusion, complication, and uncertainty, in the minds not only of Government contractors, but of potential Government contractors.

Moreover, it is our feeling that this lack of an informed and uniform Government patent policy works a significant negative influence on innovation and productivity in the private sector. That view has been echoed by the domestic policy review, which was instituted by President Carter, and it has also been echoed very recently by Senator Kennedy in a statement he issued within the last month.

Everyone agrees that any invention resulting from Federal funding must be available to the Government itself or to others authorized by the Government to use in the performance of Government work. The debate really does not center on this point. It centers around what further rights in an invention the Government should acquire.

As you heard today, there are some who believe in a title policy and some who believe in a license policy and, unfortunately, this debate has been clouded by cries of windfall, of giveaways, and so on, with hints of valuable technology being suppressed by industry.

While these various cries have frustrated the resolution of these problems, we are aware of no factual basis which would give any credence to them. In fact, as you have heard today, there are studies indicating quite the contrary. There has been reference to the Harbridge House report, which was a study authorized by the Federal Council for Science and Technology. I won't repeat the findings of that study, but you will recall that that report included conclusions that there were no windfall profits and a significant increase in commercialization when you had title in the contractor.

We believe in a rational, sensible Government patent policy to address the real issues rather than to get bogged down in cries of windfall profits, giveaways, and suppression. The real issues relate to what is the best policy to commercialize the invention, to bring the invention to the marketplace, to innovate, not who is gaining more, who is gaining less.

Everyone will agree that what the Government pays for it should get; the question is: "What is the best way to get what the Government pays for in the hands where it belongs—the hands of the people?"

If you grant nonexclusive licenses to undeveloped inventions, that does not help anyone. If you grant exclusive licenses or title and those inventions are developed, it benefits everyone.

The Harbridge House report really is something I would commend to you. It shows, in words better than I can utter today, that in fact the benefit accruing from granting exclusive rights to contractors are real and they are significant and they are not imaginary.

Now, those are my general comments. In my prepared paper, I also pointed out that the American Patent Law Association approves in principle three bills that we have been talking about. The Thornton bill, H.R. 8596, and the Schmitt bill, about which we heard this afternoon, S. 1215, and the bill commonly known as the Bayh-Dole bill, S. 414. In fact, of the three, we most strongly endorse the Thornton bill, but we feel that the passage of any one of these bills would improve upon the present situation.

Now, rather than go into those bills or tell you how we think they should be amended, since our prepared paper does some of that, I would like to address the six questions which were posed to me in a letter written by you, Mr. Chairman, before this hearing.

One was: Whether patent reform provisions should apply to all Government contractors or to a subset of them such as small businesses, universities, and nonprofit corporations?

We agree with the testimony of Senator Schmitt this morning: That is, only 10 percent of the Government-funded inventions go to small businesses and not-for-profits. A policy restricted to those classes of entities would have an extremely limited effect on the overall innovation problem in the United States.

A second question was posed: Whether Federal patent reforms should include Government payback measures?

We recognize this is a very hot political issue, a very hot political question, and it has a lot of sex appeal and quite obviously it has taken something like that to get a bill which would have otherwise beneficial provisions in it and compromises may have to be made, but we feel that provisions such as that are not in the public's best interest.

In the first place, they are impossible to monitor. The costs which would be incurred in monitoring those provisions in the accounting would, we feel, probably outweigh any direct benefits you would obtain, not to mention the fact, as Senator Schmitt pointed out, that you will get money through these successful programs from Government taxes, you will get new jobs created, and you will have what we would like to call a building bloc procedure in which people benefiting from earlier inventions will make new inventions and new taxes and jobs will be created.

There are provisions such as that in the Bayh-Dole bill with significant problems in wording and discussion, but we commend you to our written paper for those particular points.

The third question you raised: What march-in rights provisions would be most effective in preventing or remedying potential abuse of reforms?

There are various march-in provisions in the various bills we have been talking about. In general, we have no objection to meaningful march-in rights provisions such as appear in the Thornton bill, in the Schmitt bill and in somewhat different language in the Bayh-Dole bill.

In the Thornton bill, however, there is a shortened period, a 7-year period and a 10-year period, for march-in by the Government except

in certain situations. Universities and nonprofits are not excused from those provisions, whereas small businesses are.

We would oppose that limitation in general, but, if you are going to have one, we would extend it to universities and nonprofits; that is, that they be excused as well.

The next to the last question: Should the reforms adopt the exclusive licensing or the title in the inventor approach? You raised the question of whether or not foreign applications would have to be filed in the name of the owner?

Generally, that is true. Obviously, that could be arranged by a provision in the law saying that the Government will sign the necessary papers, but we think that it is a much simpler, a much more direct approach to give title to the contractor with march-in rights with appropriate protection to the Government.

Moreover, there are problems of enforcement. We have seen some provisions which keep the power of enforcement in the Government and we think it is wasteful and expensive and the easiest, simplest, and clearest way which avoids the psychological problems that Senator Schmitt talked about is to put the title in the contractor.

Lastly, Mr. Chairman, you said, "What rights should the individual inventor have, both in the Government, university or industrial employees?"

We have not taken any formal position on this point. We are familiar with the Moss bill which has been introduced on this subject. We would, however, commend you to the domestic policy review, which generally felt that it was counterproductive to have any legislation specifically dealing with rights going to inventors, to employed inventors.

It is very difficult to isolate the contribution that is made to the employed inventor. There are people on both sides of him, before the invention is made and after the invention is made.

That report points out in some detail, with backup papers, that you end up penalizing these other people and end up inducing people to concentrate on getting patents rather than making a significant contribution. As happened in Germany, you end up with a flood of patent applications into the Patent Office because people benefit from patented inventions and become preoccupied with the patent rather than with the technology.

I missed one point. You mentioned background rights.

We don't have a specific position on this. I would only note this is one of the biggest problems in getting private contractors to come into partnership with the Government in Government R. & D. efforts. If you have very negative background rights provisions, any R. & D. contractor that has significant R. & D. as background may well not enter into the agreement.

We would suggest that if you put any background rights provisions in any legislation, they be minimized to the extent absolutely necessary to effectuate the Government policy.

With that, Mr. Chairman, I will conclude my remarks and I will be glad to answer any questions.

Mr. ERTEL. Thank you very much. You know, if I were trying to play the political rhetoric game, and I heard your testimony, Mr.

Dunner, I might say your testimony was windfall profits are the big boys, little boys be damned. Maybe I can explain that for a minute.

Mr. DUNNER. All right.

Mr. ERTEL. You indicated there would be no royalties back to the Government, but let everybody go ahead and develop the inventions they developed as a result of the Federal dollars.

The Federal research development funding for 1976 goes something like this: \$294 million for firms requesting with 1,000 people and \$262 million for firms with 1,400, or 4,999 to 5,000, and \$312 million for those with 5 to 10,000 employees and \$511 million for those with 10,000 to 25,000 and for those who have employees over 25,000, it is \$7,907 million.

So, therefore, one could argue that really what we are doing is going to allow patent rights, without royalties back to the Government, to go to those very, very large firms, because they are getting most of the contracting dollars. One would assume if inventions or patentable inventions would follow in some proportion to the amount of money they are getting from the Federal Government, it will be the big companies who are getting the major windfall of the research and windfall dollars, who would get the major inventions and profit. It is not the small people, all of those other people we are concerned about, but the ones that would benefit by the no royalty and give them title clearly would be the big companies. How would you respond to that?

Mr. DUNNER. I would respond by saying, first, Mr. Chairman, if there is disparity in the amount of Government money going to small business, that some consideration should be given to putting more money into small businesses in terms of giving them a greater share of the Government contracts.

The point I am making is that it is not a windfall. The point I am making is that the Government gets paid back because there are taxes generated at whatever the level is, 50 percent or what have you, on large corporations.

New jobs are made which benefits everybody and which generates new money and new taxes again. There is an accounting problem.

The Bayh-Dole bill has a provision in it which basically says that: At a certain level the Government will recoup a certain percentage of profits for anything having a subject invention. Well, the subject invention may be a little cotter pin in a \$1 million device. There is a problem of allocation. How do you decide what portion of the whole is to be taxed? How do you decide what portion of the whole was contributed by the small item?

All I am saying is: I don't think that is a good way to deal with the inequity you talked about. I think there are much better ways. I think that way would be counterproductive.

Mr. ERTEL. I can see your argument. I am not sure you really addressed the problem though, because although the Federal Government will get a return by more taxes and although we will get more return by more employees, we have made the big companies more powerful because they are getting more of the research dollars and there is more and more money flowing to those companies as a result of the inventions and availability or patentability and the exclusive licenses you get.

I don't know how you resolve that problem, but I think that is a perception that one can have. I think it is not an inaccurate perception because what we are doing is creating bigger businesses which may not be good from a policy standpoint in the United States.

Mr. DUNNER. Mr. Chairman, without disagreeing or agreeing with you, I would say I think this approach is ill-equipped to deal with that problem.

I think it creates a nightmare of collateral problems and I think there must be better ways to deal with that problem than this particular approach.

Mr. ERTEL. I will agree with you and we will try to find those. I yield to my colleague.

Mr. WATKINS. In your statement you state about 90 percent of Federal research dollars goes into medium-size and larger businesses. According to the figures I read the other day about two-thirds or more of the new inventions come from small businesses.

So we have all of the research going into the big companies, but the innovations or inventions come from the small ones.

Mr. ERTEL. The number of inventions do not indicate the worthiness; that is, the number of patentable inventions put into the system which may be commercially viable could be entirely different than the total number of patents. Also, perhaps high technology does not go into the smaller ones and, maybe the larger corporations are going to the extent to protect themselves that way. So it is deceiving the way you use the percentage figures, and as I pointed out earlier, you have to use what is the commercial utilization of those figures.

Now, I understand and agree with your logic, but then I see the practical application of that logic and I wonder who really does benefit. Certainly the Government and the American people benefit, but the large corporations also benefit. That is one of the problems that we see; we look as though we are preferring one over the other.

Mr. DUNNER. May I say one more thing?

Mr. ERTEL. Yes.

Mr. DUNNER. I served on President Carter's Domestic Policy Review, and the notion was expressed time and time again during the sessions of that committee, assuming that company *x* makes more money than it might otherwise make from a given venture, the problem in industry today, large industry and small industry, is "How do we get the best return on investment?"

If you put any companies, large companies or small companies, in a situation where you are giving them a much less return on investment for a given area of investment, they are going to seek other areas of investment.

That is why I say I don't think this is the way to deal with that problem. There must be a better way, such as ferreting out the small companies, looking for small companies to funnel money into, so that the 10-percent share moves up to 20 or 30 or 40, or whatever percent of the total picture.

Mr. ERTEL. Thank you. Let's turn to some other area because I think we have exhausted that one. Let's have the other two gentlemen answer if they have a comment on that problem of the royalty situation and how it would impact on the American economy or American business structure.

Mr. MOSSINGHOFF. It may be useful to provide a context. NASA's position and based on our statutes, and as we determine what we think is the public interest—I might interject that one of the advantages of a statutory Government-wide patent policy would be Congress telling us what is in the public interest, and where that public interest would be served; that is why we would welcome a Government-wide patent policy. We charge royalties on our exclusive domestic licenses after the licensee has invested the amount of money he has agreed to and submits his firm plan to bring the patent to the point of practical application—we do collect royalties beyond that. We do charge royalties under our foreign licenses—we have a modest foreign filing program, which is sort of a pilot program—and we charge royalties on the foreign patent licenses.

Finally, in those contracts where it is to be expected that whatever comes out of the contract will have commercial application, as an example the quiet jet engines that we have developed in our aeronautical program, we put recoupment clauses in the contracts, but those clauses are really separate from inventions. In other words, the contractor could easily carry out the contract without making a patented invention, but if he makes an engine later incorporated into his commercial line, the recoupment clauses of those contracts come into play. And then finally, with respect to our nonexclusive domestic licenses, where we take title, at least our decision has been that the stimulus of the patent should be brought to bear to encourage marketing and not to provide what Senator Schmitt earlier referred to as a damper at the front end, so we do not charge a royalty.

So those are the four different situations we are currently operating under.

Mr. ERTEL. Doesn't it bring you back to the problem mentioned by Mr. Dunner, that there is a tremendous amount of administrative cost in negotiating each and every one of the different policies?

Mr. MOSSINGHOFF. Yes, Jim, do you want to comment on that?

Mr. DENNY. Yes. I hate to keep crying like a bureaucrat, but I think if something like the recoupment provisions of S. 414 were enacted, it is going to cost the taxpayer a considerably larger amount than there is any hope of recouping. To make a royalty requirement or to share royalties in every invention from every contractor and in every contracting situation, can't possibly be handled.

Mr. Dunner mentioned the cotter pin in the big system. How do you identify the worth of what it is that the Government contributed, particularly in the DOE area, where the technology that we support was going on for 25 years before the Government thought it important? Now we come in late and we add a little bit, what is our contribution, to what piece, of what system?

Recoupment can be accomplished, but it should be done on a selective basis, on a system basis, as Mr. Mossinghoff mentioned, but not in every situation, in every contract, on every invention. It just will not work.

Mr. ERTEL. Back to your illustration, if I might. I don't want to dominate this because I have my colleagues here, but you talked about the cotter pin. There had been a lot of development over the years and all of a sudden the Government added to the development which made

it a little easier. How do you attribute value to it? If it had been a private individual developing that cotter pin and he had gotten a patent on it?

The way to determine the value of the pin is on the market by the market mechanism. I am not so sure the Government couldn't share in that person's profit if it is a patentable invention.

We may not know how much background went into it, but every patent starts from stage one of the existing state-of-the-art, so I don't think that is a major problem.

Mr. DENNY. I think it is a problem.

Mr. ERTEL. You think it is a problem. If we gave him exclusive title to that pin couldn't we get a percentage of the gross?

Mr. DENNY. Well, this is the recoupment that Mr. Mossinghoff has talked about, that you can negotiate early-on, that does not apply to inventions. The recoupment provisions in S. 414 only apply to inventions. The Government may help support an invention and it may not be commercialized for 14 years because of a lot of other related technology.

Every time a provision like this is placed in legislation, GAO has a nasty habit of coming around and asking us what it is we are doing to enforce it, and we are expected to.

If you are talking about recoupment on an invention-by-invention basis, whether it is with a university or small business, whether the support concerned a little piece of a system or a whole system, there is virtually so much followup and work involved to this approach that there would not be sufficient money or personnel to do it.

Mr. ERTEL. I just want to follow that one step further, if I might. Let's assume for a moment you have a contract with a contractor and he comes up with an invention, I am not sure we can't design by legislation a certain percentage back to the Government of what he would sell that particular invention for on the market.

Now, that does not seem unreasonable to me because the contractor knows if he has an invention and he decides to utilize it in a commercial undertaking without a patent, it is free to anybody. But what he is saying for exclusive rights the Government is giving him and also giving him money, you normally just give exclusive rights to utilization of something if you invent it, but here it is not only because he has invented it, but also giving him money to do the development for that invention and then we get a little bit of royalty back, and I don't know why we couldn't work out a system to do that without doing it on an individualized basis on the administrative cost that we have talked about here and you talked about.

As long as the inventor decides to go ahead and get a patent, he has made a business judgment, he wants it, and the Government is not going to get it. The contractor is going to get the patent. He makes a judgment that he wants exclusive rights to use that particular one because it is patentable and, two, he thinks exclusive rights gives him the right to commercialize it and make money down the road. If he doesn't make that judgment, he goes ahead and uses it without a patent. Don't worry about being sensitive to my feelings, go ahead and comment. They have been bruised before.

Mr. DENNY. It can't be done. For example, if a \$10,000 grant is given from the National Science Foundation to the University of

Pennsylvania, it may support some basic research which may or may not be utilized 10 years from now. An across-the-board requirement would require the agency to negotiate, perhaps at the time of contracting, before an invention is made, a percentage of something that may or may not be developed in the future. That gets extremely difficult.

Mr. ERTEL. Only if you elect with the contractor, but he may decide it is not worth patenting.

Mr. DENNY. Wouldn't that be unfair?

Mr. ERTEL. Not at all.

Mr. DENNY. If he decides not to patent because of redtape in dealing with the Government, it might not be worth the effort.

Mr. ERTEL. If that is his reason for not patenting it; but if his reason for not patenting it is because of the cost of the royalties, then it ought to be in the public domain.

Mr. MOSSINGHOFF. Let me comment. One of the things Mr. Dunner in his domestic policy worked on was efforts to strengthen the patents. There were concerns among those that watch the patent system that patents are not as strong a staff as they used to be. They are becoming weak reeds in some cases.

When you consider the cost of filing for and obtaining a patent; add to that, at least under present NASA policy, the cost of preparing a petition for waiver, typically done by a lawyer at some cost; add to that the fact that the Government takes a royalty-free license not only for it to use it, but its contractors, State and municipal government, and foreign governments to use it; and add to that the march-in rights that the Government takes—when you add in all of these facts, you may well tip the balance by requiring royalties. You may tip the balance in favor of the contractor saying exactly what Mr. Dunner said: "I don't have the time to worry about this one. I will go and do something else." I think that would be a loss.

Mr. ERTEL. That is the reason he gets through and that is the reason he doesn't get the patent and maybe gets it developed, of course you are right. Of course, he needs a waiver.

Mr. MOSSINGHOFF. If it is an automatic waiver, you would modify the situation. Maybe Mr. Dunner can comment more currently, but the statistics I have heard is that a lot of the companies file on maybe 10 percent of the reportable items that their employees report to them. There is a selectivity driven by the limitation of patent resources that can be applied. There is a selectivity done on just in-house inventions. This contractor's invention done under the Government sponsorship is competing for those patent resources of a corporation.

Mr. ERTEL. The productivity would be done by the contractor whether he wanted to get a patent or not.

Mr. MOSSINGHOFF. Right, but his own invention done under his own research and development carries with it no Government license, no foreign, State and municipal licenses, and no march-in rights, so automatically it has advantages as opposed to an invention made under Government sponsorship. If you add royalties, he has to consider that in the balancing the corporate executive would go through.

Mr. ERTEL. There is another consideration. If he is doing it under his own, without the Government being involved, he is also paying for the inventive process and that is a pretty big factor.

Mr. MOSSINGHOFF. True, but we are really at the back end of that. If we have two inventions in front of us, one made under NASA sponsorship and another under corporate sponsorship and he has to decide how to apply his corporate patent resources and the Government invention already carries burdens that the private one does not have, you must consider that burden. It is a balancing that you have to take into account.

Mr. ERTEL. I agree. Thank you.

Mr. DUNNER, you had a comment.

Mr. DUNNER. I agree with what my colleague said, but I sense in your question that you felt that somehow, some way, legislation could be drafted to give a value to a certain invention. I thought you had said that.

Mr. ERTEL. That is what I was implying. It is a real problem because there are obviously different merits to different situations.

Mr. DUNNER. What I wanted to comment upon, typically, what happens is that the cotter pin ends up not being sold as a cotter pin but as part of a big machine with 10 or 15 other inventions. While I agree with Mr. Denny that you can design legislation to deal with it, I don't see how you can avoid dealing with it on a case-by-case basis to negotiate not the value of the cotter pin, as such which may be 2 cents, but which may have a value of \$100 in that machine or one penny, but it has to be negotiated on a case-by-case basis and segregated from other inventions in the package, and that is extremely difficult, coupled with the other comments with which I agree.

Mr. ERTEL. Mr. Watkins.

Mr. WATKINS. Let me ask a few questions maybe of all three of you. Mr. Mossinghoff, you mentioned the inventions were patented by the outside contractors who receive many more Federal R. & D. dollars than spent on in-house research?

Mr. MOSSINGHOFF. Certainly. my breakdown would show more research and development money goes out under contracts than to support the in-house work, I think there are two reasons: First, I am firmly convinced that part of what the Patent Counsel does at NASA on employee inventions is a legitimate service to employees. I think it stimulates NASA's corps of creative engineers and scientists. When it comes right down to it, the only way someone can record their place in history as an inventor is through an issued U.S. patent. So, I believe what we do is a legitimate service to NASA inventors.

Second, I think we recognize there is a higher potential of commercial utilization of an employee's invention than there is a contractor invention because we have the single greatest champion of that invention and that is the inventor.

Frank Nola, for example, from the Marshall Center, is anxious to see the power factor controller utilized. He has been willing to provide data and help to small businesses to commercialize his power factor controller. As a result, this will be a real winner, I think, a very significant energy-saving invention coming out of the space program.

Similarly, with Barbara Askins' faint image intensifier, developed in that large space telescope program to improve images, will clearly reduce X-ray times. That is another significant invention that will also give you the ability to improve your old family photo albums once

the process is in place. Since the inventor is our employee, she will be available to consult with and to foster the utilization.

So, I think those two reasons account for the fact that we have filed patent applications and achieved utilization on a higher percentage of employee inventions than contractor inventions.

Mr. WATKINS. NASA has a well-defined process for contractors to obtain exclusive licenses. Despite this, the number of inventions commercialized, as we heard, is very low, about 2 percent.

Does this indicate that if we establish procedures for companies to obtain exclusive licenses from Federal agencies that we might have a little more success in commercialization of Federal inventions, or will it be also a low figure of like 2 percent?

Mr. MOSSINGHOFF. I would hate to try to extrapolate what the other agencies experience would be. I think we have been a little too cautious in the granting of exclusive licenses. We should be bolder and willing to issue exclusive licenses with less notice, publication, and 30-day waiting period, and so on.

I believe we have been a little too cautious perhaps understandably so because we broke bureaucratic ground in the licensing area; we were the first agency to issue exclusive licenses. So, we were learning as we went along. I think we can improve that and I hope we can. Whether or not our percentage of utilization could be extrapolated, I really couldn't say. There will be a tendency to do that because NASA works pretty hard at it.

Mr. WATKINS. Some agencies deal differently with nonprofit organizations. Do you think it would be possible to transfer Federal patents to nonprofit innovation centers which could then grant exclusive licenses to industries they have helped commercialize the invention? If a royalty were then paid to the innovation center, it could eventually become self-supporting. The benefits to the taxpayers would be more innovating, productivity, jobs and new products.

Mr. MOSSINGHOFF. We grant waivers to nonprofit institutions of they have a plan for utilization, a plan for commercial licensing, or finding commercial licensing. Dr. Frosch is on record in favoring a policy to automatically grant waivers to "nonprofits" and small businesses. One problem with that is it involves a relatively small percentage of our budget, and while it will be helpful in that small percentage of cases, it is not helpful in the other 85 percent.

Mr. WATKINS. The procedure in getting the patent into the market?

Mr. MOSSINGHOFF. We will grant waivers now.

Mr. WATKINS. What about the other two of you?

Mr. DENNY. The Department of Energy gives preference to universities and small businesses in their waiver policies and we do it because our statute tells us to.

One of the things that makes me wonder, is that if this is an effective way to encourage commercialization with small businesses and universities, wouldn't it also be effective with large industry? If it is effective in accomplishing what our mission is, I am not sure we should be selective.

Mr. WATKINS. What about the nonprofit or innovation center type approach? Do you have procedures to transfer patents to such groups?

Mr. DENNY. Just with universities. If they have a technology program and technology transfer capability, then they are entitled to special treatment under our statute.

Mr. WATKINS. How about a nonprofit group that works in conjunction with a university?

Mr. DENNY. No, just nonprofit educational institutions.

Mr. WATKINS. Do you see any harm in moving in that direction?

Mr. DENNY. No.

Mr. WATKINS. OK.

Mr. DUNNER. I would add that I agree with what my colleague says, but I would add that if you read all of the arguments in favor of the "not for profits" and "educational institutions," who I certainly favor getting the advantages to go ahead and commercialize their inventions by getting exclusive rights, the arguments applicable to them are applicable 100 percent to companies that are not in this "not for profit" category, and the number of "not for profits" is so small you just barely dent your problem if you restrict yourselves to them.

Basically, I do agree with my colleagues, I think that is not a total solution to the problem, but a step in the right direction.

Mr. WATKINS. What if the research is done over at NASA and the nonprofit innovation group is attempting to commercialize it through a broker-type approach. Do you have anything that allows that to happen? I mean something that encourages that to happen?

Mr. DUNNER. I would just add that that should be encouraged to happen. Organizations like that exist today. I have worked for at least one such organization, and they need exclusive rights in order to innovate and get the invention out into the marketplace in order to generate the funds. Certainly that should be encouraged. But I think it is a limited part of the total problem.

Mr. DENNY. I am not really sure I understood that question. But if a university, for example, has a grant and makes an invention, we do take into consideration that they may have an agreement with a technology transfer organization—a couple of well-known ones, the Research Corp., University Patents, Inc., this kind of outfit, connected with them, or Wisconsin Alumni Research Foundation being another type. They will get the benefit of having that kind of capability if they are associated with them.

Mr. WATKINS. Let me have just one extra moment of my colleagues' time, right here.

Suppose we have an innovation center that searches NASA's technology data base and discovers an invention or technology that is patented by the Government. The center then works with an inventor or entrepreneur to commercialize the invention, spending quite a bit of money themselves in the process.

All right, maybe they own the title to the patent and they could recoup that commercialization expense through some royalty formula. That is where I am trying to get to.

Mr. DENNY. In other words, an exclusive licensing agent that operates on behalf of the Government to try to find the end utilization, that kind of thing?

Mr. WATKINS. Yes.

Mr. DENNY. We do not do that. I am not real sure we would have authority to do that. NASA probably comes closer.

Mr. MOSSINGHOFF. We don't do exactly that and maybe we ought to look into it. We do work closely with the technology utilization offers

and if there is commercial use found through one of our centers, that could very well stimulate a license directly from NASA.

I think what you are suggesting is that maybe we give one of our centers the right to an exclusive license with a right to sublicense perhaps to recoup some of their expenses.

Mr. WATKINS. We are kind of coming down to that in one of the approaches we use with the center, but the innovation center would recoup that commercialization expense from a revolving fund they have established through the royalties, or maybe some other method. I don't think they look for outright ownership as much as licensing someone who can commercialize the thing, but the royalties to pay off the expense would go into a revolving fund to continue to promote new products and processes.

Mr. MOSSINGHOFF. Let me consider the question to see if there is something to be done in the area. NASA has broad authority and probably could do that.

Mr. WATKINS. For the sake of time, if you have any suggestions on approaches that way, I would appreciate receiving it so we can look at it.

Thank you, Mr. Chairman. I apologize.

Mr. ERTEL. Mr. Brown?

Mr. BROWN. Mr. Chairman, I have only a couple of questions. I am not as well versed in this area as I should be. In looking at the statistics you have cited on the granting of exclusive licenses, both of you gentlemen from NASA and DOE, the rate of commercialization, and our general picture that the rate of commercialization of patents developed with Government R. & D. fundings is very low; I need something to compare this to. Can any of you indicate to me what the rate of commercialization is on general patents developed by private industry with their own money with no Government restrictions on it?

Mr. DENNY. Let me turn that over to you.

Mr. DUNNER. I would say I have only one number and that is, at one of the public hearings at the end of the domestic policy review, a gentleman got up whose name is Mr. Maurer, patent counsel for Monsanto, and answered that very question. He answered it only for Monsanto. It was a very high number compared to these numbers.

Mr. ERTEL. He will be a witness here tomorrow.

Mr. DUNNER. Will he? You should ask him that question directly. My recollection is the number was in or about 20 percent, a little higher or lower, but it was a significant number. Ask him that question.

Mr. BROWN. Are you saying only 20 percent of Monsanto's patents were carried on to commercialization?

Mr. DUNNER. As I recall, it was that number, which is a significantly higher number than the numbers we have been hearing about in exploitation of Government-owned inventions.

Mr. BROWN. One of the figures given here, and maybe it was you, Mr. Mossinghoff, was that when exclusive title was granted to a contractor, the rate of commercialization doubled and I think the figure is 24 percent.

Mr. MOSSINGHOFF. The 18 to 20 percent is a very consistent number for contractor-owned-waived patents.

Mr. BROWN. That is comparable to the figure on Monsanto?

Mr. DENNY. Yes.

Mr. BROWN. That is not a bad figure. I mean, if Monsanto's figure is a representative figure for non-Government patents?

Mr. DENNY. Well, a few years back the George Washington University Patent, Trademark, and Copyright Foundation did a series of studies. I don't know how big the samples were, but my recollection is that when they did a study on private industry using their own inventions developed by themselves, they came up with around 50 percent.

Interestingly enough, they did a similar study on the utilization of Government inventions by the Government itself and came up with almost that figure. What we are talking about here in many agencies is a spinoff on nonmission use.

I think one of the interesting things that will be in the future is a study of what the Department of Energy does with its inventions, which were developed not for its own use, but for commercial use, just like the private organization. We don't have figures on that. We may not for a while. But it hopefully should improve.

Mr. DUNNER. Mr. Brown, I was just told by a colleague of mine that Mr. Manbeck, head of the General Electric Patent Department, generated a number for his company at or around 50 percent of the patents they have contributing to commercial products.

Mr. BROWN. I would like to refine that and see if there is any data available. I think common sense would lead you to the conclusion that as far as patents derived from Government funding R. & D., you are likely to get a substantially higher figure of commercialization where you grant an exclusive license or title than you would if you don't. I think I can understand the reason for that. But I am not sure what the significance of the relative figures are.

Another aspect of this problem, and this is just to help me fit it into a logical framework of some kind, is there any comparison between the granting of a title to an invention developed through a Government-funded contract and the granting of a right by the Government in other areas? For example, there are innumerable examples: We issue mineral rights, we issue rights to use telecommunications spectrum, we issue rights to steal by granting a bank charter, we have all sorts of things like that that the Government provides, and is there any frame of analysis that can be applied to all of these or is this looking for too broad a pattern situation? These all allow individuals to make money. In some cases it is a gamble, and with others it is not a gamble. The gamble is whether or not you get the license; then you are sure to make the money.

The question is: Are we using a logical framework that would apply across the board, or some system of analysis that sort of applies across the board?

Mr. DUNNER. Off the top of my head, I can't give you the answer to your question. I gather my colleagues are not any more enthusiastic than I. The analogy would have to come in an area where some kind of exclusivity is needed to justify an investment. I am sure that analogy could be found there. I don't have it right off the top of my head.

Mr. DENNY. With those analogies, it may not look quite so much like the giveaway that it is frequently referred to. I don't know if any of

you saw Sixty Minutes last night, but that apparently was another area.

Mr. BROWN. You are referring to the disaster loan situation?

Mr. DENNY. Right. That is the first time I knew anything about it, but there are areas like these in which assistance is provided.

I am a patent attorney and I believe in the patent system. However, sometimes, Mr. Chairman, I think a little too much is expected of our patent policy. For example, if we are concerned about creating monopolies by giving multimillion dollar contracts to people, I am not really sure that the patent ownership question is either going to help or harm that issue that much.

Our studies would indicate No. If it is wrong to provide substantial research moneys to an otherwise large corporation, I don't think the patent policy manipulation is going to improve that situation much. It may help the commercialization.

Mr. MOSSINGHOFF. The major benefit NASA confers, as you know, is the awarding of R. & D. procurement contracts and that is done under the Armed Services Procurement Act in a competitive environment. It seems to me the same kind of criteria which would lead NASA to choose a given contractor would also lead you to expect, if you left exclusive rights with that person on a commercially adaptable invention, that person would invent it; namely, a person with good management, a desire for profit, and so on. It seems to me that correlation would hold.

Mr. BROWN. Well, this is helpful. I am inclined to think from the burden of all of your testimony, that we have created a rather cumbersome system here which is difficult to justify just from the standpoint of cost benefit. The benefit is not proportional to the burden we are imposing.

I think you have all agreed that it would be much simpler if we enacted a framework which did allow for either title or exclusive licensing in the contractor who developed the invention. Am I correct in this?

Mr. DUNNER. Yes, sir.

Mr. BROWN. I recognize you say that, but how about the other two gentlemen?

Mr. DENNY. Yes; no question. A lot less burdensome and a lot simpler—and looking toward the march-in rights to rectify any abuse.

Mr. BROWN. All right. I think this then meets the public purpose which is ultimately to expedite commercialization of these inventions, new inventions, or whatever they may be. I have no further questions.

Mr. WATKINS. We will take a short recess so the gentlemen can go vote.

[Whereupon, at 3:30 p.m. a short recess was taken.]

Mr. ERTEL. I apologize for having to leave and for the recess. I did want you people to get together and talk it over. I am sorry I missed a few of the questions by Mr. Brown.

There are some other questions I had—really a multitude of them. No. 1, talking about title to the contractor, I presented this question to Senator Schmitt: What effect does it have on foreign patent rights? Do you have any idea?

Also, in relation to that, does the U.S. Government attempt to obtain foreign patent rights or do we have treaties which give us auto-

matic patent rights in the foreign countries as a result of those patents issued by us?

Mr. MOSSINGHOFF. There are no such treaties. The patent treaties, in effect, merely assure there is no discrimination against foreign nationals, vis-a-vis citizens of the issuing state, but to get a patent abroad, you must file in the country. The exception is the European patent. Mr. Dunner can probably comment more authoritatively on that than NASA. We do have a pilot program for obtaining, in the Government's name, patents in foreign countries; and we have been successful in licensing them.

Mr. ERTEL. You have?

Mr. MOSSINGHOFF. We have been successful. The royalty return does not yet approach the expense we put into it, but we are hopeful that this will change with our more significant inventions; for example Frank Nola's power factor controller.

Mr. ERTEL. Tell me what it is because I heard it expressed six times and I still don't know what it is.

Mr. MOSSINGHOFF. It is a relatively simple electronic device. One of the problems that small electric motors present is that they are pretty inefficient. In general, their efficiency is geared to a full load and when they are not under full load, they are very inefficient.

What this device does is to sense the angle between current and voltage. It senses how much load the reactor is under and adjusts the voltage coming in so the motor runs at peak efficiency under varying loads. This device will be a significant energy saver in this country and abroad. We are negotiating to issue royalty-bearing licenses abroad on that.

Another is the invention of Dr. Whitcomb, a Langley Research Center employee. His invention is a supercritical wing, which is likely to appear on all of the next generation subsonic jet aircraft. We have a licensing plan specifically for that, and for which NASA hopes to obtain significant royalties.

Mr. ERTEL. In general when you apply for a foreign patent, does the titleholder have to apply for the patent?

Mr. MOSSINGHOFF. Generally, yes.

Mr. DUNNER. Abroad, not in the United States, but abroad that is the case.

Mr. ERTEL. In other words, if the Government retained title and, in fact, gave exclusive license to anybody, then the Government would have to be the one that would receive the foreign patent although the Government may not be interested in obtaining it. The one who has the interest is the one who holds exclusive right and title?

Mr. DUNNER. I would imagine that would be right, but I would imagine you could work out an arrangement whereby the contractor did all of the work and the Government merely signed the papers, which would accomplish the same result. But it would be an unnecessary division of functions.

Mr. MOSSINGHOFF. It would be. I believe the Government would be somewhat reluctant to give away its power of attorney to non-Government people. I think there is a sense of decorum there where the Government is reluctant to do that. By splitting it that way, you would complicate obtaining foreign patent rights.

Mr. ERTEL. I assume as a result of your comments, that you are in agreement, assuming we do something in the field, that we transfer title to the contractor?

Mr. MOSSINGHOFF. If the decision is made as a policy matter to let the contractor retain exclusive rights, I would be in favor of title to the contractor with march-in rights back to the Government.

Mr. DUNNER. That is my view as well.

Mr. DENNY. I was asking for some expert advice from members of my office and I did not hear the question.

Mr. ERTEL. The question is if we decide to give exclusive rights to Government inventions, would you prefer to give the title to the contractor or hold the title in the Government and give just the exclusive license to the contractor?

Mr. DENNY. The title, absolutely.

Mr. ERTEL. I am just trying to get something where we all agree.

Mr. DENNY. I don't know from personal knowledge, but I have heard it stated with some degree of enthusiasm that there is a substantial difference when you are out trying to borrow money to commercialize an invention on whether or not you have title or exclusive license.

Mr. ERTEL. Why?

Mr. DENNY. I am glad I prefaced my remark with "I do not know personally." I understand it is just primarily the banking community. I mean, if I have title to this invention and I want to borrow money to commercialize it, it is a stronger kind of right to have and I have been told that it is a substantial additional benefit when you are trying to borrow money. If you only have an exclusive license, subject to terms and conditions, it is a lesser right and can be removed easier.

Mr. LAUGHLIN. I can comment, the Small Business Administration has a number of investor groups which are organized under its auspices and under the ordinary operation of those investor groups the inventions that come to them must come to them with title free and clear, which is to say they cannot operate under licensing agreements, but must operate under ownership.

For example, in the southwestern Virginia area outside of Roanoke that is presently being organized for development of industry in that area, my personal experience is we had shifted around title to two applications in one patent to satisfy requirements so that funds could flow.

It is important psychologically and also important as a practical matter, that the person most interested in the property have legal title to be able to control the preponderance of rights involved with ownership. Banks understand this for purposes of collateral and investors understand it with respect to inventions and I think it should be true with patent policy also.

Mr. DUNNER. I would like to supplement that, Mr. Chairman, in one way.

I would like to comment: I personally see that from a factual standpoint, if we leave the psychological point alone, you can give an exclusive license which has all of the attributes of granting title, subject to the defeasible provisions we have, subject to march-in rights. You can give exclusive licenses and right to sublicense. So, tech-

nically, an exclusive license can be granted which from a practical standpoint, is fully equivalent to title, except for the foreign licensing agreement where you might need signatures, and except for a special group that insists you have title such as the group Mr. Laughlin described.

Mr. MOSSINGHOFF. I don't disagree with that, but there may be another practical problem; that is, if an owner of a patent were to sue, he would sue in his own name and control the litigation through his own attorneys.

If the Government were the owner, and we gave an exclusive license, we would probably be asked to join in that lawsuit. As soon as we did that the Department of Justice would also come in with the patent owners or patent licensee's lawyers and it seems to me there may be a lot of complications flowing from that joinder of the owner and the licensee when they sue.

Mr. ERTEL. What happens if the Government has march-in rights even if you transfer title to the contractor?

That is a reservation of rights and, therefore, you don't have a title free and clear, you have it subject to march-in rights.

Mr. LAUGHLIN. Subject to a subsequent condition. That condition is sometimes seen in these agreements, but it does not seem to have the same problem there. It may be something which is so far down the road that the investor doesn't see it as a problem.

Mr. ERTEL. The other thing is the thing will have to be done commercially and they figure it will be done or otherwise they lose anyway.

Mr. DENNY. I think there is probably a substantial difference—

If I give title and I want it back, I have to go after it by legal action. If there is disagreement on the terms and conditions that have taken place, I may have to "march-in."

On the other hand, if I owned title and only give you an exclusive license and I say, "You are no longer licensed," that control happens to reside in the owner of the patent, or in the Government. That is a much more frightening thing to the contractor.

I think due process would have to take place in any event, but in the first instance, the person who is commercializing the invention is in a stronger position, I would think, if he had title.

Mr. ERTEL. Let's turn to another area, if I might. I am curious about your administrative negotiations on waivers. Obviously, that is something we have to consider. But, certainly, any time you give directions to an administrative agency, and I know it happens here as well as anyplace else, that you are talking about giving a person exclusive rights subsequent to the invention being done, as I understand when you talk about it?

Mr. MOSSINGHOFF. There are two times when a waiver can be granted.

Mr. ERTEL. One is before and one is after and I am only talking about after. There is no royalty then paid to the United States. What incentive does the Government have to give that exclusive licensee other than seeing that it is commercialized in a productive field and, second, what kind of pressure goes on with that negotiator for the Government and does it not set up a situation where criminality or some other type of activity in regard to that employee would be possible, especially if the invention is valuable or perceived to be a valuable invention?

Mr. MOSSINGHOFF. Under the section of the Space Act, section 305(f), a statutory Inventions and Contributions Board was established which is a statutory board that decides whether waivers shall or shall not be granted. It is chaired by the same gentleman who chairs our Board of Contract Appeals, and is staffed by a professional staff of three persons—mostly of people, nonlawyers, who understand the technology.

All waivers before contract, or waivers after contract when an invention has been identified, come to the board, with a staff analysis based upon the requestor's submission of his commercial position, his invention, and how he proposes to commercialize it. Then based upon the criteria written into the two Presidential statements I mentioned, President Kennedy's and President Nixon's amendment to President Kennedy's statement, the board acts as a body on the record in sessions open to the public on whether waivers are to be granted. So, the procedure is not a low-cost one. We spend a lot of money acting on these waivers now.

Mr. ERTEL. You spend a lot of money to give away something?

Mr. MOSSINGHOFF. To get an invention utilized.

Mr. ERTEL. That is what we are doing, giving away certain rights the Government has?

Mr. MOSSINGHOFF. Yes, giving away exclusive rights in order that these exclusive rights can stimulate commercialization of the invention. I guess I am not concerned, the procedure is sufficiently rigorous and operates in the open with post audit and all of the rest, even if one person were so mean-spirited and wanted to tip it, I don't think he could do it.

Mr. ERTEL. How many small businesses have been able to come in after the process is completed, and spend the time and money to go through this administrative process to get the exclusive rights? Have you broken it down whether it is just a major or minor thing in doing it, or a minor or major part?

Mr. MOSSINGHOFF. Part of the concern that prompted Dr. Frosch to suggest several months ago that we automatically grant waivers to small business and nonprofits is precisely the point you are suggesting, that it costs them, I assume, a lot of money to prepare this request for a waiver.

I think there is a goal to streamline the situation both for them and the other people, too. Because, I would be interested to know what a first-rate patent lawyer would charge to prepare a petition for waiver to NASA. I assume it is a lot of money.

Mr. ERTEL. Well, ask him.

Mr. MOSSINGHOFF. All right.

Mr. DUNNER. Am I subpoenaed? Well, I can answer.

Mr. ERTEL. You are testifying, but I don't know if you are under subpoena or not.

Mr. DUNNER. I can answer that. As a matter of fact, I was just involved in dealing with the DOE people on a request for a waiver for a small business, for a small client. I made lots of phone calls, lots of papers went back and forth.

Mr. ERTEL. Mr. Dunner, you don't have to justify your speech.

Mr. DUNNER. No. What I am saying is that the amount of time involved is enormous and the current rates vary from city to city. Legal

fees in Washington and New York and elsewhere, not unusually are \$75 or \$100 or \$125 an hour and perhaps more.

I would guess you are probably talking in the area of \$75 or \$100 an hour average, plus a lot of hours to prepare these petitions. You are spending a lot of money. I would guess you are talking of at least \$1,000 or more to prepare and carry through a petition. That is probably a low number.

Mr. ERTEL. I want you to know that Washington lawyers work cheaply. Where I come from, they charge more than that.

Mr. DUNNER. Where are you from?

Mr. ERTEL. I am not encouraging you to raise your fees either.

Mr. DENNY. Mr. Chairman, Government lawyers sometimes work for free. You have a witness tomorrow from Advance Mechanical Technology, Inc., and I would suggest to you that he is a statistic. I heard this gentleman testify before Senator Schmitt's committee and he made a statement that he wouldn't bother trying to get a waiver from the Department of Energy, because of the time and effort and expense. He is a representative of small business and I challenged him and asked him if he ever asked and he said, "No, he had not." I asked, "Why don't you try it?"

In between then and now I think you may find that the Advance Mechanical Technology, Inc., has a waiver from the Department of Energy and he didn't even have a lawyer at all.

We, for one, try our best to make this a negotiating process, it is a matter of common sense and factual presentation. We encourage our waiver requestors to talk to us, we provide a form, and try to give them guidance on how to request a waiver. I would submit that in many instances, it may not be necessary to have a lawyer at all.

Mr. DUNNER. I would like to challenge that, Mr. Chairman. I think that is unrealistic. Clients, well, there are lots of problems in dealing with waivers. There are cases which I know Mr. Denny is familiar with, which may jeopardize collateral developments going on and a client who deals in this waiver situation without counsel, is, in my opinion, committing a gross mistake and running substantial risks of jeopardizing his entire technology portfolio.

Mr. ERTEL. If I might turn to another area; I know we have a genuine dispute there, and I think it is up to each individual to make his own judgment at this stage which he may change later.

It has been suggested that a lot of people will not bid on Government contracts because of their background data and Government patent policy. Do you have evidence to substantiate that, that people will not contract, one, based on the background data, and, two, whether or not they can get a patent? Do you have any evidence?

Mr. MOSSINGHOFF. Let me answer for NASA. I don't think we can document where someone would not work on a NASA contract because of our foreground patent policies; namely, policies involving the inventions coming out of it. I think there are two reasons. One is that we deal with a specialized industry, aerospace industry, which is very sophisticated and accustomed to dealing with the Government as well as all of the clauses that go into Government contracts. That is how they make a good portion of their money. There are companies that have very well-established private positions, for example, in the

photographic area; in lieu of taking a NASA contract, they will attempt to have NASA inform them of our needs. In other words, we describe an end product of a film or end product of a lens that we want, and they invest their own money in an attempt to meet that requirement. If they succeed in meeting that need, then we issue a contract; it is not a question of doing R. & D. That is an isolated industry and it is an unusual case. In general, 99.9 percent of the time, we don't have trouble getting companies to accept Government contracts because of our patent policy. If we did, we would have been up here long ago to get that policy changed. That is the main line of business we are in and would have been alive to that problem.

Mr. ERTEL. Does DOE have the same experience?

Mr. DENNY. Yes. As I mentioned in my testimony, you will always find corporations that will take your money. But there are definitely corporations that also will not, or divisions of corporations that will not.

There are a lot of corporations, larger ones, that segment their Government work in a Government-supported contract R. & D. outfit and they go by different names. They have other segments that are working in the commercial worlds, and the Department of Energy frequently wants to do business, not with the Aerospace Defense Division, but with the one making electric light bulbs, say, or electric motors, and we are dealing in very, very highly sensitive areas.

There are areas in which they will not work with us. There are even some industries almost as a whole that will not work with us. A lot of it depends on the state of their technology, and a lot of it depends on how far down the road they are in a particular invention or concept. It is a very selective kind of thing and it is extremely difficult to document.

There is absolutely no question in my mind there are large segments that will not work with us.

Mr. DUNN. Mr. Ertel, in testimony I gave before Senator Nelson's committee, I believe it was last year, I cited a hearing before the House Subcommittee on Domestic and International Science and Planning an analysis of the Committee on Science and Technology during the 94th Congress. In that citation, cases were listed including background problem cases. There were seven different cases plus some supplemental material giving case studies of situations in which companies refused to enter into Government contracts at least in part because of background problems.

I can speak from my own personal experience that I have had situations where clients of mine, small clients, particularly those in the R. & D. area, could not and would not enter into Government contracts because of background patent problems, some of which may even have been picked up under the contract because they had not been reduced to practice before the contract, but had been conceived.

They had just not been embodied three dimensionally. It is a problem, but the American Law Association, which is opposed to restrictive provisions in this area, feels that background rights are appropriate in narrowly restricted conditions where they are absolutely necessary to be included in a settlement contract.

Mr. DENNY. Mr. Chairman, I guess I may have slipped over the background issue specifically.

We do have a background patent policy provision that is basically boilerplate in all of our research and development contracts, and it is not required by our statute. It is negotiable. It defines a background patent as what we normally refer to as a blocking invention, one whose use is necessary in order to use the research results of the contract.

In such inventions, when they exist, we take a free Government license to do research only. We would require the owner of that background invention to license it in the field of use of the contract when he is not appropriately supplying the market needs or market demands. It is a very narrow clause and it is a very emotional issue. We spend lots of time discussing it. And frequently we can come to an agreeable position on either limiting it or putting it in or leaving it out of the contract. It is a matter of negotiation with the Department of Energy.

Mr. ERTEL. What would you estimate the workload savings to be if we enacted the Bayh-Dole bill or Schmitt bill into law?

Let's limit it to Bayh-Dole because that is the one that applies to small business and nonprofit organizations. Let's say the Schmitt bill—how would that downgrade the workload, do you think?

Mr. DENNY. Let me say this.

Mr. ERTEL. Would you be out of a job?

Mr. DENNY. Maybe. That might be in the public interest, too. We used to be the Atomic Energy Commission. We are now, through ERDA, the Department of Energy. During that time our R. & D. budget has quadrupled. Our contract workload has increased by a factor of 10. My organization has increased by only a third.

If the Schmitt bill were passed, we might be able to do a fairly decent job on those duties we have left. There would be a considerable savings. There would be a savings in my organization of one-half of what we ought to be doing if we were fully staffed.

Mr. ERTEL. Would you agree with that?

Mr. MOSSINGHOFF. Clearly, a good portion of the inventions and contributions work is waivers. They also have, however, work on awards to inventors. We are proud of our awards program and we would keep it. The board also works on exclusive licenses. No matter what is done with the Thornton approach, if you enact that, there will be a number of employee inventions on which we would attempt to seek patent protection and would use the patent system to exploit the invention. I assume one-third of our patent-lawyering time, at least, would be saved with Thornton. The Thornton bill, just as a hypothetical issue, has an advantage over Senator Schmitt's bill, which still requires a before-the-contract determination. Now, it is a narrow determination, but anytime you have a before-the-contract determination, some contractor will have to determine if it is R. & D. before awarding.

The advantage which the Thornton bill has—that bill was drafted by an interagency group under Jim's leadership—is that it would use an automatic clause. The contracting officer merely puts the boilerplate clause in and there is no before-the-fact patent-lawyering done. So from an administrative point of view, the Thornton bill would be more cost effective.

Mr. ERTEL. I assume in your agency you have no comment?

Mr. DUNNER. That is right. I have no agency.

Mr. ERTEL. One last question. I will ask Mr. Denny. How do you account for the fact that DOE has so few waivers? Usually, you would think it would be NASA because in a percentage way you don't have many either.

Mr. MOSSINGHOFF. That is right.

Mr. DENNY. Well, we have very few waivers, because for one thing, Congress told us to give very few. As we looked at our legislative history, they specifically looked to NASA and the Atomic Energy Commission, which basically never waived, and they said, "We expect that kind of performance."

We give waivers in cost-sharing situations. We give waivers to small businesses. We give waivers in situations where we are what I would refer to as, trying to increase the commercialization response time of an already existing technology. In the vast majority of situations, I would say our contracts do not fall within one of these three major situations.

Mr. MOSSINGHOFF. As I indicated in my statement, we do grant approximately 75 percent of the requests we get. The other 25 percent are determined by the Inventions and Contributions Board as not meeting the President's criteria for waiver.

My speculation as to why we receive few requests is that it may not be a good deal. The contractor may review it, and then decide—with all of the baggage that a waived invention has to carry with it, including extra costs of applying and getting it—to apply resources to his privately funded invention.

I think there is an overlay. That is, as to the first part of the NASA programs, many of the inventions were purely aerospace-Government related where commercial rights were not worth a lot, giving the broad Government license because it was only intended to be used for Government purposes.

As we move into the Space Shuttle area with commercial satellites, that will change, for example, with all of the commercial use of space. Attitude control over a satellite obviously is commercially valuable.

I don't know if we can perceive, or if we will perceive, an increase in the number of waivers requested, but I would suspect the 75 percent would probably hold and I have no reason to believe it would change if we continue under the present patent policy.

Mr. ERTEL. Mr. Pease has joined us and do you have questions?

Mr. PEASE. No; I don't.

Mr. ERTEL. Thank you.

I have a question. Do you have to couple an information disseminating program along with the idea of giving the title to the contractor so that he can provide at least background information concerning patents and patent applications to the rest of the business community? Where will they get the patent application information so we can get transfer of the background knowledge?

You know the whole theory of the patent system is disseminating the information and putting it in the public domain for purposes of getting exclusive licensing. I don't believe it works, frankly, but you may, because I don't know how many people search the patent files to find out about that information. But assuming that you now give

exclusive license or title to the contractor, is there some sort of information-relaying system we have to set up so that the information gets to small business and others who may be affected?

Mr. MOSSINGHOFF. NASA has a fairly systematic way of publishing everything in what are called tech briefs, which are one- to two-page disclosures of an invention, up through handbooks, for example, handbooks on welding aluminum, which are, I am told, standard reference items for those in the field. We would obviously continue that. I don't think we would in any way let the patent policy one way or another influence the publication dissemination program we have, which is judged to be effective.

Mr. ERTEL. You are unique in that respect and I don't think you have the same thing.

Mr. DENNY. No. No; we don't. My response for DOE is, unfortunately, such information is freely and fully available to everyone who bothers to ask. I say "unfortunately" because under the Freedom of Information Act, all of the technology, some of it highly valuable technology, that this country produces is published and made available for everyone, and that includes all of our foreign competitors. As far as I am concerned, we are the only civilized nation on Earth that does that.

We are put at a tremendous disadvantage in our international negotiations and I am sure that the industries that work with us are concerned about it and they are also put at tremendous disadvantage. We give away all of our technology, and anytime the Government takes ownership to patents we give those away for free use. Other countries do not do this. They either give it to their industry for commercial advantage, or they consider it proprietary to the Government and sell it or license its use.

Mr. ERTEL. The other side of the equation is that nobody can build on that knowledge unless they have it.

Mr. DENNY. Your man on the street does not do a whole lot of building on some of the kinds of technologies that we are creating and developing, commercial synfuel plants, say. If we could have some sort of control, we could maybe increase recoupment, we could increase our balance of payments, and we could make sure that technology is made available to those people within this country that are capable of using it.

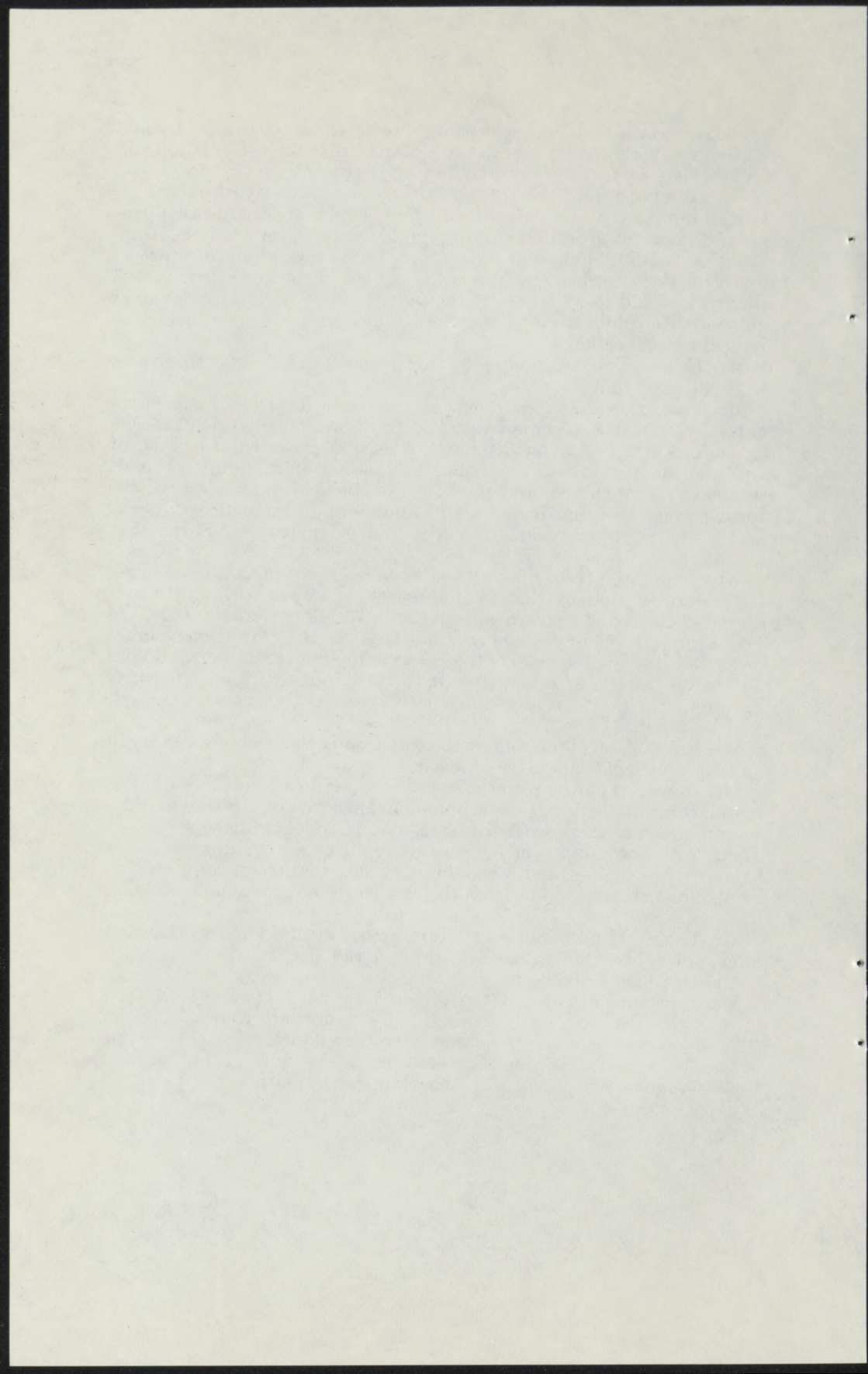
Mr. ERTEL. If no one has any further comments, I have exhausted mine, unless Mr. Dunner has something to say.

Mr. DUNNER. I don't.

Mr. ERTEL. Gentlemen, I thank you very much. It has been very informative and very enlightening and I appreciate your taking the time to answer these questions that have been posed.

Mr. DUNNER. Thank you, Mr. Chairman.

[Whereupon, at 3:55 p.m. the hearing was adjourned.]



GOVERNMENT PATENT POLICY

WEDNESDAY, OCTOBER 17, 1979

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY,
Washington, D.C.

The subcommittee met, pursuant to notice, at 1:05 p.m. in room 2325, Rayburn House Office Building, Hon. Allen E. Ertel presiding.

Mr. ERTEL. The subcommittee will come to order.

Today, we continue with the hearings on Federal patent policy. Yesterday, we heard from Government witnesses. Today, we will hear from the private sector.

We will start today with the Large Business Association panel. The witnesses will be Harry F. Manbeck, Jr., the general patent counsel, General Electric Co. in Fairfield, Conn.; Dr. Gardner Stacy, the president of the American Chemical Society in Washington, D.C.; John E. Maurer, director of the patent department at Monsanto Corp. in St. Louis, Mo.; and Edward J. Brenner, the president of the Association for the Advancement of Invention and Innovation, accompanied by Paul L. Gomory, director and adviser.

STATEMENT OF A PANEL OF WITNESSES CONSISTING OF HARRY F. MANBECK, JR., GENERAL PATENT COUNSEL, GENERAL ELECTRIC CO., FAIRFIELD, CONN., ACCOMPANIED BY PHILLIP SCHLAMP AND JAMES E. ESPE; DR. GARDNER STACY, PRESIDENT, AMERICAN CHEMICAL SOCIETY, WASHINGTON, D.C., ACCOMPANIED BY WILLARD MARCY, CHAIRMAN OF THE COMMITTEE ON PATENTS AND RELATED LEGISLATION, AMERICAN CHEMICAL SOCIETY, WASHINGTON, D.C.; JOHN E. MAURER, DIRECTOR, PATENT DEPARTMENT, MONSANTO CORP., ST. LOUIS, MO.; EDWARD J. BRENNER, PRESIDENT, ASSOCIATION FOR THE ADVANCEMENT OF INVENTION AND INNOVATION, ARLINGTON, VA., ACCOMPANIED BY PAUL L. GOMORY, DIRECTOR AND ADVISER, ASSOCIATION FOR THE ADVANCEMENT OF INVENTION AND INNOVATION, ARLINGTON, VA.

Mr. ERTEL. Is Mr. Maurer here? I understand he has been delayed en route. What we will do is begin, take all of your testimony, and then have questions at the end of the entire panel. We do appreciate your coming here. We will begin with Mr. Harry Manbeck.

Mr. MANBECK. Thank you.

My name is Harry Manbeck and I am general patent counsel for the General Electric Co. General Electric is a large, diversified, technically based company which serves regularly as a contractor to the U.S. Government.

In that role, it does considerable research and development work, and it has a significant history of utilizing contract-originated technology in commercial products. The rights afforded to Government contractors under contract-originated inventions are, therefore, of importance to it, and we hope that any changes in Federal patent policy will be such that patents will serve as an incentive rather than as a disincentive to commercialization by all classes of contractors.

This is really our answer to the first question. By first question, I mean the first question in the letter that was sent by the subcommittee.

Mr. ERTEL. We will incorporate your written testimony in the record and you may summarize, or you may read it, whichever you like.

Mr. MANBECK. It's pretty hard to summarize. Let me read a little bit and then I'll try to cut it down. How is that?

Mr. ERTEL. Whatever you prefer.

Mr. MANBECK. OK. As I said, this is really our answer to the first question, whether patent reform provisions should apply to all Government contractors, or whether they should be restricted to small businesses and universities. But, let me explain further.

I recently had the opportunity to serve as the chairman of a patent working group which participated in a study of technology policy conducted by the Committee for Economic Development.

The Committee for Economic Development, a nonprofit organization composed of 200 trustees, including many corporate executives and university presidents, made its study to determine what policies are needed to stimulate technical progress in the United States.

One conclusion reached, and I think it is indisputable, is that the patent system serves as an important stimulus to industrial innovation. The protection afforded by patents encourages the investment of funds not only in R. & D., but also in the product engineering and the facilities needed to commercialize the R. & D. output.

It is this aspect of patents—namely, the continuing development and product engineering, and the facilities expense—with which we are concerned when talking about Federal patent policy.

Large companies must take the patent situation into account when introducing new products, as do small companies, and the lack of a favorable patent picture may make the difference between product innovation or not.

In our context here, it may make the difference between the commercialization or the dropping of technology in which the Government has had a funding input. If it is felt that affording patent title to contractors will aid commercialization, and we do believe this, then it is contradictory to the overall purpose of Federal patent reform not to give the same treatment to all contractors.

Both large and small businesses are important to the American progress, and to withhold an incentive from large business and perhaps even place patent roadblocks in front of it is diametrically opposed to what should be done if commercialization of contract originated technology is to be achieved.

The next point on which I will comment is whether Federal patent reform should include Government payback measures. We believe that this is undesirable for a number of reasons.

Mr. Ertel, I will just read the reasons without going into details. If you want to go into the details, why, I'll be glad to answer them during the question period.

Mr. ERTEL. Fine.

Mr. MANBECK. First of all, we believe a significant administrative burden would be imposed on the contractor. Second, there is no question in our mind that a further Government bureaucracy would be needed. Not only would there be more bureaucracy, there would be continuing administrative difficulties between the contractor and the Government.

Third, the Government receives a payback in any case through its tax revenues. Whatever the contractor makes, the Government gets 46 percent. Fourth, royalty provisions or profitsharing on top of tax liability act as a deterrent to commercialization if alternate technologies are available.

Last, if the payback provision should extend to inventions only, as contrasted to patents, then the contractor would be placed at a disadvantage compared to anyone else.

Turning now to march-in provisions, we recognize that these may be desirable to guard against possible abuses. From our own experience, I doubt that there will be any significant number of such abuses, but nonetheless, it is a subject which should be treated.

It seems to us that the most obvious situations where march-in rights might be considered are as follow: First, where public use of the patented invention is required by Government regulation; second, where use of the patented invention by companies other than the contractor is necessary for reasons of health, safety, or the public welfare; or third, where the contractor has not taken effective steps toward commercialization and others are willing to do so if granted immunity under the patents.

However—and this is, I think, extremely important—each exercise of the march-in rights will necessarily involve a specific factual situation with complex factors possibly applying.

Therefore, the contractor should be given a complete and fair hearing before the patent rights are taken back by the Government or the contractor is required to grant licenses.

Background rights also present a difficult problem. Broad statutory provisions or contract clauses requiring contractors to surrender privately funded background rights can act as a serious deterrent to the companies bidding on or accepting R. & D. contracts.

A company with an established commercial position may be reluctant to do Government R. & D. work if it will result in the company's having to license some important privately funded work. Obviously, this would vary from company to company.

On the other hand, where the Government is investing large funds to development equipment for public use, there is logic for requiring the contractor to license its background patents in certain situations. Our belief is that a reasonable approach should be followed.

If the contractor carries the contract technology to commercialization and is supplying the market with all the needed equipment at a

reasonable price, then it seems unfair to require it to license its background patents to others.

On the other hand, if it fails to supply the market adequately at a fair price, then there is reason for requiring it to license both the background patents and the patents stemming from the contract work. We suggest the same due process considerations apply as in the case of march-in rights; namely, that any background license provisions should require a full hearing for the contractor before any licenses are vested in its competitors. This should assure that both the contractor and the public receive fair treatment to the best ability of the administrative agency.

I believe the subcommittee is also interested in whether the reforms should adopt the exclusive licensing approach or the title in the inventor approach. Since contractors may wish to file patents in foreign countries as well as in the United States, the title approach is much superior on an administrative basis.

Also, if any litigation occurs, which we certainly hope it would not, I question whether the Government should be included as a party in a suit between private litigants. That would probably be necessary in the exclusive licensing approach. The exclusive licensing might also require more Government employees for administrative purposes and would be undesirable for that reason, too.

The final point mentioned in the letter inviting me to testify is what rights should the individual inventor have; that is, Government, university, or industry employee rights. It seems to me that this is not something which should be taken up in the legislation.

The missions of the Government, the universities, and industry are all different. Each of them has developed employee practices in respect to inventions, which work very well for them. They should be allowed to continue to have the contractual arrangements with their employees which are best for their purposes.

As a company, we believe that our present arrangements are entirely satisfactory for assuring that a favorable inventive climate exists, that all inventions are uncovered, and that the Government will receive all the rights to which it is contractually entitled.

We follow the same practices in our businesses which deal with the Government as we do in our commercially oriented businesses, and to require us to have different agreements for different areas would create significant problems.

What may be suitable for us, however, may not be the best for universities, and we believe that they should be allowed to work out their own arrangements. In short, we urge that there be no legislation on this point. Thank you very much for the opportunity to present our views.

Mr. ERTEL. Thank you, Mr. Manbeck. Congressman Doug Walgren of Pennsylvania has joined us for our hearings. Welcome.

Mr. WALGREN. Thank you.

Mr. ERTEL. Our next witness is Dr. Gardner Stacy. We will incorporate your written testimony as well in the record. You may either read it or summarize it, whichever you feel more comfortable with.

Dr. STACY. Thank you, Mr. Chairman.

I am president of the American Chemical Society and I appear before you today through the authorization of the society's board of

directors. Accompanying me is Dr. Willard Marcy, chairman of the society's Committee on Patent Matters and Related Legislation. The American Chemical Society welcomes this opportunity to present its views in relation to patents based upon federally funded research and development, and hopes that the society's insights will be useful to the subcommittee in its deliberations.

It is the position of the ACS that technological innovation underlies and supports modern society, and that the fostering of innovation, therefore, must be a national priority. Strong and continuous efforts to enhance and expand technological innovation result in high standards of living as exemplified by the history of the United States. Every effort should be made to encourage and strengthen technological innovation so that these standards are maintained and expanded. If we are to find solutions to ever more complex social, economic, and environmental problems, the United States must commit itself to the full utilization of its innovation skills.

Innovation proceeds from an inventive idea through interwoven steps of research, development, and demonstration of feasibility, to the diffusion and eventual acceptance of a new product or process in the marketplace. Technological innovation may or may not involve patentable inventions. While invention is a necessary precedent to innovation, inventions are of value to society only when put to use. At early conceptual stages, inventions are fragile and need all the nurturing and protection they can get. In the United States we have been fortunate that our forefathers laid the foundation for a patent system in our Constitution. Over the years, the U.S. patent system has been a strong positive influence in bringing inventions to the public, and in contributing to the economic growth of our country.

While the patent system has been a bulwark in the past when its use was primarily in the hands of private individuals and industrial companies, massive Federal funding of research over the past 25 years has raised a new question; namely, the proper use for public benefit of the patent system by the Federal Government. A firm and uniform Government patent policy has never been established. Instead, each funding agency has developed its own policy, procedures and regulations. These independent actions have caused confusion and an ongoing, seemingly never-ending debate, as to what should be public policy in this area. It is very clear that an early first step by the Congress and the administration toward a national policy dealing with innovation should be to correct the errant Government patent practices.

The procedures used in the implementation of the patent laws differ markedly among agencies, particularly with respect to the determination of ownership of patents. This is a most important point in that if ownership of a patent is in doubt or if the activities of an owner are too restricted relative to the development of a patent, the invention covered by the patent will often lie fallow and be of no use to the public. The absence of unified policy and procedures among Federal agencies thus can cause excessively long delays and even a complete loss of innovative benefits to all citizens whose taxes may have supported the original research. When the public is denied the benefit of a useful invention because of a situation like the one described, a repudiation of the concepts embodied in the Constitution occurs.

A legislative resolution on the issue of a uniform Government patent policy appears to be required and several bills have been introduced in Congress to solve the problem. In assessing the provisions in these bills, the American Chemical Society has taken the viewpoint that any legislation in this area should foster and promote innovation, not merely protect possible Government equity in the inventions themselves. With this position in mind, and recognizing that these bills are directed toward Government patent policy regarding inventions resulting from Government-supported research, the ACS believes that the following principles should govern:

One. In many, but not all instances, the grant of exclusive rights is required to induce industrial companies to undertake commercialization of inventions. However, the ACS believes that exclusivity may not be needed where the costs of technical and market development are not substantial; where substantial promotion expense is not required; or where improvement expense is minor or can be reimbursed or compensated for by having a headstart in the market, or by obtaining improvement patents.

Two. The American Chemical Society also recognizes that the Government, having sponsored and supported research leading to inventions, may be entitled to hold title to resulting patents. Nevertheless, the Society believes that the burden should be on the Government to establish that the greater benefit to the public will result from the Government's holding title. Therefore, there should be a strong rebuttable presumption that any contractor or potential licensee is entitled to an exclusive license under such patents, unless the Government, in a formal hearing, can make a clear and convincing case for withholding or revising such license. The basis for such rebuttal should be a showing that the contractor does not have an incentive; or is not the best qualified to exploit an invention; or that a license to the contractor may result in an undue contribution to a monopoly position.

Three. The ACS recommends the grant of exclusive rights for the life of each patent, with the right to sub-license. If appropriate, licenses may be limited by the Government as to technical areas or fields of use.

Four. There should be a strong presumption that the contractor is the best qualified to exploit the invention. In any event, the Society believes the contractor should be entitled to at least a non-exclusive license if a request for an exclusive license is denied.

Five. Provision should be made for rescinding or revising licenses whenever the licensee is not engaged in a reasonable or diligent working of the invention, or where the effect of such licenses is clearly contrary to antitrust laws or policy. The American Chemical Society recommends that decisions on rescission or revision of licenses preferably be made by a specially constituted body independent of the agency that funded the research. This body should not be a new, separate bureaucratic entity, nor should it be more than a limited member board of inquiry with a small staff.

Six. The ACS urges that whatever administrative procedures are initiated for granting and reviewing licenses, these procedures must be devoid of redtape and unnecessary delay, or their primary purpose to permit innovation to occur will be defeated.

Seven. The ACS advocates recoupment by the Government of funding costs through sharing of income accruing to licensees, exclusive

or nonexclusive, by way of royalty or other payments based upon the licensee's use of the invention.

Eight. The society recommends that accountability reports to Congress on licensing activities by all Federal agencies should be required on an annual basis.

Nine. It is of critical importance that provision be made for maintaining the confidentiality of proprietary data, engineering know-how, and other like intellectual property developed by and belonging to licensees.

Ten. Uniform regulations should be established and followed by all agencies in interpreting and administering a uniform Government patent policy. The ACS believes that administration of such regulations by an independent body would tend to provide the necessary uniform administrative procedures.

Eleven. Foreign patents corresponding to U.S. patents should belong exclusively to the contractor, who has the discretionary right to use or license them, thereby increasing the probabilities of the foreign use of U.S. inventions, and improving the unfavorable U.S. balance-of-payments position.

I might point out, and many of you are aware of this, that the chemical industry is second to agriculture in exports, at \$6 billion a year, I understand.

Twelve. The ACS believes that, notwithstanding its grant of exclusive rights to the contractor, and by virtue of its initial financial support, the Government should be entitled to a royalty-free nonexclusive, irrevocable license to practice, or have practiced for Federal Government purposes only, any invention resulting from work carried out in Government facilities or pursuant to Government contracts or subcontracts.

Thirteen. The society takes the position that no Government department or agency should have rights to background patents, developed with the contractor's own funds, unless the contractor chooses to sell such rights to the Government. However, the ACS also contends that if the contractor refuses to make the product of the background available or to license the patent, the Government should have the right to license for Government purposes under the background patent at a reasonable fee.

To summarize, the ACS firmly believes that if a uniform Government patent policy is instituted, it would result in increased productivity and would aid the United States in reasserting its technological leadership in the world.

To acquaint you with the American Chemical Society, we would like you to note that the ACS is an individual membership organization made up of approximately 117,000 chemists and chemical engineers reflecting a broad spectrum of academic, governmental, and industrial professional pursuits. Approximately 60 percent of the membership is employed by industry, 25 percent by academic institutions, and 15 percent by governmental and nonprofit institutions.

The society was founded in 1876 and chartered as a nonprofit, scientific, and educational organization by an act of Congress signed into law on August 25, 1937. Under its national charter, the society is charged with the responsibility to encourage in the broadest and most liberal manner the advancement of chemistry and the promotion of research in chemical science and industry "thereby fostering

the public welfare and education, aiding the development of our country's industries, and adding to the material prosperity and happiness of our people."

The charter imposes an obligation on the society to provide assistance to the Government in matters of national concern related to its areas of competence. Since one of the objectives of our Federal charter is the promotion of research, we appreciate the opportunity that has been given to us today to comment on Federal patent policy.

Thank you, Mr. Chairman.

Mr. ERTEL. Thank you very much, Dr. Stacy. We appreciate your testimony. When we come to the question period, I have a few questions I would like to address to you. I'm sure other people do as well. We would like to welcome Mr. John Maurer.

Mr. MAURER. Sorry I was late.

Mr. ERTEL. I'm glad you made it. We will incorporate your written testimony in the record. You may proceed as you see fit.

Mr. MAURER. Thank you, Mr. Chairman. The principal point of my remarks today is addressed to Government patent policy that needs to provide exclusively to the innovator. You can see from the chart which I attached to the copy of my testimony that patent exclusivity is a vital link between a Government-funded invention and the tangible public benefit. The chart also shows you why: Any innovative process contains risks. And, the promise of exclusivity is necessary to equalize some of the risk.

Let me explain that, if I may. The chance of success for any one invention is always a very highly questionable thing. In that chart, we tried to depict one idea traveling all the way through the innovation pipeline.

However, for every successful product, there are literally thousands of ideas which fail. At Monsanto, for example, one successful pesticide represents on the average, 10,000 compounds which were considered and discarded for some reason along the way.

This could be because they failed to perform as expected in the field, because they couldn't meet health and safety criteria, or the manufacturing process was uneconomic. I might add to that that the 10,000 compounds as representative for pesticides, the cost usually runs \$18 million to \$20 million before you have a product.

For every dollar spent in research on a project, which is the Government end of that pipeline, 10 more dollars are needed to carry that project through to the public. You can see, then, that the Government R. & D. funding really only involves a very small percent of the total investment.

The average length of time from idea to public product is at least 10 years, often longer. Most of that time is innovation, not invention. For example, Monsanto's Acrilan acrylic fiber took 19 years to reach commercial success, Astroturf stadium surfaces took 10 years and I'm sure you are all familiar with the simple zipper which took 27 years. Even with the promise of exclusivity, it is still a big decision for a businessman to support a project which cannot hope to show a profit for a decade.

At Monsanto, ideas for the innovation pipeline come from several sources: our own laboratories, university researchers and small businesses.

As a matter of course, scientists in Monsanto's research laboratories are constantly seeking innovative ideas which will improve our business, whether it be process or product, or carry the company into new businesses.

Monsanto also looks to research that is underway in academic laboratories. We have a variety of arrangements with a number of universities, but one in particular stands out. About 6 years ago, Monsanto entered into an agreement with Harvard Medical School to conduct a joint biomedical research project.

The Harvard investigators had already received some Government funding, but Monsanto committed \$24 million more in addition to technological expertise and people. Because Harvard had an institutional patent agreement from the Department of Health, Education, and Welfare, Harvard was able to give Monsanto the needed right to commercialize inventions.

However, Harvard and the Government retained march-in rights as protection if we fail to commercialize under our exclusive licenses on the Harvard inventions. Arrangements also exist for royalty payments to the university.

Other research in which Monsanto is interested is that conducted by small businesses. Through a new ventures development group, Monsanto seeks out small high technology businesses suitable for partial funding, or even acquisition.

An example of this approach is the just-announced merger of Radiation Dynamics, Inc., into a Monsanto subsidiary. Incidentally, that company's initial success was rather significantly due to a patented invention.

I mentioned these three sources of Monsanto's innovations merely to point out the diversity of routes which exist and how we are involved in them.

In most cases, Monsanto does not consider a research project unless it has some relation to existing Monsanto technology, products, or our technical marketing skills and we feel that research can be moved successfully through the innovation pipeline. However, sometimes the risk is simply too great.

Certain areas of technology are not promising enough to attract private funding. However, where the public need is perceived to be sufficiently great, the Government steps in with financial support for research. Examples of such technological risk or uncertain profitability are coal gasification, basic cancer studies or other energy and health research investigation.

However, when Government-funded research in these areas produces an invention, some incentive is usually needed to move that invention from the laboratory into the development sector. And that, I believe, is the fundamental purpose of granting exclusive licenses.

The Government must arrive at patent policies that are most likely to complete the innovation process. This is best done, in my opinion, by attracting private funds and expertise to move the federally or publicly funded invention along the pipeline to where it can begin to meet public needs as a commercial product.

In this connection, patent exclusivity is equally important for research done in universities, small businesses and large businesses. In

fact, large businesses are often the only places which have the skill for some types of research and the resources to support a long-term innovation.

It simply would be self-defeating to limit a sound patent policy to only universities and small businesses. If that happens, many options for valuable innovations will fall by the wayside and the Government will get less than a full return on investment. The public will receive no benefit whatsoever for supporting that research.

I wish to speak now on five principal issues concerning the proposed legislation. First, title. Who should have title to the invention? Theoretically, it could be either Government or the R. & D. contractor so long as the latter has an exclusive license with the right to sublicense.

Actually, however, the title should be where the invention is located and that would be with the contractor, not the Government.

A university is better motivated, for example, than a Government bureau to seek out and identify inventions, to find organizations capable of commercializing and to negotiate realistic arrangements.

Larger universities are well equipped to promote inventions on their own and smaller ones have access to excellent invention development organizations. Small and large businesses, on the other hand, have intimate knowledge of their own capabilities.

In short, we would recommend that the title be put where the knowledge and the action of the invention are located. This will both enhance the chances of success and reduce the Government's costs.

Two, march-in rights. We think these are appropriate. Ordinarily in private industry, a license agreement provides specific incentives toward commercialization and the right for the licensor to find others to do it if the exclusive licensee does not undertake commercialization in a reasonable time.

In the case of Government-funded inventions, the Government's right to march in should realistically recognize the leadtime necessary to commercialize an invention. This is especially long when regulatory approvals must be obtained, and S. 414, for example, properly takes this into account.

As I mentioned earlier, it is often not realized how long a time period is required between invention and successful innovation. An interesting review of many of these studies and discussion of the various stages of innovation is found in an article which I have attached to my testimony.

A third point is payback. When one licenses an invention to another in industry, he expects some kind of payback. The amount of payback, however, normally bears little or no relationship to the cost of the research which resulted in the invention.

Rather, it recognizes the value of the invention as proved in the marketplace.

Similarly, a university also needs the incentive of royalty or other income from licensed inventions to reward the efforts required to identify an invention and to find someone to exploit it.

In addition, this return of a portion of the sales of a product in royalties or some other form of payback can serve to support the university's R. & D. or other educational goals. Some kind of payback could also be provided to the Government agency which funded the research originally.

But, caution must be taken that any such arrangement does not place an undue burden, monetary or administrative, on the innovator and thereby stifle innovation.

Fourth is background rights. The granting of a license by a contractor or a licensee under a patent or technology previously owned by him should not be a requirement of the Government patent policy.

If background rights were required, it would significantly inhibit the number of innovators willing to become involved with inventions resulting from Government funded R. & D. and thus, reduce the chances for successful innovation.

I might add that I can recall that this was a significant problem many years ago in the desalination area where there were several chemical companies who were very advanced in that field, but were unwilling to come forward and take part in the Government's program simply because of the requirement of giving up their background rights.

The fifth point is the individual inventor. S. 414 is the only one of the three principal bills which specifies particular treatment of the individual inventor. It requires that a nonprofit organization share royalties with its inventor.

Although this is already common practice with many universities, it does not seem to me wise to standardize such an arrangement. Circumstances vary so much and so many different factors enter into compensation and incentives that this matter should be left to the discretion of the various organizations.

I hope the points I have made will be useful to the subcommittee to fashion what I think is needed, a coordinated and unified government-wide patent policy which hopefully would permit any contractor to retain title to inventions resulting from federally sponsored grants or contracts, a policy which retains royalty-free rights for the Government to use the invention for governmental purposes, a policy which gives the Government march-in rights and a policy which provides sufficient periods of exclusivity to permit the contractor or his licensee to recoup their investment.

In my opinion, these provisions are essential if the results of federally sponsored R. & D. are to be given the best chance of reaching the consumer. And that is, after all, a vital concern.

If the consumer does not receive any tangible benefits from the research, then the Government has not completed its job and has not, in my opinion, been a good steward of the taxpayers' money.

Thank you.

Mr. ERTEL. Thank you very much, Mr. Maurer. It's a very good statement and very helpful.

Our next witness is Mr. Edward J. Brenner, president of the Association for the Advancement of Innovation and Invention.

Mr. BRENNER. Thank you, Mr. Chairman.

Our Association very much appreciates the invitation and opportunity to testify at the hearings today. In addition to myself, we are represented today by Mr. Paul Gomory on my left who is an adviser and director of the association.

It is my plan to read only certain portions of my testimony and to summarize other portions.

Mr. ERTEL. Your entire testimony will be incorporated into the record without objection.

Mr. BRENNER. Yes, sir. Basically, our position relates to the Constitutional provision for patents. The principles, as you know, upon which our patent system are based are drawn from interpretation and understanding of article 1, section 8, clause 8 of our Constitution, which provides for the promotion of the progress of science and the useful arts by securing for limited times to inventors the exclusive rights to their inventions.

We believe the principles apply equally well to all of industry at all stages. The patent system basically provides rewards to procure the disclosure of new information relating to invention or technology which can then be innovated; that is, brought to commercial or other beneficial applications on behalf of the public.

The ultimate reward of invention and innovation results in growth and production of products useful to the consumer. In this chain of events, there are created jobs, the payment of taxes, consumer goods and, as we know, help to fight inflation which, in turn, improves our economic and, consequently, our military posture.

It is our position that in the best interest of our country, the Government ordinarily should not own patents. Government ownership of patents is distinguished from that of an individual or organization competing in the marketplace because it denies the encouragement of competition to invent offered by our patent incentive system.

Government should not be in competition for a share of the market by acquiring title to patents or inventions. As will be seen in that which follows, it is inescapable that title vested in the Government very strongly tends to negate the use of the invention because something that is available to all is not protected specifically and exclusively to those who would invest their time, funds, and effort to innovate the invention covered in the patent.

This is because, to the extent Government enters into the field by owning patents, it is removing an area which otherwise would be fertile for competition and which the patent could be used as a competitive tool.

The Government supposedly holds its patents for the benefit of the public because the Government is for the benefit of the public and is created by the public for the public.

Consider for a moment the Government suing to enjoin the use of an invention which has been patented, the patent being owned by the Government. This would result in the anomaly that the Government would be suing to enjoin the infringer from innovating the invention: that is, bringing it into the commercial marketplace in competition with other goods of like character, thus denying the consumer the added choice and the price competition inherent in such an enjoined operation.

Our position is consistent and has been consistently to provide a better climate for invention and innovation.

As we view it, the basic issue is whether it is better for the consumer, the ultimate consumer, the citizen, if you will, to have the title vested in the Government or in the contractor, admitting that the Government has paid a sum of money to have the problem solved or a plant operated and this has resulted in the making of one or more patented inventions.

Now, to summarize a certain portion of the testimony here, we would like to call attention to the report of the Advisory Subcommittee on Patents and Information Policy of the Advisory Committee on Industrial Innovation established as part of the Domestic Policy Review which, among other things, stated that: "Experience has shown us that the Government as a purchaser or consumer of goods and services is not in a position to take advantage of its ownership of patents to promote enterprise."

On the other hand, private companies are. The advisory subcommittee also quoted from the Harbridge House report which we feel is a very important report in this area and, among other things, emphasized that: "Government ownership of patents with an offer of free public use does not alone result in commercialization of research results."

Further, with regard to the advisory subcommittee's view, they stated that:

The idea that what the Government pays for belongs to the people is not only appealing, it is true. The question is: What instrumentalities can be brought to bear to maximize the possibilities that the people will, indeed, have available the fruits of their Government's expenditures?

Therefore, the subcommittee concluded: "All the members of this subcommittee recommend transferring the patent rights and the results of Government-sponsored research to the private sector for commercialization."

Furthermore, Mr. Staats, the Comptroller General of the United States stated that:

It has been the experience of agencies with policies of granting title to the contractor that a willing contractor-inventor is more likely to expeditiously commercialize an invention than a Government licensee.

The U.S. patent incentive system gives a reward to the inventor because he has contributed to the country, to the sum total of knowledge. The Government spends the taxpayer's dollar and should get what it pays for. It should have the best.

Basically, then, the capability to deliver the best for the dollar should be the main principle guiding the Government contractor when seeking to get work done by a private industry contractor.

It is a fact that the contractor, who should be approved by the Government, is one who has a background of knowledge and expertise with which to solve whatever is the problem sought to be solved by the Government on behalf of the people.

Such contractor, quite naturally, will hesitate to bid on a contract if the very cream of his know-how and expensively trained personnel—that is, the inventions which might, but won't necessarily, be made during the operation of the project—were vested in the Government and in fact can be and usually will become available free of cost to competitors against whom there is no action by way of injunction or otherwise because the patent is vested in the Government.

Thus, the vesting in the contractor of title to inventions made during execution of a contract is the best incentive to cause the best organization to bid to do the work. The amount of cost to the Government—that is, the people—is negotiated in light of this fact.

Basically, and importantly, then, the tax money should be well spent so that the Government does in fact get what it pays for and it should pay for only the best.

Putting the principle that the Government should get what it pays for as first in mind, it can be seen that there should be no discrimination with respect to factors based on size, however this term is given substance or defined. Legislation should be directed to and should provide the incentive for the best equipped or most capable to bid.

Indeed, it is difficult to draw the line between what is truly a small business and what is large business. Both appellations are, in many instances, highly arbitrary in spite of statutory or other definitions because such factors as rate of growth, percentage of return on assets are involved, and are not accounted for by mere statements of size.

Indeed, in terms of the numbers of persons as shareholders, and therefore as citizens, there are many more involved as shareholders in the larger businesses than in the smaller businesses.

On this basis, it can be argued that legislation favoring smaller businesses is highly discriminatory in favor of a lesser number of people than the number of those who own the larger businesses. The investment per shareholder in different size businesses very likely would show the arbitrariness here mentioned.

Further, large companies, in fact, may include or be made up of a number of separate individual small businesses.

However, our association is not seeking to have the Government favor larger businesses over smaller businesses or smaller businesses over larger ones. It bears repetition that we are interested primarily and only in the provision of a better climate with which to promote invention and innovation, even as mandated in the constitutional provision earlier set out.

Our association, therefore, believes those most capable to perform for the taxpayer's dollar should see the incentive to bid for Government contracts, as earlier stated. In some instances, this will mean that a high-technology, smaller, but innovative organization may be the best to be selected to accept the Government contract and in others, an organization composed of more persons and having larger assets, but the best capability to perform may be the one selected to perform the contract. Large projects require large organizations. The patent system should apply equally to all, even as all our laws ought to do.

With regard to the size of the business, I think it's also important to recognize the interrelationship between small businesses and large businesses. For example, the largest organization may be dependent upon hundreds of thousands of other organizations, according to an article that appeared recently in the Washington Star.

Thus, whether the contract is granted to a small company or to a large company, there will be a considerable interrelationship as the project is brought forth to the marketplace. Thus, based upon our analysis of the actual situation, we favor primarily a nondiscriminatory type of legislation such as S. 1215 because it is an across-the-board bill. This feature appeals to us for reasons we have given.

The Presidential memo of 1963, revised by the memorandum issued August 23, 1971, recognized the need to give contractors greater rights to inventions to achieve utilization. The wisdom of the memo is underscored by Mr. Staats' testimony, mentioned above.

We also agree to march-in rights, but believe that the period to elapse should be negotiated in light of factors affecting the nature of the business doing the bidding. If the committee and, ultimately, the Congress decides to favor so-called small business and nonprofit organizations, then S. 414 would appear to be a reasonably good bill to enact.

However, we do not believe there should be any payback provision. This is a disincentive to contract. Analysis of the risk involved in the hope for commercial rights to inventions, if any are made, inventions which have yet to be developed and innovated, is a factor which has resulted in the contract.

This is a factor which has been taken into consideration during the negotiations. Once the contract is made, all burden should be lifted and the contractor permitted to proceed with dispatch to help our country.

We have a number of specific comments on S. 1215 and on H.R. 5427 which we understand has just recently been introduced into the House. Our Association supports S. 1215 and H.R. 5427 in principle. We view the acquiring of title by the Government at the time of making the contract with possible subsequent waivers as generally not being the full incentive which should exist initially to enter into a Government contract.

Thus, the possibility of a waiver being provided for is uncertain and the waiver must be negotiated to be obtained.

Section 301 requiring acquisition of title at the time of entering into the contract under certain situations is not thought to be in the best interests of the country, especially not in its rather broad form. Such acquisition, if practiced at all, should be severely restricted to only those situations of an emergency character when it can be demonstrated readily that only Government intervention can be expected to yield a benefit to the public that is urgently needed and desired.

Provisions such as one or more of those in section 301 invite expenditure of much time and funds and negotiation and even possibly litigation. Individual subsections of section 301 are set forth below in my prepared statement. In view of the time, I will not go into each of these, but would say that it seems to us that the language and the objective of these various provisions could be improved considerably when one takes into account the various specific points we have set forth in our statement.

Moving to page 19 of my statement, I again will summarize this particular section. We heartily endorse the testimony of Dr. Betsy Ancker-Johnson, formerly Assistant Secretary of Commerce for Science and Technology and now, one of our advisers on S. 414 as she testified before the Senate Judiciary Committee.

We would also like to endorse the testimony of Mr. Tom Arnold, former president of the American Patent Law Association in his testimony before the Senate Committee on Commerce, Science, and Transportation, relating to S. 1215.

And, in addition to their statements relating to Government or contractor ownership of patents, we would like to call the attention of the committee to several other important points made by Mr. Arnold

in that testimony that does not go to the ownership of patents, but which goes to the effectiveness of patents such as those that may be acquired by the Government or contractors under legislation being considered here.

First of all, we endorse the proposition that an adequate budget and an increased budget needs to be provided for the Patent and Trademark Office to provide prompt issuance of well-thorough-out patents. Second, we support legislation that has now been recently introduced into the House, H.R. 5075, by Congressman Butler and by several Senators in the Senate, relating to a new reexamination procedure for patents which would be very helpful with regard to providing a relatively inexpensive way of having a patent reexamined in lieu of expensive litigation.

This, again, should promote the utilization of Government—or patents derived from Government-sponsored research.

We also have several specific comments on S. 414 in the prepared testimony which we would like to call to the attention of the subcommittee.

With regard to the question of sharing royalties with inventors, we would call attention to the testimony of Donald Quigg who was a member of the Subcommittee on Patents and Information of the Domestic Policy Review in which at an open hearing earlier this year, his testimony was summarized by Chairman Baruch as saying:

If I am hearing you right, what you are saying is that you are not against rewarding the inventor for the act of invention, but you would not like the method of that reward dictated by any group of government.

Thus, we believe that to the extent that such a requirement goes beyond the normal compensation program of a particular contractor, it is viewed under the circumstances as a disincentive to take the contract.

In conclusion, then, it appears to be fitting to call attention to the now famous case of the *United States v. Dubilier* in which the court issued its original opinion on April 10, 1933, and later, on motion of the Solicitor General, struck from its opinion a paragraph which questioned the authority of the Government to hold ownership to a patent.

The stricken paragraph reads as follows:

In these circumstances no public policy requires us to deprive the inventor of his exclusive rights as respects the general public and to lodge them in a dead hand incapable of turning the patent to account for the benefit of the public.

In summary, then the U.S. patent system is one of the foundations of our free enterprise system. It is intended to provide the major incentive for promoting competition in research and development and for taking the risk of failure inherent in the invention-innovation process.

Parenthetically, it is of interest to note that a number of socialist Eastern European countries have adopted a patent system for these same reasons. The major incentive is basically the profit motive which is an essential element in our free enterprise system. Along with the profit which may be gained by the inventor, innovator, and their financial supporters, the public also benefits under the system from the new, improved and less expensive products brought forth under

the patent system, not to mention the taxes paid on the profits realized from the invention.

No one forces the public to buy such products; they will only buy them to the extent that the patented products provide them with greater value than existed before. Patented products compete in the marketplace with other patented and nonpatented products.

A patented invention which never reaches the marketplace provides no benefit to the public. History has demonstrated that the present Government patent policy has been relatively ineffective.

The key to Government patent policy must be to provide strong and realistic incentives to invent and innovate and thereby bring patented inventions to the marketplace for the benefit of the public.

Finally, in closing, I'd like to call the attention of the subcommittee to a report issued by the Department of Commerce entitled "Technological Innovation: Its Environment and Management." Among other useful information, it sets forth that with regard to bringing an invention to the marketplace, approximately 5 to 10 percent of the total money is involved in research and advance development of the basic invention. The other 90 to 95 percent is involved in the innovation process—in the risk process in bringing this invention to the marketplace. So, with figures like this, it seems to us that with regard to Government R. & D. contracts, it is in the public interest to try to grant the contract to the organization or individual who is best qualified or in the best position to make an invention or provide the best solution.

Second, with regard to bringing the invention to the marketplace, the patent system is required to provide the incentive to do that.

Thank you very much, Mr. Chairman.

Mr. ERTTEL. Thank you very much, Mr. Brenner, for your carefully thought out statement.

[The prepared statements of the panel members from large businesses and associations are as follows:]

STATEMENT OF HARRY F. MANBECK, JR., GENERAL PATENT COUNSEL, GENERAL ELECTRIC Co.

RECOMMENDATIONS ON FEDERAL PATENT POLICY

My name is Harry F. Manbeck, Jr., and I am General Patent Counsel of General Electric Company. General Electric is a large, diversified, technically based company which serves regularly as a contractor to the United States government. In that role, it does considerable research and development work and it has a significant history of utilizing contract originated technology in commercial products. The rights afforded to government contractors under contract originated inventions are therefore of importance to it, and we hope that any changes in federal patent policy will be such that patents will serve as an incentive rather than as a disincentive to commercialization by all classes of contractors.

This is really our answer to the first question; namely, whether patent reform provisions should apply to all government contractors or whether they should be restricted to small businesses and universities. But let me explain further. I recently had the opportunity to serve as the chairman of a patent working group which participated in a study of technology policy conducted by the Committee for Economic Development. The Committee for Economic Development, a non-profit organization composed of 200 trustees including many corporate executives and university presidents, made its study to determine what policies are needed to stimulate technical progress in the United States. One conclusion reached, and I think it is indisputable, is that the patent system serves as an important stimulus to industrial innovation. The protection afforded by patents encourages the investment of funds not only in R&D, but also in the product engineering and the facilities needed to commercialize the R&D output.

It is this aspect of patents; namely, the continuing development and product engineering and the facilities expense, with which we are concerned when talking about federal patent policy. Large companies must take the patent situation into account when introducing new products, as do small companies, and the lack of a favorable patent picture may make the difference between product innovation or not. In our context here, it may make the difference between the commercialization or the dropping of technology in which the government has had a funding input. If it is felt that affording patent title to contractors will aid commercialization, and we do believe this, then it is contradictory to the overall purpose of federal patent reform not to give the same treatment to all contractors. Both large and small businesses are important to the American progress, and to withhold an incentive from large business and perhaps even place patent roadblocks in front of it is diametrically opposed to what should be done if commercialization of contract originated technology is to be achieved.

The next point on which I will comment is whether federal patent reform should include government payback measures. We believe that this is undesirable for a number of reasons.

(a) *A significant administrative burden would be imposed on the contractor.* Much government-sponsored technology which may be translated to commercial products relates to large, complex equipment such as aircraft, aircraft engines, electronic equipment and transportation equipment. It would be a substantial burden on the contractor to trace any given invention through a commercial program or to allocate any particular contributed value to an invention. Take, for example, a patent on an electronic switch which is used in a complex commercial radar system. It would take considerable time and effort to verify whether, in fact, the patented switch is used, the amount of the use and what portion of the equipment is attributable to the switch. Also, is that switch so much better than an unpatented alternative that any royalties should be justified?

Further, suppose that the overall radar equipment were licensed to a foreign manufacturer with appropriate government approvals. The switch patent would be only a modest part of the total license, the main value of the equipment really being the technology and technical assistance passing from the licensor to the licensee. In fact, there is probably no value which can be broken out as being attributable to patents as such and certainly no way of determining the value attributable to the particular electronic switch invention.

All in all, the effort required to try to reach some resolution both on the base for the payback and the rate at which the payback would be made, far exceeds any benefit to the government possibly resulting from the modest monetary flow that might be created.

(b) *A further government bureaucracy would be needed.* Just as it is difficult, if not impossible, for the manufacturer of complex equipment to assign a value to any one patent, so also would it be difficult for the government to monitor the payback programs. Clearly, more and more people would be needed in the government agencies; in fact, the cost of people added to the government for control purposes might well exceed the amount of money paid to the government. The possibility of never ending administrative wrangles is not far fetched.

(c) *The government will receive a payback in any case through its tax revenues.* Presumably, the commercialized version of the government-financed technology will earn a profit for the contractor. Otherwise, there is no reason for the contractor to carry the technology to the marketplace. Whatever profit the contractor makes will be taxed at 46%, the current corporate tax rate, and the government will get a significant payback through that avenue. The tax structure clearly makes the government a partner as any monies start to flow.

(d) *Royalty provisions or profit sharing on top of the tax liability act as a deterrent to commercialization.* Why should a contractor commercialize government-financed technology if there is alternate technology available if it has to pay a premium for the use of the government-financed technology? In fact, a payback provision would be a good reason for a contractor to separate the government-financed technology from its commercial technology in order to avoid any payback liability.

(e) *If the payback provision should extend to inventions only as contrasted to patents, then the contractor would be placed at a disadvantage compared to anyone else.* He would pay for commercializing something which others could then follow without any liability for payments.

Turning now to march-in provisions, we recognize that these may be desirable to guard against possible abuses. From our own experience, I doubt that there will be any significant number of such abuses, but nonetheless, it is a subject which should be treated. It seems to us that the most obvious situations where march-in rights might be considered are as follow:

(a) Where public use of the patented invention is required by government regulation.

(b) Where use of the patented invention by companies other than the contractor is necessary for reasons of health, safety or the public welfare, or

(c) Where the contractor has not taken effective steps toward commercialization and others are willing to do so if granted immunity under the patents.

However, since each exercise of the march-in rights will necessarily involve a specific factual situation with complex factors possibly applying, therefore, the contractor should be given a complete and fair hearing before the patent rights are taken back by the government or the contractor is required to grant licenses.

Background rights also present a difficult problem. Broad statutory provisions or contract clauses requiring contractors to surrender privately funded background rights can act as a serious deterrent to the companies bidding on or accepting R&D contracts. A company with an established commercial position may be reluctant to do government R&D work if it will result in the company's having to license some important privately funded work. On the other hand, where the government is investing large funds to develop equipment for public use, there is logic for requiring the contractor to license its background patents in certain situations. Our belief is that a reasonable approach should be followed. If the contractor carries the contract technology to commercialization and is supplying the market with all the needed equipment at a reasonable price, then it seems unfair to require it to license its background patents to others. On the other hand, if it fails to supply the market adequately at a fair price, then there is reason for requiring it to license both the background patents and the patents stemming from the contract work. We suggest the same due process considerations apply as in the case of march-in rights; namely, that any background license provisions should require a full hearing for the contractor before any licenses are vested in its competitors. This should assure that both the contractor and the public receive fair treatment to the best ability of the administrative agency.

I believe the subcommittee is also interested in whether the reforms should adopt the exclusive licensing approach or the title in the inventor approach. Since contractors may wish to file patents in foreign countries as well as in the United States, the title approach is much superior on an administrative basis. Also, if any litigation occurs, which we certainly hope it would not, I question whether the government should be included as a party in a suit between private litigants. That would probably be necessary in the exclusive licensing approach. The exclusive licensing might also require more government employees for administrative purposes and would be undesirable for that reason, too.

The final point mentioned in the letter inviting me to testify is what rights should the individual inventor have; i.e., government, university or industry employee rights. It seems to me that this is not something which should be taken up in the legislation. The missions of the government, the universities and industry are all different. Each of them has developed employee practices in respect to inventions, which work very well for them. They should be allowed to continue to have the contractual arrangements with their employees which are best for their purposes. As a company, we believe that our present arrangements are entirely satisfactory for assuring that a favorable inventive climate exists, that all inventions are uncovered, and that the government will receive all the rights to which it is contractually entitled. We follow the same practices in our businesses which deal with the government as we do in our commercially-oriented businesses, and to require us to have different agreements for different areas would create significant problems. What may be suitable for us, however, may not be the best for universities, and we believe that they should be allowed to work out their own arrangements. In short, we urge that there be no legislation on this point.

Thank you very much for the opportunity to present our views.

STATEMENT
of
DR. GARDNER W. STACY
on behalf of the
AMERICAN CHEMICAL SOCIETY
to the
SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY
COMMITTEE ON SCIENCE AND TECHNOLOGY
UNITED STATES HOUSE OF REPRESENTATIVES
on
FEDERAL PATENT POLICY
Wednesday, October 17, 1979

Mr. Chairman and Members of the Subcommittee:

My name is Gardner W. Stacy. I am President of the American Chemical Society, and I appear before you today with the authorization of the Society's Board of Directors. Accompanying me is Dr. Willard Marcy, Chairman of the Society's Committee on Patent Matters and Related Legislation. The American Chemical Society welcomes this opportunity to present its views in relation to patents based upon federally-funded research and development, and hopes that the Society's insights will be useful to the Subcommittee in its deliberations.

It is the position of the ACS that technological innovation underlies and supports modern society, and that the fostering of innovation, therefore, must be a national priority. Strong and continuous efforts to enhance and expand technological innovation result in high standards of living as exemplified by the history of the United States. Every effort should be made to encourage and strengthen technological innovation so that these standards are maintained and expanded. If we are to find solutions to evermore complex social, economic, and environmental problems, the United States must commit itself to the full utilization of its innovation skills.

Innovation proceeds from an inventive idea through interwoven steps of research, development and demonstration of feasibility, to the diffusion and eventual acceptance of a new product or process in the marketplace. Technological innovation may or may not involve patentable inventions. While invention is a necessary precedent to innovation, inventions are of value to society only when put to use. At early conceptual stages, inventions are fragile and need all the nurturing and protection they can get. In the United States we have been fortunate that our forefathers laid the foundation for a patent system in our Constitution. Over the years the U.S. patent system has been a strong positive influence in bringing inventions to the public, and in contributing to the economic growth of our country.

While the patent system has been a bulwark in the past when its use was primarily in the hands of private individuals and industrial companies, massive federal funding of research over the past twenty-five years has raised a new question, namely the proper use for public benefit of the patent system by the federal government. A firm and uniform government patent policy has never

been established. Instead, each funding agency has developed its own policy, procedures and regulations. These independent actions have caused confusion and an ongoing, seemingly never-ending debate, as to what should be public policy in this area. It is very clear that an early first step by the Congress and the Administration toward a national policy dealing with innovation should be to correct the errant government patent practices.

The procedures used in the implementation of the patent laws differ markedly among agencies, particularly with respect to the determination of ownership of patents. This is a most important point in that if the ownership of a patent is in doubt or if the activities of an owner are too restricted relative to the development of a patent, the invention covered by the patent will often lie fallow and be of no use to the public. The absence of unified policy and procedures among federal agencies thus can cause excessively long delays and even a complete loss of innovative benefits to all citizens whose taxes may have supported the original research. When the public is denied the benefit of a useful invention because of a situation like the one described, a repudiation of the concepts embodied in the Constitution occurs.

A legislative resolution on the issue of a uniform government patent policy appears to be required and several bills have been introduced in Congress to solve the problem. In assessing the provisions in these bills, the American Chemical Society has taken the viewpoint that any legislation in this area should foster and promote innovation, not merely protect possible government equity in the inventions themselves. With this position in mind, and recognizing that these bills are directed towards government patent policy

regarding inventions resulting from government-supported research, the ACS believes that the following principles should govern:

1. In many, but not all, instances the grant of exclusive rights is required to induce industrial companies to undertake commercialization of inventions. However, the ACS believes that exclusivity may not be needed where the costs of technical and market development are not substantial; where substantial promotion expense is not required; or where improvement expense is minor or can be reimbursed or compensated for by having a headstart in the market, or by obtaining improvement patents.

2. The American Chemical Society also recognizes that the government, having sponsored and supported research leading to inventions, may be entitled to hold title to resulting patents. Nevertheless, the Society believes that the burden should be on the government to establish that the greater benefit to the public will result from the government's holding title. Therefore, there should be a strong rebuttable presumption that any contractor or potential licensee is entitled to an exclusive license under such patents, unless the government, in a formal hearing, can make a clear and convincing case for withholding or revising such license. The basis for such rebuttal should be a showing that the contractor does not have an incentive; or is not the best qualified to exploit an invention; or that a license to the contractor may result in an undue contribution to a monopoly position.

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3. The ACS recommends the grant of exclusive rights for the life of each patent, with the right to sub-license. If appropriate, licenses may be limited by the government as to technical areas or field of use.
4. There should be a strong presumption that the contractor is the best qualified to exploit the invention. In any event, the Society believes the contractor should be entitled to at least a non-exclusive license if a request for an exclusive license is denied.
5. Provision should be made for rescinding or revising licenses whenever the licensee is not engaged in a reasonable or diligent working of the invention, or where the effect of such licenses is clearly contrary to antitrust laws or policy. The American Chemical Society recommends that decisions on rescission or revision of licenses preferably be made by a specially constituted body independent of the agency that funded the research. This body should not be a new, separate bureaucratic entity, nor should it be more than a limited member board of inquiry with a small staff.
6. The ACS urges that whatever administrative procedures are initiated for granting and reviewing licenses, these procedures must be devoid of red-tape and unnecessary delay, or their primary purpose - to permit innovation to occur - will be defeated.

7. The ACS advocates recoupment by the government of funding costs through sharing of income accruing to licensees, exclusive or non-exclusive, by way of royalty or other payments based upon the licensee's use of the invention.

8. The Society recommends that accountability reports to Congress on licensing activities by all federal agencies should be required on an annual basis.

9. It is of critical importance that provision be made for maintaining the confidentiality of proprietary data, engineering know-how, and other like intellectual property developed by and belonging to licensees.

10. Uniform regulations should be established and followed by all agencies in interpreting and administering a uniform government patent policy. The ACS believes that administration of such regulations by an independent body would tend to provide the necessary uniform administrative procedures.

11. Foreign patents corresponding to U.S. patents should belong exclusively to the contractor, who has the discretionary right to use or license them, thereby increasing the probabilities of the foreign use of U.S. inventions, and improving the unfavorable U.S. balance of payments position.

12. The ACS believes that, notwithstanding its grant of exclusive rights to the contractor, and by virtue of its initial financial support, the government should be entitled to a royalty-free, non-exclusive, irrevocable license to practice, or have practiced for federal government purposes only, any invention resulting from work carried out in government facilities or pursuant to government contracts or subcontracts.

13. The Society takes the position that no government department or agency should have rights to background patents, developed with a contractor's own funds, unless the contractor chooses to sell such rights to the government. However, the ACS also contends that if the contractor refuses to make the product of the background available or to license the patent, the government should have the right to license for government purposes under the background patent at a reasonable fee.

To summarize, the ACS firmly believes that if a uniform government patent policy is instituted, it would result in increased productivity and would aid the U.S. in reasserting its technological leadership in the world.

To acquaint you with the American Chemical Society, we would like you to note that the ACS is an individual membership organization made up of approximately 117,000 chemists and chemical engineers reflecting a broad spectrum of academic, governmental, and industrial professional pursuits. Approximately

60 percent of the membership is employed by industry, 25 percent by academic institutions, and 15 percent by governmental and nonprofit institutions.

The Society was founded in 1876 and chartered as a nonprofit, scientific and educational organization by an Act of Congress signed into law on August 25, 1937. Under its National Charter, the Society is charged with the responsibility to encourage in the broadest and most liberal manner the advancement of chemistry and the promotion of research in chemical science and industry "thereby fostering the public welfare and education, aiding the development of our country's industries, and adding to the material prosperity and happiness of our people."

The Charter imposes an obligation on the Society to provide assistance to the government in matters of national concern related to its areas of competence. Since one of the objectives of our Federal Charter is the promotion of research, we appreciate the opportunity that has been given to us today to comment on federal patent policy.

Statement
Of
John E. Maurer
Director of Patent Department
Monsanto Company
St. Louis, Missouri

Before the
Science, Research and Technology Subcommittee
of the
Committee on Science and Technology
U. S. House of Representatives

October 17, 1979

The principal point of my remarks today is the need for a government patent policy that provides exclusivity to the innovator. You can see from the chart which is attached to copies of my testimony that patent exclusivity is a vital link between a government funded invention and the tangible public benefit. The chart also shows you why: Any innovative process contains risks. And the promise of exclusivity is necessary to equalize some of the risk. Let me explain:

- The chance of success for any one innovation is highly questionable. This chart depicts one idea traveling all the way through the innovation pipeline; however, for every successful product, there are literally thousands of ideas which fail. At Monsanto, one successful pesticide represents 10,000 compounds which were considered and discarded for some reason along the way. This could be because they failed to perform as expected in the field, because they couldn't meet health and safety criteria, or the manufacturing process was uneconomic.

- For every dollar spend in research on a project, ten more dollars are needed to carry that project through

the pipeline to the public. You can see, then, that government R&D funding really only involves a very small percent of the total investment.

• The average length of time from idea to public product is at least ten years, often longer. (And most of that time is innovation, not invention. For example, Monsanto's ACRILAN acrylic fiber took 19 years to perfect, ASTROTURF stadium surfaces took 10 years and the simple zipper took 27 years. Again, note that government involvement covers only a very small part of the total time for an innovation to occur.) Even with promise of exclusivity, it is a big decision for a businessman to support a project which cannot hope to show a profit for a decade.

At Monsanto, ideas for the innovation pipeline come from several sources: Our own laboratories, university researchers and small businesses.

As a matter of course, scientists in Monsanto's research laboratories are constantly seeking innovative ideas which will improve our processes or products or carry the company into new businesses.

Monsanto also looks to research that is underway in academic laboratories. We have a variety of arrangements with a number of universities but one in particular stands out. About six years ago, Monsanto entered into an agreement with Harvard Medical School to conduct a joint biomedical research project. The Harvard investigators had already received some government funding, but Monsanto committed

\$24 million more in addition to technological expertise and people. Because Harvard had an Institutional Patent Agreement from the Department of Health Education and Welfare, Harvard was able to give Monsanto the needed right to commercialize inventions. Harvard and the government retained march-in rights if we fail to commercialize under our exclusive licenses on Harvard inventions, and arrangements also exist for royalty payments to the university.

Other research in which Monsanto is interested is that conducted by small businesses. Through a New Ventures Development group, Monsanto seeks out small high technology businesses suitable for partial funding or even acquisition. An example of this approach is the just-announced merger of Radiation Dynamics, Incorporated, into a Monsanto subsidiary. Incidentally, that company's initial success was rather significantly due to a patented invention.

I mentioned these three sources of Monsanto's innovations just to point out the diversity of routes which exist, and how we are involved in them.

In most cases, Monsanto does not consider a research project unless it has some relation to existing Monsanto technology, products or our technical marketing skills, and we feel that research results can be moved successfully through the innovation pipeline. However, sometimes the risk is simply too great.

Certain areas of technology are not promising enough to attract private funding. However, where the

public need is perceived to be sufficiently great, the government steps in with financial support for research. Examples of such technological risk or uncertain profitability are coal gasification, basic cancer studies or other energy and health research investigation. However, when government-funded research in these areas produces an invention, some incentive usually is necessary to move that invention from the laboratory into the development sector. That, I believe, is the purpose of granting exclusive rights.

The government must arrive at patent policies that are most likely to complete the innovation process. This is best done by attracting private funds and expertise to move the publicly-funded invention along the pipeline to where it can begin to meet public needs as a commercial product. In this connection, patent exclusivity is equally important for research done in universities, small businesses and large businesses. In fact, large businesses are often the only places which have the skills for some types of research and resources to support a long-term innovation. It simply would be self-defeating to limit a sound patent policy to only universities and small businesses. If that happens, many options for valuable innovations will fall by the wayside and the government will get less than a full return on investment. The public will receive no benefit whatsoever for supporting that research.

I wish to speak now on five principal issues concerning the proposed legislation:

- 1) Title. Who should have title to the invention?

Theoretically, it could be either government or the R&D contractor, so long as the latter has an exclusive license with the right to sublicense. Actually, however, the title should be where the invention is located -- and that would be with the contractor, not the government. The university is better motivated than a government bureau to seek out and identify inventions, to find organizations capable of commercializing, and to negotiate realistic arrangements. Larger universities are well equipped to market inventions on their own and smaller ones have access to excellent invention marketing organizations. Small and large businesses, of course, have intimate knowledge of their own capabilities. In other words, put the title where the knowledge and action are located. This will both enhance the chances of success and reduce the government's costs.

- 2) March-in rights. These are appropriate.

Ordinarily in private industry a license agreement provides specific incentives towards commercialization, and the right for the licensor to find others to do it if the exclusive licensee does not undertake commercialization in a reasonable

time. In cases where government holds the patents, the government's right to march-in should realistically recognize the lead time necessary to commercialize an invention.

This is especially long when regulatory approvals must be obtained, and S. 414 properly takes this into account.

As I mentioned earlier, it is often not realized how long a time period is required between invention and successful innovation. An interesting review of many of these studies, and discussion of the various stages of innovation, is found in an article by L. E. Klein in LES NOUVELLES, Volume XII No. 1, March 1977, pages 12-16, which is attached to my testimony.

- 3) Pay-back. When one licenses an invention to another in industry he expects some kind of "pay-back." The amount of pay-back normally bears little or no relationship to the cost of the research which resulted in the invention; rather, it recognizes the value of the invention as proved in the marketplace.

Similarly, a university also needs the incentive of royalty or other income from licensed inventions -- to reward the efforts required to indentify an invention and to find someone to exploit it. In addition,

this return of a portion of the sales of a product in royalties or some other form of pay-back can serve to support the university's R&D or other educational goals. Some kind of pay-back could also be provided to the government agency which funded the research originally -- but care must be taken that any such arrangement does not place a monetary or administrative burden on the innovator and thereby stifle the innovation.

- 4) Background rights. The granting of a license by a contractor or a licensee under patent or technology previously owned by him should not be a requirement of government patent policy. If background rights were required it would significantly inhibit the number of innovators willing to become involved with inventions resulting from government funded R&D, and thus reduce the chances for successful innovation.
- 5) Individual inventor. S. 414 is the only one of the three principal bills that specifies particular treatment of the individual inventor: it requires that a non-profit organization (but not a small business) share royalties with its inventor. Although this is already common practice with many universities, it

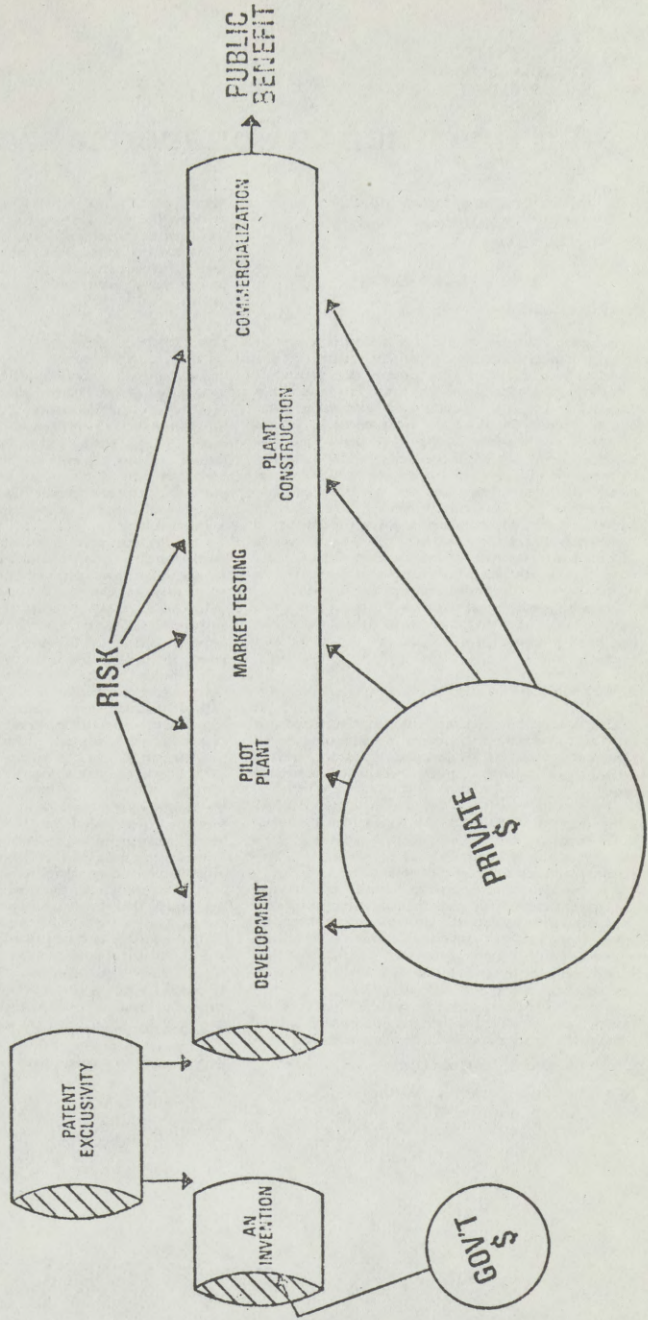
does not seem wise to standardize these arrangements. Circumstances vary so much and so many different factors enter into compensation and incentives, that this matter should be left to the discretion of the various organization themselves.

I hope that the points I have made will be useful to the subcommittee to fashion a coordinated and unified government wide patent policy which

- o permits any contractor to retain title to inventions resulting from federally sponsored grants or contracts;
- o retains royalty-free rights for the Government to use the invention for Governmental purposes;
- o gives the Government "march-in" rights;
- o provides sufficient periods of exclusivity to permit the contractor or his licensee to recoup the investment.

These provisions are essential if the results of federally-sponsored R&D are to be given the best chance of reaching the consumer. And that is vital: if the consumer does not receive any tangible benefits from the research, then the government has not completed its job and has not been a good steward of the taxpayer's money.

INNOVATION PIPELINE



From Invention to Commercialization

Evidence doesn't support popular notion that technological progress is accelerating

BY L. EDWARD KLEIN*

INTRODUCTION

The general purpose of this brief review is to present some basic observations about the time required for the so-called technical innovation process (the process of translating technical knowledge and invention into economic reality). The use of the word "innovation" is important because the literature today seems in general agreement that whereas *invention* is getting the idea, *innovation*, or development, is overcoming all the hurdles to its economic use.¹ Jewkes² prefers the word "development" rather than "innovation" and points out that new "inventions" are sometimes needed when further "development" is blocked because existing technology is inadequate. He points out that drawing too sharp a line is as foolish as trying to determine whether twilight is night or day, yet he insists there is a fundamental distinction between "invention" and "development" (or innovation).

The specific purpose of this review is to provide a fact basis on this issue so that various national policies on the length of protection for patents can be intelligently assessed.

A WORKING HYPOTHESIS

This paper will provide further support for a "proposition" put forward by Bright several years ago that *the full process of technological innovation usually takes upwards of 10 years, and a quarter of a century is not an uncommon time.*³

In stating his case Bright used the word "proposition" rather than "law" because there are exceptions and sometimes important ones. Nevertheless "proposition" does assert some force and permits a reasonable degree of confidence for the establishment of policy.

It is also useful to use the word "radical" in describing the type of technological innovation dealt with here even though this word tends to change its meaning from one institution or situation to another. In short, what is dealt with here are significant or "radical" innovations which would tend to be the basis for important patent estates of real significance in setting national policy.

In general, the time period referred to in Bright's "proposition" will be defined as the time from the initial idea, when patent applications are generally made, until com-

mercial practice is far enough along so that gross profits in any one year will cover expenses for that year; in other words when annual net income covers annual expenses. (This happens before gross profits will have reached the level to defray previous research, development and other patient money inputs for the same product in previous years.)

HISTORICAL EXAMPLES

A classic case often cited is that of the Xerox copier. According to Bright³ the inventor Carlson began his work in 1934, and this innovation did not reach sufficiently broad use to break even financially until 1955-1957. Thus some 20 years passed before the innovation could be termed a success, and even here these 1955 sales were not for office copying but rather for making lithographic plates. If one were to consider Carlson's goal — the office copier — another 5 years was required and a quarter of a century went by.

It is sometimes pointed out that a classic exception to the time usually required for the innovation process is that of atomic weapons development in the United States where the government picked up the innovation after the initial development of theory and carried out multiple approaches to the development on a massive scale. Note, however, that in the follow-on case of nuclear electric power for civilian use commercialization was reached only recently. Nuclear electric power has been over 20 years in going from invention to commercialization.

Brown has made some observations based on original case histories compiled by Jewkes on a number of major inventions in the chemical, mechanical and electrical area over the past 50 years. Of 20 major chemical innovations of the 20th century, less than half show a time interval of less than 10 years between conception and innovation. Table I following combines Brown's data with additional information from Jewkes' case histories. In some cases the year of commercial success is estimated from the general flow of events since the data do not always include precise information on commercial success and profitability.

Parenthetically, national origins of the inventions and innovations show that not all inventions are innovated in the same country where they are invented.

Brown further observes that a majority of 27 major electrical and mechanical innovations of the 20th Century showed a time lag of more than 10 years as shown in Table II which is again a composite of data from the Brown paper and the Jewkes case histories.

A Battelle study provides further data on the duration from initial conception and first realization for each of 9 important developments; these are shown in Table III.⁵

*Director, Licensing, Monsanto Company, St. Louis, Mo.

TIME INTERVAL BETWEEN INVENTIONS AND INNOVATIONS

Selected Major Chemical Inventions of the Past 50 Years

Innovation	Date of Invention	Date of Commercial Success	Interval in Years
Bakelite	1909 (U.S.)	1913 (U.S.)	4
Cat. Cracking	1925-30 (Fr.)	1941 (U.S.)	11+
Cellophane	1912 (Fr.)	1924 (Fr.)	12
Crease Resist.			
Fab.	1929 (Gr. Brit.)	1932 (Gr. Brit.)	3
DDT	1939 (Sw.)	1942 (Sw.)	3
Hardening of Liquid Fats	1902 (Ger.)	1909 (Gr. Brit.)	7
Insulin	1920 (Can.)	1925 (Can. & U.S.)	5
KODACHROME Film	1923 (U.S.)	1935 (U.S.)	12
Methyl Methacrylate Polymers	1930 (Can.)	1936 (U.S.)	6
Neoprene	1925 (U.S.)	1932 (U.S.)	7
Nylon	1928 (U.S.)	1939 (U.S.)	11
ORLON Fiber	1942 (U.S.)	1948 (U.S.)	6
Penicillin	1928 (Gr. Brit.)	1944 (U.S.)	16
Polyethylene	1933 (Gr. Brit.)	1944 (U.S.)	11
Silicones	1904 (Gr. Brit.)	1943 (U.S.)	39
Streptomycin	1939 (U.S.)	1944 (U.S.)	5
Synthetic Detergents	1913 (Ger. & Sw.)	1930 (Ger. & Sw.)	17
Polyester Fiber	1941 (Gr. Brit.)	1953 (U.S.)	12
TE Lead	1921 (U.S.)	1930 (U.S.)	9
TEFLON Plastic	1939 (U.S.)	1945 (U.S.)	6

Table I

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For some of the innovations in the Battelle study the time from conception to realization was very short, as in the case of the videotape recorder which was developed within six years from its initial conception. Other innovations covered a much longer time span. From the small sample of innovations studied, according to Battelle, there is no evidence that the period from conception to realization is becoming shorter. The three innovations completed since 1960 averaged 19 years, and one of them (the heart pacemaker) involved the longest time span. The average for the nine innovations studied was 18 years.

An explanation of the striking difference between the longest duration and the shortest gives some insight into the variety of circumstances surrounding innovations. The development of the heart pacemaker, which was 32 years in the process, faced a number of inhibiting influences, including social taboos, active opposition within the medical profession and outside it, and the diversion of medical resources away from this project during World War II. Yet its more serious obstacle was probably the absence of necessary technology, as in electronics and materials. On the other hand the videotape recorder required only existing technology and so proceeded from first conception to first realization in six years.

With all of the data so far shown, it is of little wonder that with the time lags and high interest rates that innovation costs today are indeed formidable. For example, in the field of agricultural chemicals the estimated cost per pesticide for discovery and development is \$7.6 million which includes the cost of compounds which were not

commercialized. Schwartzman has placed the average development cost per single new pharmaceutical entity at \$24.4 million in 1973.⁵

Agricultural Chemicals

A recent industry study in the field of agricultural chemicals in the U.S. has shown that compounds registered by the Environmental Protection Agency (EPA) in 1974-75 had been discovered an average of 97 months (or eight years) previously.⁶ Within this 97-month period the average time from first submission of the experimental registration petition to the granting of full registration took 42 months. Further time is required for the development of data on efficacy, environmental impact, residue and metabolism, toxicology and process. Preparing and conducting so-called two-year feeding studies takes from 2 1/2 to 3 years.

Private communication from Monsanto Company showed elapsed times from year of first conception to year of commercial success on seven projects varied from 6 to 22 years and averaged 12 years as shown in Table IV.

REASONS FOR LENGTH OF TIME REQUIRED

When one examines in detail what must occur in the innovation process, it becomes obvious why the proposition of at least a 10-year span for the innovation process is valid and how infrequently exceptions occur in the case of relatively "radical" innovations. Bright⁷ has proposed

TIME INTERVAL BETWEEN INVENTIONS AND INNOVATIONS

*Selected Major Electrical and Mechanical Innovations
of the Past 50 Years*

Innovation	Date of Invention	Date of Commercial Success	Interval in years
Air Cush. Vehicle	1955 (Gr. Brit.)	1968 (Gr. Brit.)	13
Ball-point Pen	1938 (Hung.)	1944 (Argentina)	6
Cont. Casting of Steel	1948 (Ger.)	1954 (Ger.)	6
Cont. Hot Strip Rolling	1920 (U.S.)	1926 (U.S.)	6
Cotton Picker	1910 (U.S.)	1942 (U.S.)	32
Diesel-Electric	1903 (Gr. Brit.)	1934 (U.S.)	31
Elect. Digital Computers	1942 (U.S.)	1951 (U.S.)	9
Float Glass	1952 (Gr. Brit.)	1960 (Gr. Brit.)	8
Fluorescent Light	1923 (Ger.)	1938 (U.S.)	15
Gyro-compass	1865 (Fr.)	1911 (Ger.)	46
Helicopter	1909 (USSR)	1932 (U.S.)	23
Hydro. Transmission	1930 (U.S.)	1937 (U.S.)	7
Jet Engine	1929 (Gr. Brit.)	1943 (Gr. Brit.)	14
L.P. Record	1945 (U.S.)	1948 (U.S.)	3
Oxygen Steel Making	1939 (Switz.)	1952 (Austria)	13
PHOTON Photo Sett. Machine	1946 (Fr.)	1962 (U.S.)	16
Plastic Tape Rec.	1929 (Austria)	1940 (Ger.)	11
Power Steering	1925 (U.S.)	1931 (U.S.)	6
Radar	1922 (U.S.)	1935 (France)	13
Radio - Heterodyne System	1905 (U.S.)	1918 (U.S.)	13
Safety Razor	1895 (U.S.)	1906 (U.S.)	11
Self-Wind. Watch	1922 (Gr. Brit.)	1930 (Swiss)	8
Shell Moulding	1941 (Ger.)	1947 (U.S.)	6
Stainless Steel	1911 (Ger.)	1920 (Gr. Brit.)	9
Television	1919 (U.S.)	1941 (U.S.)	22
Xerography	1934 (U.S.)	1955 (U.S.)	21
Zipper	1891 (U.S.)	1918 (U.S.)	27

Table II

DURATION OF THE INNOVATIVE PROCESS
FOR NINE INNOVATIONS

Innovation	Date of Invention	Date of Commercial Success	Duration, Years
Heart Pacemaker	1928	1960	32
Hybrid Corn	1908	1933	25
Hybrid Small Grains	1937	1956	19
Green Revolution Wheat	1950	1966	16
Electrophotography	1937	1959	22
Organophosphorus Insecticides	1934	1947	13
Oral Contraceptive	1951	1960	9
Magnetic Ferrites	1933	1955	22
Video Tape Recorder	1950	1956	6
Average Duration			18.2 years

Table III

DURATION OF THE INNOVATIVE PROCESS FOR SEVEN INNOVATIONS

Project	Date of Invention	Date of Commercial Success	Duration, Years
Early grass specific herbicides	1950	1960	10
ACRILAN acrylic fiber	1943	1962	19
ASTROTURF stadium surfaces	1963	1973	10
ASTROTURF door mats	1965	1971	6
SKYDROL hydraulic fluid	1948	1955	7
CEREX non-woven fabric	1963	1973	10
Polyelectrolytes	1943	1965	22

Table IV

that the innovation process can be broken down into about eight stages, and this alone would indicate that eight years would be a very conservative estimate. In many instances one step alone might involve several years of effort.

Bright's various stages are outlined as follows:

Stage 1 — Scientific suggestion, discovery and observation, or recognition of need

Most innovations seem to begin with the latter, but there are notable exceptions such as atomic power, the laser, and penicillin.

Stage 2 — Development of theory or design concept

While early theories or designs usually are imperfect, their definition leads to a focus of effort along certain lines. In many technical innovations, new scientific theory is not necessary or may be late in coming. Then a combination of known science and/or technology — a design concept — is the goal of this stage.

Stage 3 — Laboratory verification of theory or design concept

This is the laboratory experiment which simply confirms the validity and the principle suggested in Stage 2.

Stage 4 — Laboratory demonstration of application

Here the concept is first embodied in a breadboard model of the device, a sample material or a laboratory model of the process as it would be used (hopefully) by society. In other words the concept is demonstrated in application form.

Stage 5 — Field trial or full scale trial

This stage is defined as the achievement of technical success under normal operating conditions. In the specific case of such things as agricultural chemicals and pharmaceuticals, field trials and clinical testing also require time-consuming government and environmental impact clearances.

Stage 6 — Commercial introduction

The line between stages 5 and 6 is sometimes far from clear and may be shifted simply by intent. The implication meant for Stage 6 is that the innovation has been purchased in the belief that it is now reliable enough for the marketplace. Here again in such products as

agricultural chemicals and pharmaceuticals additional governmental registration requirements must be documented and met.

Stage 7 — Widespread adoption (Initial Commercial Success)

There are several ways that the success of this stage can be defined, but the one used here is the "annual break-even point" or the time when annual gross profits at least cover annual expenses for that year. Included in this stage is one of the most treacherous of all steps for manufactured products: production startup.

Stage 8 — Proliferation

The innovation is used in a number of devices, and its principle is adopted for other purposes (new uses, new materials, etc.) The innovation spreads in two ways: (a) the original device is applied to a number of new uses (on more than an experimental scale) and (b) the technical or scientific principle is applied to other machines, processes or materials (e.g. for "a", to consider how radar spread from military uses to commercial planes, ships, air traffic control, police cars and private boats; for "b" consider how microwave technology of radar was applied to commercial heating, cooking to microwave communications systems).

IMPORTANCE OF THE PATENT SYSTEM TO THE INNOVATION PROCESS

Although it is not the purpose here to deal broadly with an overall defense of the patent system, there is one philosophical aspect of particular importance to the thrust of this paper. Patents tend to serve two different but closely related functions:

1) Incentive for the inventor.

2) Protection for the innovator (or entrepreneur-developer).

As Jewkes puts it, for the individual inventor or small producer struggling to market a new idea, the patent right is crucially important. It is the only resource he possesses, and fragile and precarious as his rights may be, without them he would have nothing with which to establish a claim to a financial reward for his work. The sale of his idea directly or the raising of capital for exploiting the

March 1977

idea would be hopeless without patent.² Just as this paper has shown that the length of time required in the innovation process is not diminishing, it is equally apparent that the day of the individual inventor is far from over. Of the 47 major innovations listed in Tables I and II, 32 or 68% involved independent inventors.

Other systems have been proposed for rewarding the inventor, such as certificates of invention granted to inventors in socialist countries where all initiatives are controlled by the state and where a competitive system of private enterprise does not exist. A certificate of invention, however, provides no exclusive licensing rights and therefore is simply not an institution designed to encourage an entrepreneur or developer to assume the huge risk involved during a 6-10-25-year period of innovation.

Competitive System

The patent system is most robustly defended and embodies the most extensive monopoly rights in those countries which most tenaciously adhere to the competitive system of private enterprise. The U.S., for example, is one of the few countries where the patentee has the right to withhold his patent from use entirely without bringing into action public provisions of compulsory licensing except in certain limited areas of public interest. Even in areas of public interest, however, recent U.S. government policies have demonstrated an interest in permitting exclusive licenses of government-held patents for the specific purpose of permitting private industry to justify high-risk investment in the innovation or development process.

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At the same time, although it is important to the understanding of the system to distinguish incentive for the inventor from protection for the innovator, it is equally important to realize that these two functions are intimately related. Otherwise there would be no way for the inventor to exploit his idea, either by raising the capital to do it himself or by licensing his rights on an exclusive basis to some developer willing to take the risk. The point should not be lost that practically all of the examples cited in this paper were innovated (or commercially developed) in countries with competitive systems of private enterprise and strong patent protection. The tables show that most of these commercial reductions to practice occurred in the United States where patent law, although undergoing gradual evolution over the years, has remained essentially unchanged in principle for 200 years. British patent practice dates back to the Statute of Monopolies in 1624 which established for "the first and true inventor" rewards in the form of grants of conditional and limited monopolies.

CONCLUSIONS

In spite of the popular notion that all technological progress is accelerating, the evidence is that not much has changed or seems likely to change, in the 10-25-year time span assumption of the proposition posed here. Even in the exceptional case of atomic weapons in which the U.S.

government picked up the innovation after Stage 2 (development of theory) and carried out multiple approaches to development through Stages 4, 5 and 6 on a massive scale, this could be the exception that proves the rule; for nuclear power for civilian use, Stage 7 was reached only recently. Nuclear power has been over 20 years in going from Stage 2 to Stage 7, despite the head start given by the development of atomic weapons.

The manager or entrepreneur dealing with a radical or patentable invention presented to him in Stage 4 (laboratory application) must think of supporting the project for roughly a decade to reach significant profits.

At the same time it must certainly be acknowledged that a precise determination of what the patent term should be is not an easy question. It is worth noting that most of the developed free world either has or will have a term of 20 years from filing. This is true of the European patent and is likely to be true in the U.S. In Japan the patent term is 15 years from publication for purposes of opposition, but no longer than 20 years from filing. All of these terms have been selected after long periods of successful experience with the patent system.

Professor Ward S. Bowman, Jr. in his book dealing with a legal and economic appraisal of the patent and antitrust laws, provides a useful discussion of the subject on pages 48-51.⁷ His conclusion is that, while a term of 17 years from issue is arbitrary, it is best judged by determining whether, on the whole, the protection of patentable information is over-rewarded or under-rewarded. His conclusion is that the latter is far more likely than the former.

Reducing or eliminating the term for patent protection will destroy an important incentive toward improving the level of technological development in any country, developed or developing. Critics of the patent system, in their concentration on the rights of the inventor, seem to overlook the incentives the system provides to the innovation (or development) process in a competitive free-market economy. Although reward to the inventor is important, particularly for reasons of fairness and ethics, it is risk protection for the innovator which fuels the engine of national economic development. In addition, it is the inventor's ability to offer exclusive rights under his patents that is a major factor in establishing their value.

NOTES

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2. Jewkes, Sawers and Stillerman "The Sources of Invention", Second Edition, W. W. Norton 1969.
3. Bright, James R. "Some Management Lessons from Technological Innovation Research", *Les Nouvelles*, November 1969, Volume 4, No. 5.
4. Globo, Levy and Schwartz, "Key Factors and Events in the Innovation Process", *Research Management*, July 1973.
5. David Schwartzman, "The Expected Return from Pharmaceutical Research", Washington, American Enterprise Institute for Public Policy Research, 1975, p. 28.
6. Environmental Protection Agency Report #EPA-540/9-75-018, February 1975, "Evaluation of the Possible Impact of Pesticide Legislation on Research and Development Activities of Pesticide Manufacturers", Aldred E. Wechsler, Joan E. Harrison and John Neumeyer (Consultant).
7. Ward S. Bowman, Jr. "Patent and Antitrust Law, a Legal and Economic Appraisal", University of Chicago Press, 1973.

STATEMENT

EDWARD J. BRENNER, PRESIDENT

ASSOCIATION FOR THE ADVANCEMENT OF INVENTION & INNOVATION

(A²I²)

ON

GOVERNMENT PATENT POLICY

BEFORE THE

SUBCOMMITTEE ON SCIENCE, RESEARCH AND TECHNOLOGY

OF THE HOUSE

COMMITTEE ON SCIENCE & TECHNOLOGY

OCTOBER 17, 1979

S. 1215 SCHMITT; H.R. 5427 ERTEL;

S. 414 BAYH-DOLE; H.R. 8596 THORNTON (95th CONGRESS)

Paul L. Gomory
Director and Advisor
(202) 785-1252

Edward J. Brenner
President
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THE ASSOCIATION

Our Association appreciates the invitation to testify at the hearings today.

The Association for the Advancement of Invention & Innovation has been established to catalyze and coordinate efforts in the private sector to promote incentives for invention and innovation in the United States in particular and in the world in general. It is dedicated to the proposition that invention and innovation provide the life blood to our national economy and are essential for increasing the productivity and competitiveness of industry in the international arena and for solving our national problems in the fields of health, safety, transportation, housing, defense, the environment and the like.

The Association is basically a prime mover in generating positive and constructive programs to enhance the climate for invention and innovation and in marshalling the necessary support by individuals, companies and organizations to achieve the desired governmental or public action. A major basic function of the Association is to serve as an important public spokesman in support of the importance of invention and innovation to the national interest and national goals. Thus, the Association is basically in the business of the advancement of invention and innovation. Its interests extend to broad national issues which affect or are affected by invention and innovation and to governmental programs or legislation in the fields of patents, taxation, anti-trust, regulation, finance and the like which have a bearing on invention and innovation.

Ideas for constructive programs to be supported by the

Association may originate from members of the Association or from other organizations interested in invention and innovation. The Association is primarily interested in supporting constructive new programs from any source which can be expected to receive relatively broad support. It is not the mission of the Association to dissipate its efforts on proposed programs or projects which are not realistically achievable. Close liaison is maintained with business organizations, trade associations, professional societies, inventors' groups, patent law associations and other organizations to solicit their suggestions for programs to be supported. Members of the Association include its directors, businessmen, scientists, engineers, lawyers, patent attorneys and agents, educators, patent examiners, economists, former government officials who have been active in the field of invention and innovation, and others who support the objectives of the Association for the support of approved Association programs.

Principles -- Basic Position

Constitutional Provision -- Mandate

The principles upon which our patent system is based are drawn from interpretation and understanding of Article 1, Section 8, Clause 8 of our Constitution.

The principles apply equally well to all of industry at all stages.

The patent system basically provides rewards to procure the disclosure of new information relating to invention or technology

which then can be innovated, i.e., brought to commercial or other beneficial application on behalf of the public.

The ultimate reward of invention and innovation results in growth and production of products useful to the consumer. In this chain of events there are created jobs, the payment of taxes, etc.; consumer goods, and as we know, help to fight inflation which in turn improves our economic and consequent military posture.

It is our basic position that in the best interests of our Country the government ordinarily should not own patents.

Government ownership of patents is distinguished from that of an individual or organization competing in the marketplace because it denies the incentive and encouragement of competition to invent offered by our patent incentive system.

Government should not be in competition for a share of the market by acquiring title to patents or inventions. As will be seen in that which follows, it is inescapable that title vested in the government very strongly tends to negate the use of the invention because something that is available to all is not protected specifically and exclusively to those who would invest their time, funds, and effort to innovate the invention covered in the patent. This is because, to the extent government enters into the field by owning patents it is removing an area which otherwise would be fertile for competition and in which the patent could be used as a competitive tool.

The government supposedly holds its patents for the benefit of the public because the government is for the benefit of the public and is created by the public for the public.

Consider for a moment the government suing to enjoin the use of an invention which has been patented, the patent being owned by the government. This would result in the anomaly that the government would be suing to enjoin the infringer from innovating the invention, i.e., bringing it into the commercial marketplace in competition with other goods of like character, thus denying the consumer the added choice and the price competition inherent in such an enjoined operation.

Our position is consistent and has been consistently to provide a better climate for invention and innovation.

As we view it, the issue is whether it is better for the consumer, the ultimate consumer, the citizen if you will, to have title vest in the government or in the contractor, admitting that the government has paid a sum of money to have a problem solved or a plant operated and this has resulted in the making of one or more patented inventions.

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The report of the Advisory Subcommittee on Patent and Information Policy of the Advisory Committee on Industrial Innovation, established as part of the Domestic Policy Review in its Proposal V (12/19/78) stated:

"Experience has shown that the government as a purchaser or consumer of goods and services, is not in a position to take advantage of its ownership of patents to promote enterprise. Private companies, on the other hand, who are in a position to utilize the patent grant are ordinarily unwilling to take a nonexclusive license under a government-owned patent and commit the necessary funds to develop the invention, since it has (sic) no protection from competition. This is a major reason that over 90 percent of all government

patents are not used. Another important reason is that the government obtains patents on technology which, in the opinion of the private sector, does not provide an attractive business opportunity."

The advisory subcommittee, quoted the Harbridge House Report, supported by the Federal Council for Science and Technology, and stated:

"Government ownership of patents with an offer of free public use does not alone result in commercialization of research results.

'A low, overall commercial utilization rate of government-generated inventions has been achieved; that rate doubled, however, when contractors with commercial background positions were allowed to keep exclusive commercial rights to the inventions.

"Windfall profits" do not result from contractors' retaining title to such inventions.

'Little or no anti-competitive effect resulted from contractor ownership of inventions because contractors normally licensed such technology, and where they did not, alternative technologies were available.'"

We thoroughly subscribe to the advisory subcommittee's view which we think is so well expressed we quote it further, in part:

"The idea that what the government pays for belongs to the people is not only appealing, it is true! The question is: What instrumentalities can be brought to bear to maximize the possibilities that the people will indeed have available the fruits of their government's expenditures? Nonexclusive licenses to undeveloped inventions, offered by the government or anyone, have few takers, whereas patent ownership or exclusive licenses of sufficient duration are much more likely to attract the money and talent needed to make and market real products to meet consumer needs.

"If the results of federally sponsored R&D do not reach the consumer in the form of tangible benefits,

the government has not completed its job and has not been a good steward of the taxpayers' money. The right to exclude others conferred by a patent, of an exclusive license under a patent, may be the only incentive great enough to induce the investment needed for development and marketing or products. Such commercial utilization of the results of government-sponsored research would insure that the public would receive its benefits in the way of products and services, more jobs, more income, etc. The cost of government funding will be recovered from the taxes paid by the workers and their companies.

"Therefore, all the members of this subcommittee recommend transferring the patent rights on the results of government-sponsored research to the private sector for commercialization. In the case of university or private contractor work sponsored by the government, the members of this subcommittee recommend that title to the patents should go to the university or private contractor, but some members feel the government should have 'march-in-rights'."

Further, in his statement, May 16, 1979, Page 15, Mr.

Elmer B. Staats, Comptroller General of the United States, stated to the Senate Judiciary Committee, on S. 414, a bill on which we comment today, that:

"...it has been the experience of agencies with policies of granting title to the contractor that a willing contractor-inventor is more likely to expeditiously commercialize an invention than a Government licensee"

and on Page 16, that

"...we believe a clear legislative statement of a uniform, Government-wide patent policy is long overdue."

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It is an historical fact that all businesses start small and that they are conducted to make a profit in competition with others seeking to do the same.

Inter alia it might be noted that what should be considered is the percent return on assets of any business and this regardless of "profits" which in today's inflationary period do not reveal the true story. (It is known that accountants are now speaking in terms of recasting accounting not only to show replacement costs which are ballooning due to inflation but all other items in terms of reflecting accurately the part that inflation plays in the balance sheets).

So what can be termed a small business, especially in view of the U. S. Code's general definition and the many rules or regulations thereunder, leaves us in a situation today in which we are limited to generalities on sizes and how these are best determined in the public interest. Suffice to say "small" is not necessarily that which the public will think of in absence of facts. S. 414 at Section 201(h) defines "Small Business Firm" by simple reference to the law and the manifold implementing regulations of SBA. This introduces the need for interpretation and can adversely affect the desire to seek to qualify as a contractor.

The U. S. Patent Incentive System gives a reward to the inventor because he has contributed to the Country - to the sum total of knowledge. The government spends the taxpayer's dollar and should get what it pays for, it should have the best.

Basically, then, the capability to deliver the best for the dollar should be the principal principle guiding the government contractor when seeking to get work done by a private industry contractor.

The attached issue of ACTION* and press releases

*MAY-JUNE 1979 issue attached to original only. All other issues exh.

published by our Association further reflect our views or explain how our system, the best in the world, works and how it should apply equally to all. Further, the copies of ACTION and press releases attest to the consistency of our position which as stated is to promote the progress of the useful arts by improving or promoting the climate for all in which such progress can be made, specifically to make the best use of our Patent Incentive System.

It is a fact that the contractor which should be approved by the government is one who has a background of knowledge and expertise with which to solve whatever is the problem sought to be solved by government on behalf of the people. Such contractor quite naturally will hesitate to bid on a contract if the very cream of his know-how and expensively trained personnel - the inventions which might, but won't necessarily, be made during the operation of the project - will vest in the government and, in fact, can be and usually will become available free of cost to competitors against whom there is no action by way of injunction or otherwise because the patent has vested in the government.

Thus, the vesting in the contractor of title to inventions made during execution of a contract is the best incentive to cause the best organization to bid to do the work. The amount of cost to the government (the people) is negotiated in light of this fact.

Basically and importantly, then, the tax money should be well spent so that the government does in fact get what it pays for and it should pay only for the best.

A²I² is interested and committed to providing a better climate for invention and innovation, i.e., to the enlightened

long term interest of our Country. A²I² is, therefore, interested that there be the greatest incentive to contract when title to invention is involved.

Putting the principle that the government should get what it pays for as first in mind, it can be seen that there should be no discrimination with respect to factors based on size, however this term is given substance or defined.

In passing, we note that virtually all businesses and even non-profit organizations are both larger than some others and smaller than some others.

Legislation should be directed to and should provide the incentive for the best-equipped or most capable to bid.

The businesses of America are largely owned by shareholders and very few shareholders own more than a very small fraction of a business. Thus, the ultimate shareholders or investors are essentially the same kind of individuals who are investors in both large and small businesses. Many hundreds and thousands if not millions of these people put in their funds, i.e., their work product after taxes, to create jobs with their capital investment.

Indeed, it is difficult to draw the line between what is truly a small business, and what is a large business, both appellations being, in many instances, highly arbitrary, in spite of statutory or other definition, because such factors as rate of growth, percentage of return on assets, etc., are involved and are not accounted for by mere statements of size. Indeed, in terms of numbers of persons as shareholders, and therefore as citizens, there are many more involved as shareholders in the larger businesses than

in the smaller businesses. On this basis, it can be argued that legislation favoring smaller businesses is highly discriminatory in favor of a lesser number of people than the number of those who own the larger businesses. The investment per shareholder in different size businesses very likely would show the arbitrariness here mentioned. Further, large companies, in fact, may include or be made up of a number of separate individual small businesses.

However, A²I² is not seeking to have the government favor larger businesses over smaller businesses or smaller businesses over larger ones.

It bears repetition to state that we are interested primarily and only in the provision of a better climate with which to promote invention and innovation, even as mandated in the Constitutional provision earlier set out.

A²I², therefore, believes those most capable to perform for the taxpayer's dollar should see the incentive to bid for government contracts, as earlier stated.

In some instances this will mean that a high technology, smaller but innovative organization may be the best to be selected to accept a government contract and in others an organization composed of more persons and having larger assets but the best capability to perform may be the one selected to perform the contract. Large projects require large organizations.

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The patent system should apply equally to all even as all our laws ought to do.

Incentive should be held out for conduct which will

benefit our Country, indeed, best benefit it.

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The larger a business is, the more smaller suppliers it will ordinarily have who are supplying its needs for goods and services either directly or indirectly. Therefore, it can be readily seen that the businesses of our Country when analyzed for what they really are and how they operate or function are interdependent. It can be said safely that all businesses depend on many others some of which are larger and some of which are smaller. And as the business or organization selected for the consideration here discussed is the larger the more likely it is to have many more small business suppliers supplying it directly or indirectly.

It follows, then, that certain smaller organizations will have to be dependent on organizations that are larger and possibly some that are smaller than they are. The largest organization will have to be dependent upon hundreds of thousands of other organizations all of which are smaller and so forth. The smaller the organization the more likely it is that the number of larger organizations on which it depends will be greater.

Based upon our analysis of the actual situation, we believe the tax dollar will be best spent when there is not any discrimination regardless of the "size" of the organization.

Therefore, when the best contractor is selected, in every event the dollar will really be helping the pluralities of organizations involved to best function on behalf of the government, that is, for the people, for the tax dollar expended.

Based upon our analysis, we favor primarily a non-discriminatory type of legislation such as S. 1215 because it is an across-the-board bill. This feature appeals to us for reasons we have given. The Presidential memo of 1963, revised by the memorandum issued August 23, 1971, Federal Register, Volume 36, No. 166, August 26, 1971, recognized the need to give contractors greater rights to inventions to achieve utilization. The wisdom of the memos is underscored by Mr. Staats' testimony first above quoted. (See page 6.)

We can agree to March-in-Rights but believe that the period to elapse should be negotiated in light of factors affecting the nature of the business doing the bidding.

For example, lead-in times involved with obtaining approvals, under manifold regulations, of which there are many to be studied and complied with as is generally known, will be a factor in the negotiations to arrive at a time to be set for March-in-Rights. Years often go by before clearances are obtained either by a contractor or his subcontractor, e.g., clearances to be given by FDA, EPA, etc.

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If the Committee, and ultimately the Congress, decides to seek to favor so-called small business and non-profit organizations, then S. 414 would appear to be a reasonably good bill to enact.

However, we do not believe that there should be any pay-back provision. This is a disincentive to contract. Analysis of the risk involved and the hope for commercial rights to inventions, if any are made - inventions which have yet to be developed and innovated - is a factor which has resulted in the contract. This

is a factor which has been taken into consideration during negotiations. Once the contract is made all burdens should be lifted and the contractor permitted to proceed with dispatch to help our Country.

COMMENTS ON S. 1215 (and H.R. 5427)

We have been advised that H.R. 5427, just introduced, is identical with S. 1215. Accordingly, to the extent H.R. 5427 is in fact as advised, the comments made here apply also to this bill.

A²_I² supports S. 1215, in principle.

A²_I² views the acquiring of title by the government at the time of making of the contract, with possible subsequent waiver, as not being the full incentive which should exist initially to enter into a government contract. Thus, the possibility of waiver provided for is uncertain. The waiver must be negotiated to be obtained.

It is conceivable that a competitor of the contractor will seek to enter into negotiation of the waiver. This would be to prevent the grant of the waiver thus to keep title in the government to leave the competitor free to proceed, so to speak, under the protection of a government-owned patent on which the government would be most unlikely to sue its own citizen-taxpayer.

It is quite conceivable that the administrator and the contractor would find themselves parties defendant in an action to block waiver of title or other administrative action brought by such competitors and one can readily imagine that during discovery proceedings much of the otherwise confidential information of the

contractor and possibly even of the government would be exposed to the competitor.

Section 301 requiring acquisition of title at the time of entering into the contract under certain situations is not thought to be in the best interests of the Country, especially not in its rather broad form. Such acquisition if practiced at all should be severely restricted to only those situations of an emergency character where it can be demonstrated readily that only government intervention can be expected to yield a benefit to the public that is urgently needed and desired.

Provisions such as one or more of those of Section 301 invite expenditure of much time and funds and negotiation and even possibly litigation. Individual subsections of Section 301 are now commented on briefly.

SECTION 301(a)(1) - OPERATION OF GOVERNMENT-OWNED FACILITIES

When a government-owned research or production facility is being operated, it can be assumed the operator has been selected because of expertise. Hence, there is no reason to vest title in the government. Title in the contractor to inventions, made during the operation of the facility, should be one of the incentives to bid to contract. Thus, ownership of inventions made by the operator during his operation of the facility at a negotiated and reasonable price can and should be one of the incentives for arriving at that price. Of course, in terms of continued operation of the facility, assuming that the contractor-operator is no longer the operator, it could be continued under a non-exclusive license to the government included in the contract when negotiated and made.

SECTION 301(a)(2) - CLASSIFIED MATTER

Simply because the work is classified does not create a need for vesting title to inventions made in the government. The operator knows of the invention. Secrecy order can be issued, if secrecy is not already imposed in the making of the contract. The incentive of immediate vesting of title in the contractor should be maintained and should be available to would-be contractors who can see that in the long-term they may be able to commercialize the invention when secrecy may have been lifted.

SECTION 301(a)(3) - PUBLIC HEALTH, SAFETY OR WELFARE

Though arguable, this section is not here discussed for the sake of brevity.

SECTION 301(a)(4) - QUALIFIED TECHNOLOGY TRANSFER PROGRAM LACKING

A non-profit organization should at least be given an opportunity in the making of the contract to agree to pursue a qualified technology transfer program, and if not extant to institute the same as part of the obligation under the contract.

SECTION 301(a)(5) - IMPROVING PRODUCTS, ETC., FOR USE BY GOVERNMENT

As above indicated, the know-how, the expertise of the contractor is the reason for the selection of the contractor. An incentive for the contractor to agree to be a contractor should be title to the commercial rights and assurance that the cream of the

exercise of his expertise initially will remain with him and with the government and will not go to his competitors. It is readily understandable that a competitor will look around to acquire rights which have been passed to the government under this section. Such possibility is a disincentive to become a contractor with the government.

SECTION 301(b) - AGENCY DETERMINATION STATEMENT

As an illustration of the problems which can arise, 301(b) leaves open to negotiation, and possibly even to litigation, the "determination statement". This is the kind of complication we get into under such provisions and matters of fairness or equity may become involved.

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SECTION 302 - CONTRACTOR'S RIGHTS

Providing for the rights of the contractor and the option to retain title is, of course, supported, in principle. It is not clear to us how one would determine the compensation in the event of an exclusive license granted by the government under Section 302(b).

SECTION 303 - WAIVER

Waiver applies to those inventions to which title is vested under Section 301 as well as to those to which title is

vested under Section 302.

In passing, but as a matter of basic negotiating importance, we suggest that Section 303 should be amended to include the degree and importance of the involvement and contribution made by the contractor and those associated with him.

SECTION 303(4) - COMPETITION, UNDUE CONCENTRATION, ETC.

The agency becomes a further Anti-Trust Division or a further Federal Trade Commission as it seeks to apply its judgment under the laws to make the determination required by this subsection. Here, as earlier noted, there is the possibility of litigation, much cost, time delay, etc. This is a disincentive to seek the contract in the first place.

A²I² believes that at this point it is well to reiterate there should be maximum incentive to make a contract the price of which shall be freely negotiated. Obviously, each would-be contractor is in competition with every other contractor, in a vast majority of the cases, to give the government that which it seeks to procure and this has control on the price, especially where the expertises are closely similar.

SECTION 305 - GENERAL PROVISIONS

This subsection can serve as a serious disincentive especially to those contractors who would otherwise bid to develop or produce items which have as substantial, if not the sole, purchasing entities states and/or municipal governments.

TITLE IV

We make no comment on subsection 401 of this Title dealing with allocations of the rights of federal employees making inventions to which a contractor could have no logical claim.

SECTION 402 - ASSUMPTION OF OWNERSHIP

With reference to subsection (a)(3), it is possible that conflicts of interest will arise in view of the access by the government employee to information of the contractor. This could act as a disincentive or at least cause arms-length negotiations or arms-length "cooperation" between employees of the contractor and those of the government.

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It will be noted that many of the problems which can be readily visualized and which serve as disincentive to negotiate for a contract are eliminated by adopting as the general rule that the title to the invention made during a contract vest in the contractor leaving the negotiated price to cover the transaction in its entirety. A²I² recommends this simple, attractive procedure.

In passing, we suggest that there be incorporated into S. 1215 from S. 414, its Section 202(e) dealing with federal employees as co-inventors.

As earlier noted, A²I² supports S. 1215 in principle. Reservations as to certain of its provisions, as above discussed

have been suggested.

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Considering whether to appear before you today, one of the highly persuasive factors in favor of appearing was the now admitted, but still somewhat misunderstood, decline in industrial innovation here in the United States relative to that of some other countries, notably Japan, Germany, and possibly even Taiwan. The testimony of Dr. Betsy Ancker-Johnson, formerly Assistant Secretary of Commerce for Science and Technology (now an A²I² advisor), on S. 414 before the Senate Judiciary Committee is cogently persuasive here.

No doubt you have the statement of Mr. Tom Arnold, then President of the American Patent Law Association, made before the Subcommittee on Science, Technology, and Space; Committee on Commerce, Science and Transportation, United States Senate, July 27, 1979, on S. 1215 above discussed by us. We have read that statement and we are in full accord that the problems it points out related to a decline in industrial invention and innovation do exist and are very real indeed.

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COMMENTS ON S. 1215

We are in particular accord with APLA that cutting of the budget of the Patent and Trademark Office is not the way to go. The Patent and Trademark Office earns money which it deposits in the U. S. Treasury and which it cannot spend. Yet, its appropriations are cut. We do not seek to enter here into the PTO budget matter. We will, however, note in passing that, when one considers the importance of this most essential - which ought to be an independent - agency, a budget on the order of about \$100 million is very small. One can readily see that this small amount of money which is provided for the most essential operation of examining about 100,000 patent applications (and also for applications for trademark registration) is inappropriate especially when one subtracts from the budget money earned by the Office for Patent and other services rendered, paid into the U. S. Treasury.

Viewing the APLA statement, we are aware that the PTO is experimenting with some computerized searching. But this is a very small percentage of the overall records which need searching and which are very vast and not computerized.

This Committee, in particular, can understand the need for integrity of search files, which the PTO regretfully cannot say that it has, and the need for the now not available capability for rapidly and substantially completely searching such files.

REEXAMINATION OF PATENTS - AN IMMEDIATE SOLUTION TO A SEARCHING
PROBLEM

A much closer near-term solution to the problem to a very large extent lies in H.R. 5075, introduced by Caldwell Butler of Virginia, August 2, 1979, and in S. 1679, an identical bill, introduced by Senator Bayh of Indiana, on August 3, 1979, now co-sponsored by Senator Dole of Kansas providing for reexamination of patents. (We are aware that Senator Nelson has introduced S. 1860, a Small Business Innovation Bill which will include the reexamination procedure of these bills.) The introduced identical bills would provide a procedure for reexamination of patents based upon earlier patents or publications which the examiner did not have before him when he originally examined the application on which a patent has issued. Reexamination of the patentability of any claim or claims when a patent or publication is cited by anyone who wishes to do so would be ordered when that new information was found by the Commissioner to raise a new issue. The purpose of the bill is to get to the examiner for a relatively inexpensive reexamination the patent or publication which the examiner may have missed, because it was simply not there in the file or because he simply could not search everywhere, manually. In must cases the reexamination will avoid any court costs or will reduce court costs in the event there has been litigation before reexamination has been requested because the patentability or lack of patentability of the claims of the reexamined patent will have been clarified to the satisfaction, or at least to the understanding, of the patent holder.

This is not the time to review the bills here mentioned, only briefly to show that the procedures are now available and can be acted on and should be acted on by Congress at an early date. These bills give effect to Proposal II, of the earlier mentioned Patent Advisory Subcommittee of the Domestic Policy Review, on which action of the White House is currently awaited. A report has been in the White House for some time now.

A²I² is indeed proud to have participated actively in the eventuation of these bills and their co-sponsorship. The bills have, but for two slight modifications, the wording of H.R. 14632, introduced by Representative Wiggins of California in the 75th Congress at the request of A²I². It is specifically the modified Wiggins bill, now embodied in the bills, introduced by Representative Caldwell Butler and by Senator Bayh, that is called for in Proposal II above mentioned.

The procedure of the bills was conceived and developed in the Patent Law Committee of the American Bar Association, Section of Patent, Trademark and Copyright Law. The bills received unanimous approval of the Patent Section at the annual meeting of the ABA, Dallas, Texas, October 11, 1979, as did the predecessor bill, Wiggins H.R. 14632, 95th Congress, at the ABA meeting, Atlanta, Georgia, 1976.

Leaving our comments on Mr. Arnold's statement which have been brief, we commend the statement to this committee for its consideration. If it has been considered some time in the past, we invite its consideration again to more fully appreciate the problems depicted here but briefly and developed there.

COMMENTS ON S. 414

The reexamination bills go hand in hand with passage of a government patent policy, for example, as embodied in S. 1215.

COMMENTS ON S. 414

If it is the will of the Congress to legislate discriminately, i.e., in only part of the field of government contracts, that is, rather than across the board, dealing with only small business and non-profit organizations, we have a few brief comments on S. 414.

We support the principle that the contractor may elect to retain title.

SECTION 202(a)(i) - DISPOSITION OF RIGHTS, GOVERNMENT FACILITY

We are not in favor, consistently with what we said earlier in this paper, that there be the potential disincentive that the election might not be exercisable where the contract is for the operation of a government research or production facility.

SECTION 202(a)(ii) - DISPOSITION OF RIGHTS, EXCEPTIONAL CIRCUMSTANCES

The vagueness of the provision of this subsection can be a disincentive. It should be firmed up and made more specific. At the least, the "exceptional circumstances" should be exemplified.

"Many companies use a combination of these approaches."

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"We also use the parallel ladder approach. We also use the promotional aspect of it. Those who insist on more government regulation to dictate a single pattern of inventor award allegedly do so because they feel they are speaking on behalf of most inventors."

"I believe when they make such a claim that they are wrong. A large segment of inventors is happy with the award system which industry provides."

"They are happy with the many intangibles of those programs. Those who do not like the program of a given company, as I said in the first instance, are free to move to a company that has a program that best suits their interests."

"This, as I said, once again is made up of a combination of benefits which a company provides. It may be the bonus; it may be any sort of benefit plan. As you, Mr. Secretary, pointed out earlier, there are about 14 million corporate entities in this country."

"So it should provide quite a possibility."

CHAIRMAN BARUCH: "If I am hearing you right, what you are saying is that it is not against (sic), you are not against rewarding the inventor for the act of invention, but you would not like the method of that reward dictated by any group of government --"

Thus, to the extent that such a requirement goes beyond the normal compensation program of the particular contractor, it is viewed, under the circumstances, as a disincentive to take the contract.

SECTION 202 (c) (7) (c) - SHARING ROYALTIES WITH INVENTOR

A requirement that the contractor share royalties with the inventor will lead to difficult, burdensome administrative problems, including accounting problems. The contribution of any particular invention in the overall scheme of things is extremely difficult to determine. Inventors are ordinarily compensated by promotion, by payments made on filing, and/or the issuing of patent applications and otherwise. Many organizations have compensation plans which recognize the contribution of the inventor.

We believe that the statement made by Donald J. Quigg, who was a member of the Subcommittee on Patents and Information of the Domestic Policy Review are pertinent. We quote portions from Pages 141-144 of the transcript of the open meeting of January 24, 1979.

"MR. QUIGG: I think it is well to remember that the scientific personnel in this country are much more transient than those in countries such as Germany and Japan. They have the right to pick and choose the companies whose research programs, technology and recognition programs best suit their desires.

"The industry in this country is making a strong effort to recognize and reward inventors for their contributions.

"Each company has its own individual style and program for accomplishing that objective. Some pay bonuses; some make payments for filing (and/or on) an issuance of patents. Some recognize technical excellence by salary adjustments; some by promotions. (parenthetical added)

"And some have established parallel ladders so that promotions can be made not only through managerial ranks, but also in a parallel scientific rank, where the individual, because of his technical excellence, is considered a consultant for other technical people in the organization.

SECTION 202(c)(7)(d)

Utilization of the balance of royalties by the contractor to support research or education would appear to be somewhat inconsistent with the provisions of Section 204 providing for the return of the government investment. If the investment has been or is being returned, the use of royalties should not be dictated. This would be a further disincentive to negotiate a contract.

SECTION 204

We believe Section 204 to be a disincentive. The government should get what it pays for when it gets the best contractor, small or large. The bare possibility that inventions will be made, which may be of value, should be one of the risks involved in the negotiations and settled in that negotiation when the price is agreed upon.

It is most likely that innovation, i.e., bringing into commercial use in the marketplace of the invention made will result if the title is placed in the contractor, at least initially. If there is innovation, there will be additional jobs, goods, and services, taxes raised, and the return to the public directly in terms of benefits and indirectly through taxes. This will alleviate its overall tax burden; and it will more than pay for the provision of the incentive of having the title in the contractor in the first place.

OTHER COMMENTS

Should a contractor not elect to take title, we suggest the contractor be offered a nonexclusive, paid-up license to practice and to have practiced the invention throughout the world along with the right to grant sublicenses of similar scope. Such a license could be made revocable in the event the government wished to grant an exclusive license.

The language should be clarified to permit not only the filing of a U. S. patent application but also foreign applications. Frequently, the evaluation, whether to file abroad, will take several months, judging by present industrial routines. This section is singled out because of the extreme importance to the obtaining of valid patents abroad, of the need for absolute secrecy prior to filing there, even as explained in the APLA statement, comment on which follows.

We have studied the statement submitted on behalf of the American Patent Law Association before the Subcommittee on Constitution of the Judiciary Committee of the Senate, June 6, 1979, speaking through Mr. J. Jancin, Jr., Vice President. We agree that the language of the bill could be improved.

We have not studied each provision of S. 414 for the possible implications of the specific language employed. We believe that the Comptroller General should, by provision in the bill, be requested to report to the President and to the Congress after, say, two years what have been the results of the passage of this or other bill or bills now considered.

THORNTON H.R. 8596 (96th CONGRESS)

This was a good bill and has much to recommend it.

A detailed discussion of its provisions at this time, especially by comparison to the provisions of the other bills of interest today, is not practical.

The bill seems well thought out. However, the bill is not now before the House and, therefore, our comments on it should be brief.

A careful reading of the bill shows that since it has been well thought out concepts therein might well be considered for mark-up of any bill finally selected to be marked-up.

At the outset, having just commented on S. 414, we note that the Thornton bill recognizes small business firms and minority business enterprises.

Generally, the bill gives effect to the principle of vesting title in the contractor selected, as above discussed. No further discussion on this principle is made here in view of earlier comments made in this statement.

Generally, the language of Section S. 313, 314 and 315 would have our initial approval in the event the Congress decides that the contractors' rights shall be defeasible.

All possible later dealings with regard to contractors' rights, especially after the contract has been executed, require time, funds, and consequent tying up of personnel to negotiate or litigate whether the contractors' rights shall be invaded. This is, at the outset, a deterrent to bid for a contract.

That discord is envisioned is readily seen from the incorporation of Section 316 on Judicial Review.

It bears repetition that the simplest possible procedure be established to secure the best contractor and to negotiate all possible future difficulties within the price to be paid by the government.

As earlier noted, some provision should be made where a joint invention of a contractors' employee and that of a federal employee may be involved. In such cases where the federal employee has obtained or worked with information of the contractor, or developed by the contractor under the contract, the federal employee should assign to the contractor electing to take title.

Section 322 dealing with allocation of rights to inventions should be amended to provide for the point here made. We especially note that Section 322(e) appears to be limited to "co-sponsored, cost-sharing, or joint venture research". This would appear to exclude the entirely government-funded operation.

Further comment on the Thornton bill is not made at this time.

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It is our view that our statement should end here to keep it from becoming unduly lengthy.

Concluding, it appears to be fitting to call attention to the now famous case of UNITED STATES v. DUBILIER in which the court issued its original opinion on April 10, 1933, (289 U.S. 178)

and later on motion of the Solicitor General struck from its opinion a paragraph which questioned the authority of the government to hold ownership to a patent (289 U.S. 706).

The stricken paragraph read as follows:

"In these circumstances no public policy requires us to deprive the inventor of his exclusive rights as respects the general public and to lodge them in a dead hand incapable of turning the patent to account for the benefit of the public." (Underscoring supplied)

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In summary, then, the United States patent system is one of the foundations of our free enterprise system. It is intended to provide the major incentive for promoting competition in research and development and for taking the risk of failure inherent in the invention and innovation process. (A number of Eastern European countries have adopted a patent system for these reasons.) This major incentive is basically the profit-motive which is an essential element in our free enterprise system. Along with the profit which may be gained by the inventor, innovator and their financial supporters, the public also benefits under the system from the new, improved and less expensive products brought forth under the patent system, not to mention the taxes paid on the profits realized from the invention. No one forces the public to buy such products; they will only buy them to the extent the patented products provide them with greater value than existed before. Patented products compete in the marketplace with other patented and non-patented products. A patented invention which never reaches the marketplace provides no benefit to the public.

History has demonstrated that the present Government Patent Policy has been relatively ineffective. The key to government patent policy must be to provide strong and realistic incentives to invent and innovate to thereby bring patented inventions to the marketplace for the benefit of the public.

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We thank the subcommittee again for inviting us to participate in this very important endeavor on the part of our House of Representatives.

A²I² is always willing to work with the Congress to improve the climate for invention and innovation and consequently is available for detailed discussion.



PRESS RELEASE

IMMEDIATE RELEASE

Paul L. Gomory
202/7851252ENERGY - SYNTHETIC FUELS
(S. 1308 - Jackson, H.R. 4500 - Dingell)

SENATOR HENRY JACKSON'S BILL IS SELF-DEFEATING, SAYS EXECUTIVE DIRECTOR E. J. BRENNER. FORMER COMMISSIONER OF PATENTS DEPLORES FAILURE TO PROVIDE PATENT INCENTIVE: CRITICIZES PATENT PROVISION OF S. 1308, TERMING IT A "DISINCENTIVE TO CONTRACT WITH GOVERNMENT BY THOSE MOST CAPABLE TO DEVELOP ENERGY SUPPLIES. THE GOVERNMENT WILL NOT GET WHAT IT WILL PAY FOR", HE SAYS. URGES USE OF PATENT INCENTIVE SYSTEM AND THE FREE ENTERPRISE SYSTEM TO PROVIDE NECESSARY INCENTIVES TO ENCOURAGE INVENTION AND INNOVATION.

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Today, discussing the recently introduced bill, the Former Commissioner again was concerned that Senator Jackson, apparently, "still will not use the patent system to provide incentives to those really qualified to help overcome our dependency on foreign countries for about one-half of all of our oil energy!"

The "patents" section of S. 1308 is considered by the former patent official to be shortsighted and not at all in long-term enlightened self-interest. In a sense, it is a repeat of S. 1283 (1973), as originally worded, now the Energy Research and Administration Act of 1974 (ERDA) which, as ultimately enacted, permits waiver of title.

Mr. Brenner explained:

"Those who truly are competent to help our great, but ailing Country to substantial energy independence from the OPEC cartel would only, very reluctantly if at all, commit their highly expensively trained personnel and 'knowhow' to invent and to innovate better methods of producing energy, e.g., oil from whatever source if the Section 506 provisions are enacted. Indeed, much if not all of the basic technology is now available, at a price, to produce considerably more oil in this country with relatively short lead times. Adequate economic incentives are the best way to go to increase supplies in the shortest possible time; also to decrease our dependency on imported energy. This would be a signal heeded by the OPEC countries."

Mr. Brenner explained that:

"We need incentives to the exercise of American inventive and innovative ingenuity to improve upon the technology now available through invention and innovation. In addition to patent incentives our Country needs the benefit of the free enterprise system so that such additional incentives to invent and to innovate will be operative. These are needed to encourage private industry to invest time, funds and efforts - much of which is now devoted to complying with regulations, etc. - to increase energy (oil) supplies now. Excessive taxes and regulation of prices and supplies will prevent realizing the fullest possible, sorely needed, independence because funds for research, invention and consequent innovation will be taxed away. I am sure the taxpayer would rather have the private competition to invent and to innovate because it will in the end save his tax money and take less from him as a consumer when he buys products."

Mr. Brenner who was a member of the President's Commission on the Patent System criticized the bill on a number of points including those which follow.

"The objective to more fully develop energy supply is good. Since taxpayer's taxes are to be involved, the drafters of S. 1308, failed to take into account the disincentive to participation (to give the Government what it will be paying that tax money for) that the Government will take title to inventions and that the Secretary cannot waive U.S. rights under the ERDA Act of 1974, (instead of vesting title in the contractor with march-in rights, if truly needed, as in S. 1215 Schmitt), and

That a participator in the program to be established by the bill would be required to release to others (who would obviously be competitors) his background intellectual property rights, e.g., patents, trade secrets, proprietary information or know-how. The vague wording of the bill, especially Section 506(c) leaves in doubt what are 'reasonable terms' for the compulsory licensing of the subsection."

The Former Commissioner of Patents recalled his comment on Senator Jackson's earlier bill, S. 1283, now the ERDA Act.

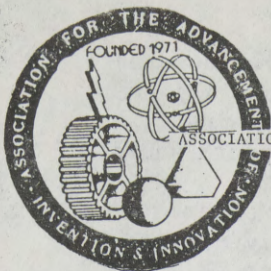
Repeating the substance of his comment, made in his July, 1973, letter to the Senator, he said:

"Would-be contractors might well say '...why not sit back and let someone else take the risk? Then, if he's successful, simply apply for a compulsory license thereby saving to the would-be contractor his background patents, trade secrets or proprietary information.'"

Mr. Brenner, who for many years has been involved in licensing of intellectual property, legislation concerning the same and other matters affecting invention and innovation, concluded that he was pleased that, as enacted, the ERDA Act of 1974 contained a much improved intellectual property provision, even if it was not the best that could have been produced for that Act.

Substantially the same remarks were made by Mr. Brenner when speaking about Section 306 of H.R. 4500 introduced by Representative John D. Dingell.

Concluding, he recommended an industry-wide cooperative effort, under the aegis of the Administration.



ASSOCIATION FOR THE ADVANCEMENT OF INVENTION AND INNOVATION

(A²I²)

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PRESS RELEASE

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IMMEDIATE RELEASE

Paul L. Gomory
202/785-1252

PATENT REEXAMINATION
BUTLER H.R. 5075, BAYH, S. 1679

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UNANIMOUS APPROVAL, BY AMERICAN BAR ASSOCIATION, PATENT, TRADEMARK AND COPYRIGHT SECTION, OF BUTLER AND BAYH BILLS PROVIDING FOR PATENT REEXAMINATION IS HAILED BY EXECUTIVE DIRECTOR EDWARD J. BRENNER.

BILLS TO AMEND TITLE 35, PATENTS TO PERMIT FURTHER EXAMINATION BY PATENT OFFICE ARE SUBJECT OF UNANIMOUS RESOLUTION AT DALLAS, TEXAS, NATIONAL MEETING OF THE AMERICAN BAR ASSOCIATION.

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Unanimous approval of identical bills by Representative Caldwell Butler of Virginia (H.R. 5075) and Senator Birch Bayh of Indiana (S. 1679), introduced August 2 and 3, respectively, to amend present patent law and procedure for further examination of patents on earlier patents and publications, is applauded by Executive Director E. J. Brenner.

The former Commissioner of Patents and member of the President's Commission on the Patent System applauded the approval to amend the patent law.

The procedure of the bills, at a low cost, would upgrade the patent system; would improve validity of patents, reduce the burden on the courts, avoid much expensive litigation, and would much better promote the progress of the useful arts to produce immediate increase in invention and innovation.

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(MORE)

Mr. Brenner stated in part:

"...there can now be no doubt that several hundred experienced and knowledgeable experts who daily toil in the obtaining, asserting of, and defense against, patents, have again emphasized that the procedure would

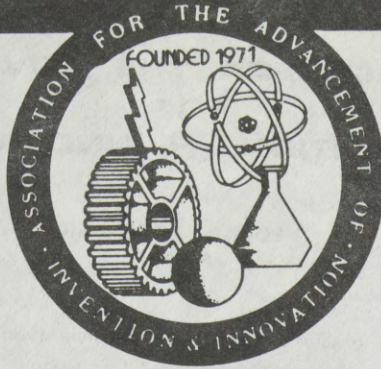
- permit a real upgrading of the overall patent system by reducing considerably expensive patent litigation now carried on in the courts;
- relieve burdened court dockets;
- in those cases in which the patent met the test of further examination give the court a record to review rather than the burden to initially pass on references not studied by the examiner in issuing the patent;
- increase validity of issued patents; and
- importantly increase invention and innovation now badly needed by our Country to fight inflation, produce more energy, reduce unemployment, etc."

The former Commissioner explained that:

"The bill would permit any person at any time during the enforceable life of a patent to bring to the Patent Commissioner's attention any earlier patent or publication, not considered by the Patent Examiner, which the citer thereof believes affects the scope or validity of the patent claims. The Commissioner, if he agrees, would institute reexamination or further examination of the patent. Thus, a would-be licensee or a would-be litigant and even the patent holder could request reexamination whenever a patent assumed commercial importance, saving many manpower hours."

Asked about such savings, Mr. Brenner explained:

"At extremely low cost, relative to litigation, the great many problems of costs and manpower involved in litigating to apply to the claims of a patent a prior patent or printed publication would be avoided. A would-be licensee could test such prior art available to him by citing the patent or publication prior to taking a license."



**JOURNAL
OF
THE ASSOCIATION
FOR
THE ADVANCEMENT
OF
INVENTION & INNOVATION**

MAY - JUNE 1979

ACTION

**JOURNAL
OF THE
ASSOCIATION FOR THE ADVANCEMENT
OF
INVENTION & INNOVATION**

**EDWARD J. BRENNER
EDITOR**

Published regularly to serve as a medium of communication between members of the Association for the Advancement of Invention & Innovation.

MEMBERSHIP IN THE ASSOCIATION

Membership in the Association is open to inventors, entrepreneurs, research directors, businessmen, scientists, engineers, lawyers, patent attorneys and agents, educators, patent examiners, economists and others who support the objectives of the Association.

Individual Membership Dues	\$25/year
Organization Membership Dues	\$100/year

LETTERS TO THE EDITOR

Letters to the Editor on specific subjects relating to the advancement of invention and innovation are encouraged and may be published in the journal ACTION.

ASSOCIATION OFFICES

**The Association for the Advancement of
Invention & Innovation**

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EDITORIALSFALSE ECONOMY

The United States Patent and Trademark Office is currently in the process of having its operating budget cut back substantially at a time when its workload is increasing steadily. This situation is already creating serious problems for the Patent Office and is making it difficult, if not impossible, for the Office to meet its constitutional and legislative mandates. The budget cuts are apparently being ordered by the Department of Commerce and the Office of Budget and Management in the White House.

This is unfortunate, since again the backlog of unexamined patent application is building up. In the 1960's the Patent Office initiated a long range program aimed at reducing the pendency of patent applications from an average of over 3 years to a period of 18 months. Up until the past year the Office was on target toward attaining that goal having reached a pendency period of about 19 months. Now, as a result of recent budget cuts this pendency is up over 20 months and increasing. This is a serious situation since it is very important for a number of good reasons for patents to issue promptly.

However, it seems as though history must repeat itself. In the early 1950's President Eisenhower ordered budget cuts which reduced the Patent Office staff substantially. The result was that the backlog of unexamined patent applications built up significantly. Subsequently, a number of years later, the staff of examiners in the Patent Office had to be increased to handle the workload. The net result was that the later extra cost to overcome the problem far exceeded the "savings" made in earlier years. This was clearly a case of false economy.

It is submitted that the same sort of false economy is being practiced at the present time. Thus, it is urged that supporters of

invention and innovation and the United States Patent system make known to the Administration and the Congress their support for an adequate budget for the Patent Office. Now is the time to act to prevent further deterioration in the Patent Office's ability to do its important job. In this connection, ACTION wishes to compliment Senator Burch Bayh for his active support of an adequate budget for the Patent Office.

A VICTORY

It was gratifying to read the U. S. Supreme Court's decision in Chrysler v. Brown wherein the court held that the Government did not have the right under the Freedom of Information Act (FOIA) to release trade secrets to the public or, more particularly, the Court held that 18 USC 1905 which made it a crime for any Government officer or employee to release trade secrets was controlling. It will be recalled that the Association filed an amicus brief in this important case and it is particularly satisfying to see that the Court agreed in principle with the Association's position.

FOOD FOR THOUGHT

A proposal to merge the U. S. Court of Customs and Patent Appeals and the U. S. Court of Claims was considered at a recent hearing by the Senate Subcommittee on Improvements in Judicial Machinery. The new court would handle all patent appeals from the Patent Office and the Federal District Courts. Proponents of the change claim there will be greater certainty, uniformity, reliability and speed in the adjudication of patents. Opponents say that a specialized court would become insular and ingrown. Because the proposed change could have a significant impact on the future of invention and innovation in the country, readers of ACTION are urged to make their views known to the Subcommittee at an early date.

GOVERNMENTAL ACTIVITIES RELATING TO INVENTION & INNOVATION

BAYH-DOLE PATENT BILL

A Congressional hearing was held recently on S.414, a "University and Small Business Procedures Act," sponsored by Senators Burch Bayh and Robert Dole. The bill would permit universities, small businesses and non-profit organizations to obtain patent rights in technology resulting from Government-funded research and development contracts.

In introducing the bill, Senator Bayh said "I have become very concerned that the United States is rapidly losing its preeminent position in the development of new technologies, which historically have been our strong suit." Senator Dole said "The damaging impact of [present] federal patent policy on the economy is dramatic. That we have lost our leadership role to Japan in the fields of electronics and shipbuilding is no accident. Without short-term exclusive rights, small firms cannot take the risk of bringing innovations to the commercial market, but large foreign firms can and are doing so, with ideas gleaned from U. S.-funded research."

REPORT ON PATENT POLICY

The following is a copy of the Summary of the Draft Report of the Subcommittee on Patent Policy of the Advisory Committee on Industrial Innovation established as part of the Domestic Policy Review on Industrial Innovation by the Department of Commerce. An Administration position on the overall study is expected in the near future.

Summary

In general, the patent system has served the country well. Major overhaul of the patent system is not recommended. Nevertheless, some modification to the system could have a beneficial effect on innovation. The most serious problems with the patent system are the uncertainty about the reliability of patents and the long time and high costs associated with resolving such uncertainty through litigation. When proper consideration is given to these problems as they relate to those independent inventors and small businesses whose success--and indeed very existence--depends upon the innovation process, it becomes clear some changes must occur. These problems deter investment of the money required to commercialize an invention (a necessary and expensive step in the innovative process). It is here that modifications to the patent system can have their most beneficial impact. Steps should be taken to increase the assurance that a patent is a valuable piece of property, something that offers protection to subsequent investment.

The committee has identified four major goals to which attention must be addressed to enhance the innovation process through improvement of the present patent system:

1. Enhancement of the reliability of the patent grant to the inventor and those investing in the commercialization of his invention;
2. Reduction in the cost--both in time and money--of judicial enforcement of the rights derived from the patent;
3. Extension of the availability of commercial exclusivity derived from patents to technological advances presently denied patentability; and
4. Development of systems transferring the commercial rights to government supported inventions to those in the private sector capable of their innovation.

We have three major recommendations to improve the reliability of the patent grant.

- 1) Upgrade the Patent Office by:
 - a. Providing an adequate examining staff to assure a rigorous high quality examination. This would increase confidence in the patents that are issued.
 - b. Providing modern search tools that increase the probability of finding the relevant prior art. This would be a cost-effective investment by reducing search time per examiner, as well as reducing the frequency of subsequent proceedings to argue the prior art.

- 2) Provide a reexamination process -- available to all interested parties -- in order to ensure that the patentability of the invention described in the patent has been considered by the Patent Office in the light of all relevant prior printed publications.
- 3) Provide a central court to hear patent appeals. This would provide greater consistency in judicial decisions, thus reducing uncertainty.

To reduce the present cost of judicial enforcement of the patent grant, a request should be directed to the Supreme Court, and the Judicial Conference, to require each federal court to exercise a high degree of control over the conduct of patent litigation, with particular concern for the time and expense of discovery.

To foster commercialization of inventions made in governmental laboratories, under government research contracts and in university laboratories supported with federal funds, the subcommittee recommends that the commercial rights in such inventions be structured in a manner capable of being transferred to industry -- small or large -- to insure capital investment in their development. Such transfers should be subject to a license right reserved to the government to insure no further payment for governmental use of the invention.

The subcommittee also recommends clarifying the statutory standard of patentability and permitting licensees to agree not to attack the validity of licensed patents. An adequate extension of the patent term should be provided when commercialization of patented inventions is delayed due to federal regulations.

The subcommittee recommends establishment of foreign policy which encourages other countries to provide United States innovators the right to obtain enforceable patent rights, thus extending the incentive to commercialize United States innovations in international markets.

Further, study should begin of the appropriate extension of patent rights to presently unpatentable technological advances, with consideration to be given to patentability of new life forms for industrial applications, use-specific chemical formulations based upon unpatentable biologically active ingredients and computer software.

INTERNATIONAL ACTIVITIES RELATING TO INVENTION & INNOVATION

1979 U. N. CONFERENCE ON SCIENCE & TECHNOLOGY

There is a most important Conference on Science and Technology being held this year in Vienna under the sponsorship of the United Nations. In particular, the Conference will try to come to grips with the interest of the developing countries in technology transfer to their countries from the developed countries such as the United States. Reproduced on the following pages for the information of our readership is a Summary from the U. S. National paper prepared for the Conference.

PATENT COOPERATION TREATY

The activities under the Patent Cooperation Treaty continue to expand under the direction of the World Intellectual Property Organization (WIPO). The Netherlands has recently ratified the Treaty and the Australian Patent Office has recently been appointed as a PCT Searching and Examining Office. A copy of a recent WIPO press release on these matters is reproduced on the following pages.

TECH-TRANSFAIR '80

An announcement of Tech-Transfair '80, an international fair for technology transfer to be held in Utrecht, Holland May 13-16, 1980, is reproduced on the following pages.

SCIENCE AND TECHNOLOGY FOR DEVELOPMENT

U.S. national paper prepared for the 1979 U.N. Conference on Science and Technology for Development by the Office of the Coordinator of that conference in the Department of State.

PREFACE

The compelling thing about the world conference that convenes in Vienna next August is inherent in its title: the United Nations Conference on Science and Technology for Development (UNCSTD). Those two words, "for development," are the keys. They mean that the governments of the world will be gathering to discuss science and technology not in an abstract or academic sense but in explicit relation to human welfare.

Science and technology are responsible, of course, for much of the rapid material progress of many societies in recent times. But we also have learned that indiscriminate application of some technologies can cause unintended damage to ecological systems. We have seen too much of the benefits of modern technology distributed inequitably or wasted for destructive and frivolous purposes. And only now have we begun to sense the magnitude of our failure to allocate adequate scientific and technological resources to meeting the fundamental needs of people and to fulfilling priority social goals.

Manifestly there are limitations as well as potentials to what science and technology can achieve in the realm of social action. But what is important here is that we are preparing to take up the urgent work of focusing the potential of world science and technology more directly, more deliberately, and more systematically on human needs and prospects.

The absolute numbers of hungry,

sick, homeless, jobless people in this world continue to grow. The agenda of current problems that cannot be resolved by any state acting alone is still expanding. The pressure of time in this final quarter of the 20th century is increasingly insistent. And the need both for more self-reliance of nations and for more cooperation among nations becomes imperative.

As we approach the Vienna conference, my sense of optimism is fortified by a personal conviction. It is this: Religious and moral values, human compassion, political necessity, and pragmatic common sense are now all pointing in the same direction for action. These major motivational forces are converging in support of a freshly concerted and cooperative world effort to get on with the essential tasks of development, especially in the poorest countries and for the poorest in all countries.

The point of departure of U.S. preparation for UNCSTD is an assumption on which we invite discussion by industrialized countries and developing countries. This is: The overriding objective in the application of science and technology to development is to further the modernization of developing economies and simultaneously to meet the basic human needs of developing country populations.

This assumption rejects any implication that meeting basic human needs and modernization are mutually exclusive or incompatible development strategies. It asserts, instead, that the fulfillment of basic needs and the process of economic modernization can

proceed simultaneously in a mutually enforcing relationship.

Finally, there is no more important facet in our present joint effort than a more intensive application of human knowledge to the resolution of human problems. The United States delegation

to the world conference in Vienna will be dedicated deeply to that purpose.

Ambassador Theodore Hesburgh
Chairman, U.S. delegation to
the U.N. Conference on Science
and Technology for Development

SUMMARY

The U.S. National Paper is a brief reflection on the American experience in applying science and technology to development. It analyzes the vital role they have played in the evolution of the U.S. economy and society and in the U.S. contribution to economic and social growth in the developing countries. The paper suggests steps which could be taken at various levels to improve the application of science and technology to problems of development.

The Challenge Ahead

The chief question before the U.N. conference is whether the peoples of the world have the will and can develop the means to harness scientific knowledge and technological skill for the benefit of all. We are faced with a challenge to meet the basic needs of more than 1 billion people who live in abject poverty and whose lot cannot be improved without the help of science and technology. We are faced, in addition, with a variety of common global problems such as protection of the environment, population growth, development of new energy sources, and alleviation of shortages of food and water—on all of which science and technology can have major impact.

Each country must reach its own decisions on how best to address these tasks. The United States is a major source of science and technology, but it also has needs in this common area which other countries can supply. President Carter has expressed the policy objective of making scientific and technical cooperation with developing countries a key element in our relationships. This policy is based on the premise that, although our material resources are limited, our resources of technical knowledge are inexhaustible. They must be employed more efficiently in the framework of international cooperation.

Such cooperation should be among and with upper- and middle-income developing countries as well as low-income countries. The issues and development circumstances vary widely from country to country, and many actors and factors must be involved in an effective developmental process. In particular the successful transfer of

technology depends on the ability to put it to use, including effective collaborative efforts between governments and private sector institutions and cooperative relationships among countries faced with similar problems. And finally, all parties must recognize that, as helpful as science and technology may be in addressing these problems, they are not the total solution. Many other factors are involved, and there is no "quick fix" to many issues of long duration.

U.S. Approaches

Over the past 30 years, the U.S. Government has made outlays for economic assistance in excess of \$100 billion. The U.S. approach, in close consultation with developing countries, has been:

- To provide technically skilled personnel and scientific knowledge;
- To facilitate direct transfer of capital goods that embody new technologies; and
- To help build the necessary infrastructures to implement the transfer of new technologies, both on an international basis and within the recipient countries.

U.S. efforts have included the use of American experts in advisory and operational roles; the use of radio, television, remote sensing, and other technologies; the training of experts in recipient countries; and the support of research efforts that have direct and favorable impact on the major problem areas of public works and transportation, communications, housing, public administration, agriculture, health, manpower training, and mineral and water resources development.

The United States holds strongly to the view that the success of the economic and social development of other nations is very much in the U.S. interest. Although concern is sometimes raised that the transfer of technology can have adverse effects on domestic employment in the United States, as well as other negative short-term economic impact, in the long run such transfer provides important opportunities and benefits to the U.S. economy, its businesses, and overall employment. All countries can benefit from

economic growth in developing nations and from the worldwide expansion of trade.

The transfer and diffusion of science and technology is a complex process of adaptation. No particular country can claim to be the model for scientific and technological development. Historical circumstances, economic conditions, and cultural patterns differ. Therefore, the evaluation of the U.S. experience is not to be taken as prescriptive but descriptive of the evolution of U.S. policies and practices in the application of science and technology for development.

Findings

The United States offers the following preliminary findings on the central issues relating to science and technology for development in the evolving international economic system.

Indigenous Capacity Building. It is necessary to improve the technologies and mechanisms of industrialized countries for assisting developing countries in upgrading their scientific and technological skills and resources. This would enable the developing countries better to generate, select, adapt, and apply science and technology in pursuit of their own economic and social goals.

Education and Training. Manpower needs must be critically surveyed, evaluated, and updated as an integral part of national and regional economic development plans. Education and training programs should be geared to these plans so that the required experience, ability, and skills are forthcoming. Educational and training opportunities should be expanded and more scholarships and fellowships should be provided with emphasis on science, engineering, and management.

Research and Development. Because the world's natural resources are limited and problems of global expanse such as food, water, health, and energy are common to all countries, there should be more collaborative research among scientists and engineers from industrialized and developing countries on solving these problems in the

mutual interests of all. Research and development, now heavily concentrated in industrialized countries, should be expanded in developing countries with greater reliance on their own scientists and engineers.

Information Systems. Developing countries should define obstacles to access and use of desired information as they see them. Industrialized countries should clarify the extent and sources of available information of both a proprietary and nonproprietary nature. Together both sides should devise practical and economic ways to improve the flow of mutually beneficial information in science and technology.

Cooperative International Mechanisms. Linking mechanisms between the public and private scientific and technological community of the industrialized and developing countries must be strengthened to promote the sharing of experience, knowledge, and skill as well as joint research and other problem-solving activities. These mechanisms do not require new international institutions; rather they call for closer integration of national and regional institutions which would facilitate cooperative efforts toward agreed goals.

Toward this end the President has proposed a new domestic foundation for international technological cooperation to serve as the focal point within the United States for the planning and implementation of international collaborative efforts in science and technology for development. The U.N. conference should encourage establishment of similar institutions in other countries. A network of such institutions could better use the creative talents of scientists and engineers throughout the world on problems of mutual concern.

A More Effective U.N. System for Science and Technology. The many useful science and technology activities within the U.N. system need a central focal point and policy direction so as to insure greater harmony and efficiency in working toward shared goals. This does not require creation of a new entity. The United States supports the idea of international collaboration on pilot programs in science and technology for development which can be applied to critical global problems.



WORLD INTELLECTUAL PROPERTY ORGANIZATION
ORGANISATION MONDIALE DE LA PROPRIÉTÉ INTELLECTUELLE

WIPO Press Release PCT/12(USA)

Geneva, May 9, 1979

The World Intellectual Property Organization (WIPO), Geneva, announces the appointment of the Australian Patent Office as an additional International Searching and Preliminary Examining Authority under the Patent Cooperation Treaty (PCT) and the adoption of a new Schedule of Fees during the third session of the PCT Assembly, held in Geneva from April 25 to May 1, 1979, and attended by Delegations from 25 countries including all major Contracting States and several countries expected to join the PCT this year.

- . -

1. Under the PCT, United States citizens and residents may file an international patent application with the United States Patent and Trademark Office in Washington. The effect of the international application is the same as if national applications had been concurrently filed with the national Patent Offices (or the European Patent Office) of those countries party to the PCT which the applicant designates. The international application is then subjected to a search of the prior art by an International Searching Authority (see below), and the applicant is placed in a position in which he can decide, on the basis of the international search report, whether it is worth while to pursue his application in the various countries he has designated. National procedures in such countries (or the European Patent Office) are then delayed at least until 20 months after the priority date unless the applicant asks for an earlier start.

2. An international application may be the first application or it may be a subsequent application invoking the priority of an application previously filed with the national office of a country party to the Paris Convention or with the European Patent Office.

/...

3. Where protection is sought through an international application in the countries party to both the PCT and the European Patent Convention, the applicant may seek protection under the national law of those countries or under the European Patent Convention, except in the case of France, where protection through an international application is possible only under the European Patent Convention.

4. The countries which had ratified or acceded to the PCT by the time of the third session totalled 24. They are the following:

- in Africa: Cameroon, Central African Empire, Chad, Congo, Gabon, Madagascar, Malawi, Senegal, Togo
- in America: Brazil, United States of America
- in Asia: Japan
- in Europe: Austria, Denmark, France, Germany (Federal Republic of), Luxembourg, Monaco (with effect only from June 22, 1979), Netherlands (with effect only from July 10, 1979), Romania (with effect only from July 23, 1979), Soviet Union, Sweden, Switzerland, United Kingdom.

It is expected that other highly industrialized countries such as Australia, Belgium, Finland, Italy and Norway and several developing and socialist countries will ratify or accede to the Treaty in the course of 1979. Some other countries, in particular Canada and Spain, are likely to join the system in 1980.

5. The PCT Assembly appointed the Australian Patent Office as an International Searching and International Preliminary Examining Authority subject to the PCT coming into effect for Australia. According to the information conveyed to the PCT Assembly, this is expected to occur on January 1, 1980. The Offices already acting in this capacity are: the Austrian Patent Office, the Japanese Patent Office, the USSR State Committee for Inventions and Discoveries, the Swedish Patent Office, and the European Patent Office (for international preliminary examination only as from June 1, 1979, and only for those technical fields which are open for examination of European patent applications); furthermore, the United States Patent and Trademark Office is an International Searching Authority and the United Kingdom Patent Office is an International Preliminary Examining Authority. The activity of the Australian Patent Office as an International Searching and International Preliminary Examining Authority will be directed to serving the needs of applicants from Australia and from developing countries, especially those of South East Asia and the South Pacific.

**NEWS
LETTER
NO.1**



tech-transfair '80

international fair for technology transfer
utrecht-holland, 13-16 may 1980

WHAT IS TECH-TRANSFAIR?

- Tech-Transfair is a biennial event organized for executives, active in the international field of technology exchange (licensing, know-how agreements, joint ventures etc).
- Only sellers of technology are entitled to rent standspace at the show and ready-made stands (turn-key) are made available for this purpose.
- Buyers of technology are aided by Tech-Transfair's unique pigeon-hole system which furthers fast and effective personal contacts with relevant technology sellers.
- Unqualified attendance is discouraged by high admission charges.
- Delegations of buyers from developing countries are helped by special arrangements made in close cooperation with UNIDO and CBI, The Centre for Promotion of Imports from Developing Countries.

GOOD RESPONSE

- Hundreds of replies are coming in from all over the world as a result of Tech-Transfair's first announcement.
- Chances are that the next Tech-Transfair will show a marked increase in the number of exhibitors and visitors.

UNIDO'S PROGRAMME FOR TECH-TRANSFAIR '80

- UNIDO Headquarters - in close cooperation with the CBI - is in the process of arranging a special programme for delegates from developing countries visiting Tech-Transfair '80.

Participation will be open to such countries in Latin America, Africa, the Near and Middle East and Asia.

INTERNATIONAL CONFERENCE ON MANAGEMENT OF TECHNOLOGY EXCHANGE

- This international conference to be held in conjunction with Tech-Transfair '80 will bring forward an elite of experts highlighting basic aspects in the management of technology with a strong accent on the how-to-approach.

WAITRO CONFERENCE

- WAITRO - World Association of Industrial and Technological Research Organisations - is planning a conference for it's member organisations within the framework of Tech-Transfair '80.

*** EXHIBITORS BROCHURE NOW AVAILABLE**

- Intending exhibitors are requested to rush their application form, duly completed, to the organizers.

Should you not yet have received your exhibitors' brochure and application form, please let us know. The documents will be airmailed to you without delay.

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ACTIVITIES OF OTHER ORGANIZATIONS RELATING TO INVENTION & INNOVATION

NATIONAL CONGRESS OF INVENTORS ORGANIZATIONS

The second organizational meeting of the NCIO was held at TechEx'79, in March in Atlanta. The representatives in attendance agreed to the basic principles for establishing NCIO. A committee to write a Charter was appointed.

The NCIO would be a nonprofit organization designed to serve all inventor organizations and aid them in achieving their separate or common goals. NCIO would in no wise conflict with the operation of separate inventor organizations, but would provide a means of enlarging their separate possibilities. NCIO would provide a network of communication and intercommunication with all inventor organizations and with many of the government agencies.

EDISON - CENTENNIAL OF LIGHT

As part of our continuing program of cooperation with the Thomas Alva Edison Foundation, ACTION is reproducing on the following pages, information on Edison's major inventions, books on Edison and Edison medallions.

Edison's inventions: a chronological listing

Most people can identify Edison as the inventor of the light bulb, the phonograph, and the motion picture camera. Beyond that, their knowledge of his works is limited.

Edison earned 1,093 U.S. patents in all, more than any other individual.

The list should help stimulate further planning of local Centennial events built around Edison's legacy.

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|---|--|
| <p>1868 Invented electric vote recorder (Oct. 13).</p> <p>1869 Invented electric stock ticker.</p> <p>1872 Invented motograph and duplex, quadruplex, sextuplex and multiplex telegraph systems.</p> <p>1874 Invented "electric pen" and manual duplicating press.</p> <p>1875 Discovered "etheric force" (Nov. 22). (Twelve years later this was recognized as being due to electrical waves in free space — the foundation of wireless telegraphy or radio.)</p> <p style="padding-left: 20px;">Invented automatic copying machine (mimeograph), later sold to A.B. Dick.</p> <p>1877 Invented telephone transmitter and the microphone (April 27).</p> <p style="padding-left: 20px;">Invented the phonograph (Dec. 6).</p> <p>1878 Invented the microtasmeter, a device indicating minute heat variations by electrical means (July 29).</p> <p>1879 Invented the incandescent electric light (Oct. 21).</p> <p style="padding-left: 20px;">Gave first public demonstration of electric street and building lighting in Menlo Park, N.J. (Dec. 31).</p> <p>1880 Discovered "Edison Effect," the fundamental principle of the science of electronics.</p> <p style="padding-left: 20px;">Invented magnetic ore separator (April 3).</p> <p style="padding-left: 20px;">Invented and installed first electric railway for freight and passenger use (May 13).</p> <p>1882 Began operation of first commercial electrical distribution station in New York City.</p> <p>1883 Patented the electric indicator using "Edison Effect" (Nov. 15).</p> <p>1885 Invented system of wireless telegraphy for use between moving trains and railway stations as well as ship-to-shore (March 27).</p> | <p>1889 First projected an experimental motion picture (Oct. 6).</p> <p>1891 Patented the motion picture camera (Aug. 24).</p> <p>1894 First commercial showing of motion pictures on Broadway in New York City (April 14).</p> <p>1896 Invented the fluoroscope, using principles of x-ray for medicine and surgery.</p> <p>1899 Invented the fluorescent light (May 16).</p> <p>1902 Invented the alkaline storage battery.</p> <p>1903 Invented the rotary kilns for cement production.</p> <p>1905 Established the first Portland Cement mill.</p> <p style="padding-left: 20px;">Introduced new dictating machine which allowed the dictator to hear repetitions and note corrections.</p> <p>1907 Introduced the first universal electric motor which operated on all lighting circuits.</p> <p>1912 Introduced the Kinetophone (talking motion picture).</p> <p>1914 Invented a method for producing synthetic carboic acid.</p> <p style="padding-left: 20px;">Invented the Telescribe, combining the telephone and the dictating phonograph.</p> <p style="padding-left: 20px;">Patented electric safety lanterns for use by miners (Oct. 13).</p> <p>1915 Established plants for manufacture of coal-tar derivatives.</p> <p style="padding-left: 20px;">As president of Naval Consulting Board, developed many inventions for military and naval use.</p> <p>1927 Commenced experiments to discover a domestic source of natural rubber.</p> |
|---|--|



International Committee
Centennial of Light
Thomas Alva Edison Foundation
P.O. Box 1310
Greenwich, Connecticut 06830
(800) 243-6561

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- Martin, Patricia M. Thomas Alva Edison. Putnam, 1971, PLB \$3.96.

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ASSOCIATION BUSINESS

PATENT-ANTITRUST COOPERATION

Recently, several members of the Association had an opportunity to meet with Mr. Robert Allen, Chief of the Intellectual Property Section of the Antitrust Division of the U. S. Department of Justice to discuss various matters affecting incentives for invention and innovation. We were most impressed with Mr. Allen's open-mindedness, cooperative nature, sincerity and dedication to his job.

Reproduced on the following page is a recent letter to Mr. Allen, inquiring as to his possible support for legislation on two specific subjects affecting incentives for invention and innovation. It is hoped that a spirit of cooperation will prevail in the future between patent and antitrust groups to help direct the nation's efforts toward improving our country's invention and innovation efforts.

SUPREME COURT DECISION

As mentioned in the Editorials, the Association was pleased with the U. S. Supreme Court's decision in the case of Chrysler v. Brown in which the Association filed an amicus brief. For the information of ACTION's readership, a syllabus of this decision is reproduced on the following page.

ASSOCIATION FOR THE ADVANCEMENT OF INVENTION & INNOVATION

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1735 JEFFERSON DAVIS HIGHWAY
ARLINGTON, VIRGINIA 22202
(703) 979-2520

EDWARD J. BRENNER
EXECUTIVE DIRECTOR

May 22, 1979

Mr. Robert Allen
Chief, Intellectual Property Section
Anti-Trust Division
U. S. Department of Justice
Washington, D. C. 20530

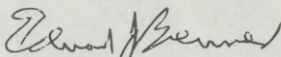
Dear Bob:

During our recent pleasant luncheon discussion, we had an opportunity to talk about a number of important matters relating to incentives for invention and innovation. In this connection, I wonder if you have given any further thought as to whether you would consider supporting legislation on the following two subjects:

1. Legislation to eliminate the misuse problem involving "use" patents to thereby stimulate research and development on new uses of old products.
2. Legislation similar to the "Scott Amendments" introduced into the Congress several years ago which would furnish guidelines (based on the rule of reason rather than a per se approach) to industry to thereby facilitate the licensing of patents to bring useful technology to the marketplace for the benefit of the public.

In the event you would be willing to support one or both of these two proposals, our Association would be pleased to work with you toward the enactment of appropriate legislation.

Sincerely yours,


Edward J. Brenner

EJB:pcp
cc: Paul L. Gomory

(Slip Opinion)

NOTE: Where it is feasible, a syllabus (headnote) will be released, as is being done in connection with this case, at the time the opinion is issued. The syllabus constitutes no part of the opinion of the Court but has been prepared by the Reporter of Decisions for the convenience of the reader. See *United States v. Detroit Lumber Co.*, 200 U.S. 321, 337.

SUPREME COURT OF THE UNITED STATES

Syllabus

CHRYSLER CORP. *v.* BROWN, SECRETARY OF DEFENSE, ET AL.

CERTIORARI TO THE UNITED STATES COURT OF APPEALS FOR THE
THIRD CIRCUIT

No. 77-922. Argued November 8, 1978—Decided April 18, 1979

Petitioner, as a party to numerous Government contracts, was required to comply with Executive Orders 11246 and 11375, which charge the Secretary of Labor with ensuring that corporations that benefit from Government contracts provide equal employment opportunity regardless of race or sex. Regulations promulgated by the Department of Labor's Office of Federal Contract Compliance Programs (OFCCP) require Government contractors to furnish reports about their affirmative action programs and the general composition of their work forces, and provide that notwithstanding exemption from mandatory disclosure under the Freedom of Information Act (FOIA), records obtained pursuant to Executive Order 11246 shall be made available for inspection if it is determined that the requested inspection furthers the public interest and does not impede agency functions, except in the case of records disclosure of which is prohibited by law. After the Department of Defense's Defense Logistics Agency (DLA), the designated compliance agency responsible for monitoring petitioner's employment practices, informed petitioner that third parties had made an FOIA request for disclosure of certain materials that had been furnished to the DLA by petitioner, petitioner objected to release of the materials. The DLA determined that the materials were subject to disclosure under the FOIA and OFCCP disclosure rules, and petitioner then filed a complaint in the Federal District Court seeking to enjoin release of the documents. Petitioner contended, *inter alia*, that disclosure was barred by the FOIA and was inconsistent with the Trade Secrets Act, 18 U. S. C. § 1905, which imposes criminal sanctions on Government employees who disclose or make known, in any manner or to any extent "not authorized by law," certain classes of information submitted to a Government

CHRYSLER CORP. *v.* BROWN

Syllabus

agency, including trade secrets and confidential statistical data. Finding jurisdiction to subject the disclosure decision to review under the Administrative Procedure Act (APA), the District Court held that certain of the requested information fell within Exemption 4 of the FOIA, relating to trade secrets and commercial or financial information; that whether the requested information may or must be withheld thus depended on applicable agency regulations; and that here a regulation (29 CFR § 70.21 (a) (1977)) which states that no officer or employee of the Department of Labor is to violate 18 U. S. C. § 1905, and which proscribes specified disclosures if "not authorized by law," required that the information be withheld. Both sides appealed, and the Court of Appeals vacated the District Court's judgment. While agreeing with the District Court that the FOIA does not compel withholding of information that falls within its exemptions, and that analysis must proceed under the APA, the Court of Appeals reached a different conclusion as to the interpretation of 29 CFR § 70.21 (a). In the Court of Appeals' view, disclosures made pursuant to OFCCP disclosure regulations are "authorized by law" by virtue of those regulations.

Held:

1. The FOIA is exclusively a disclosure statute and affords petitioner no private right of action to enjoin agency disclosure. The language, logic, and history of the FOIA show that its provisions exempting specified material from disclosure were only meant to permit the agency to withhold certain information, and were not meant to mandate non-disclosure. Congressional concern was with the *agency's* need or preference for confidentiality; the FOIA by itself protects the interest in confidentiality of private entities submitting information only to the extent that this interest is endorsed by the agency collecting the information. Pp. 6-10.

2. The type of disclosure threatened in this case is not "authorized by law" within the meaning of the Trade Secrets Act on the theory that the OFCCP regulations relied on by DLA were the source of that authorization. Pp. 11-32.

(a) The Act addresses formal agency action as well as acts of individual Government employees, and there is nothing in its legislative history to show that Congress intended the phrase "authorized by law" to have a special, limited meaning different from the traditional understanding that properly promulgated, substantive agency regulations have the "force and effect of law." In order for a regulation to have the "force and effect of law," it must be a "substantive" or "legislative-type" rule affecting individual rights and obligations (as do the regulations in the case at bar), and it must be the product of a congressional grant

Syllabus

of legislative authority, promulgated in conformity with any procedural requirements imposed by Congress. Pp. 11-19.

(b) The disclosure regulations at issue in this case cannot be based on § 201 of Executive Order 11246, as amended, and a regulation which permits units in the Department of Labor to promulgate supplemental disclosure regulations consistent with the FOIA. Since materials that are exempt from disclosure under the FOIA are outside the ambit of that Act, the Government cannot rely on the FOIA as congressional authorization for disclosure regulations that permit the release of information within the Act's exemptions. In order for regulations adopted under § 201 of Executive Order 11246—which speaks in terms of rules and regulations “necessary and appropriate” to achieve the Executive Order's purposes of ending discrimination by the Federal Government and those who deal with it—to have the “force and effect of law,” there must be a nexus between the regulations and some delegation of the requisite legislative authority by Congress. When Congress enacted statutes which arguably authorized the Executive Order (the Federal Property and Administration Services Act of 1949, Titles VI and VII of the Civil Rights Act of 1964, and the Equal Employment Opportunity Enforcement Act of 1972), it was not concerned with public disclosure of trade secrets or confidential business information, and it is not possible to find in these statutes a delegation of the disclosure authority asserted by the Government here. Also, one cannot readily pull from the logic and purposes of the Executive Order any concern with the public's access to information in Government files or the importance of protecting trade secrets or confidential business statistics. Pp. 19-24.

(c) Legislative authority for the OFCCP disclosure regulations cannot be found in 5 U. S. C. § 301, which authorizes heads of Government departments to prescribe regulations to govern internal departmental affairs and the custody and use of its records, and which provides that it does not authorize withholding information from the public or limiting the availability of records to the public. Section 301 is a “housekeeping statute,” authorizing rules of agency organization, procedure, or practice as opposed to “substantive rules.” There is nothing in the legislative history to indicate that § 301 is a substantive grant of legislative power to promulgate rules authorizing the release of trade secrets or confidential business information. Thus, § 301 does not authorize regulations limiting the scope of the Trade Secrets Act. Pp. 24-28.

(d) There is also a procedural defect in the OFCCP disclosure regulations that precludes courts from affording them the force and effect of law, since they were promulgated as “interpretative rules” without

Syllabus

complying with the APA's requirement that interested persons be given general notice of an agency's proposed rulemaking and an opportunity to comment before a "substantive rule" is promulgated. An "interpretative regulation" cannot be the "authoriz[ation] by law" required by the Trade Secrets Act. Pp. 28-32.

3. However, the Trade Secrets Act does not afford a private right of action to enjoin disclosure in violation of the statute. Where this Court has implied a private right of action under a criminal statute "there was at least a statutory basis for inferring that a civil cause of action of some sort lay in favor of someone." *Cort v. Ash*, 422 U. S. 66, 79. Nothing in the Trade Secrets Act prompts such an inference; nor is there any indication of legislative intent to create a private right of action. Most importantly, a private right of action under the Act is not necessary to make effective the congressional purpose, since review of DLA's decision to disclose petitioner's employment data is available under the APA. Pp. 32-33.

4. Since the Trade Secrets Act and any "authoriz[ation] by law" contemplated by that Act place substantive limits on agency action, DLA's decision to disclose petitioner's reports is reviewable agency action and petitioner is a person "adversely affected or aggrieved" within the meaning of the APA's provision affording the right of judicial review of agency action to such a person. Since the Court of Appeals did not reach the issue whether disclosure of petitioner's documents was barred by the Trade Secrets Act, the case is remanded in order that the Court of Appeals may consider whether the contemplated disclosures would violate the Act. Pp. 33-35.

565 F. 2d 1172, vacated and remanded.

REHNQUIST, J., delivered the opinion for a unanimous Court. MARSHALL, J., filed a concurring opinion.

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THE ASSOCIATION

The Association for the Advancement of Invention & Innovation has been established to catalyze and coordinate efforts in the private sector to promote incentives for invention and innovation in the United States in particular and in the world in general. It is dedicated to the proposition that invention and innovation provide the lifeblood to our national economy and are essential for increasing the productivity and competitiveness of industry in the international arena and for solving our national problems in the fields of health, safety, transportation, housing, defense, the environment and the like.

The Association is intended to be basically a prime mover in generating positive and constructive programs which will enhance the climate for invention and innovation and in marshalling the necessary support by individuals, companies and organizations to achieve the desired governmental or public action. The second major basic function of the Association is to serve as an important public spokesman in support of the importance of invention and innovation to the national interest and national goals, in response to attacks thereon by critics or opponents of invention and innovation. Thus, the Association is basically in the business of government relations and public relations for the advancement of invention and innovation. Its interests extend to broad national issues which affect or are affected by invention and innovation and to governmental programs or legislation in the fields of patents, taxation, anti-trust, regulation, finance and the like which have a bearing on invention and innovation.

Ideas for constructive programs to be supported by the Association may originate from members of the Association or from other organizations interested in invention and innovation. The Association is primarily interested in supporting constructive new programs from any source which can be expected to receive relatively broad support. Expressed in another way, it is not the mission of the Association to dissipate its efforts on proposed programs or projects which are not realistically achievable. Close liaison will be maintained with business organizations, trade associations, professional societies, inventor's groups, patent law associations and other organizations to solicit their suggestions for programs to be supported and for support of approved Association programs. The Association is intended to perform new functions and thus is not intended to replace any existing organizations.

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Mr. ERTEL. Congressman Hance from Texas has joined us. If Mr. Hance has any questions, I will defer to him at this time.

Mr. HANCE. No questions at this time.

Mr. ERTEL. I would like to start with Mr. Hanbeck, but I guess the question should be addressed to all of you. Some of you have taken different positions on the idea of establishing either title in the contractor or title in the Government with exclusive license to the contractors.

If we keep the title in the Government and give an exclusive license, one of you indicated that it would be necessary to set up an elaborate system where we would have to negotiate each one of those waivers.

Yesterday, we heard from a panel of experts from the Government, one representing DOE Patent Counsel and one representing NASA. I don't know if you were here to hear them, but they indicated it takes a great amount of administrative time to negotiate a waiver. The delay period, therefore, is somewhere around 12 to 20 months for the negotiation of these waivers.

Are you advocating this extensive negotiation with the Government on each and every project and each and every contract you enter into? Because, you might have to do it in advance if something of patentability comes up during that contract award.

If you don't do it in advance, you can do it afterward, but again, at least you know what you're looking at there. What about the administrative costs not only to the Government, but the administrative costs to that contractor? He has to go through that process.

I recognize that some of you are patent attorneys. One could say this is a patent lawyer's retention bill, if you have that kind of an administrative procedure. I just wonder what your comments are on that.

Mr. MANBECK. May I speak on that point, Mr. Ertel?

Mr. ERTEL. I'd be happy to have you speak to that.

Mr. MANBACK. Thank you. In my statement, I said that there should be a uniform Government policy where the standard Government contract process would provide for placing title to the inventions in the contract without extensive negotiations.

I have also said we do not oppose march-in rights to guard against abuses. May I give you an example of what I mean? For many years, the Department of Defense has had a patent practice whereby when you are developing equipment for the Department of Defense, ordinarily the contractor will receive title to the inventions which come out of the contract.

The Government keeps a license for all of its purposes. It keeps a license with rights enabling it to have the equipment made by anyone.

But, title is left with the contractor. It has to report the inventions to the Government. If it fails to patent the inventions, the Government may then patent them if it wishes. The contractor has so long to file, and if it doesn't, the rights revert to the Government.

Now, this, we feel, has been an outstandingly successful practice. Today, there are hundreds if not thousands of aircraft engines in the commercial area utilizing technology which originally came out of the Department of Defense contracts.

The patents, instead of getting in the way, were helpful in the general activity I am familiar with—I'm not necessarily familiar with

other contractors—we have been able to take some military engines and do a lot more work on them to come up with commercial engines.

You just can't put a military engine in a commercial aircraft. You have to change it so it is much more reliable over a longer period. You can't have it torn down as often as you do in the military service. There are other requirements. But, you build on the base technology, taking many millions of dollars to reach the commercial stage. But, you build on that base technology.

Then, you come up with commercial engines. The DOD patent policies have enabled us to do this, and I believe others to do this, because we have title to the patents. We know we can go ahead, without fear of interference from the Government, to do a real commercial development job.

Now, not only does this aid the American public in making available better, more reliable, quieter, more smoke-free, et cetera, aircraft engines, it is a magnificent thing in keeping the American commercial aircraft the best in the world.

Now, we were able to participate, for example, in the European airbus with a very significant American engine content, which we probably would not be able to do if it were not for the fact that we got the rights originally when we did Government work.

I hope this is—

Mr. ERTEL. Is that a standard policy by the Department of Defense? Is that in their standard written contracts? That is not negotiated?

Mr. MANBECK. They have various contract forms, depending on what the mission of the contract is. But, with most of the contracts under which we do work for them, it is in their standard contract form.

Mr. ERTEL. In your statement, if I just might follow up on that a minute, you keep talking about a complete and fair hearing before the patent rights are taken back by the Government and the contractor is required to grant licenses. In other words, you are talking about the Government there with march-in rights?

Mr. MANBECK. That's right.

Mr. ERTEL. You're talking about all these rights which you have given the contractor. You've asked for a fair hearing and all of those things. How much administrative detail are we going to get into?

Mr. MANBECK. I—

Mr. ERTEL. How many problems are we going to envision with that? Can't we say to you if you don't have this commercial development and have x amount developed by a certain time, whether it's engines or something on a market, we will take away the rights? The problem is you say after all we have invested now you're going to let somebody else march in on us.

But really, you're way ahead of the game, anyway. You've been way down that road. The Government has given you research money. You're so far in advance anyway that it's going to be very difficult for someone to come in all of a sudden and pick up where we let them march in. Isn't that a prod to you to do a little better?

Mr. MANBECK. Well, I can't say it wouldn't be. But, let me put a little different twist on it, if I may.

Mr. ERTEL. Certainly.

Mr. MANBECK. The timing for when the contractor should be commercial—I mean, should have a commercial product is a very difficult thing. Now, in the aircraft engine examples of which I just spoke, the original Government contracts during which some of the most significant work occurred were over 15 years ago—I know that, because I happened to join our aircraft engine business in the summer of 1964.

This meant that some of the contract work was probably back in the very early 1960's, some of the development work was going on then. By 1964, there was a two-thirds to maybe three-quarters size demonstrator for the military application. Then, you know, it took years to scale that up to the final military application which was on a very large troop transport. From there, it took many more years to carry it over onto the commercial product.

In fact, the aircraft of which I'm speaking today, these engines are on the DC-10. They will be used—I notice you are smiling, sir.

Mr. ERTEL. It wasn't the engines.

Mr. MANBECK. We are talking only of the engines, which have had a magnificent record. [Laughter.]

Mr. ERTEL. I duly note that in the record, that the engines have not failed. [Laughter.]

Mr. MANBECK. Thank you, sir. Still more modification to the engine was necessary to get it arranged properly for the European airbus. The next thing which follows through is to put it on reengining of the DC-8's. The advantage to the public—there is a lot less fuel and a lot quieter engines.

I would say that there probably was a time at which if General Electric had not gone forward with some basic inventions and others were being blocked out, the Government should be entitled to come in.

But, I think you would have far less administrative problems with the Government coming in where somebody says I want a license—because the original contractor isn't doing the job, than to provide for extensive waiver provisions. I will, by the way, characterize these as waiver proceedings rather than extensive waiver proceedings.

You will have much less administrative bureaucracy both within the Government and the contractors if you try to keep control through march-in rather than through original waiver proceedings. Waiver proceedings take forever. I checked in on one which was done in our Space Division just to see.

My associate, Mr. Schlamp who is behind me here, did this for me. We took a NASA contract and we asked for a waiver. They said, we can't possibly do this within the time this contract is going to be signed. Would you sign the contract and go ahead?

We wanted the contract and we signed and we put in for the waiver. It took 2½ years of work for that waiver to go through. Obviously not everybody is going to be working on it every day.

Mr. ERTEL. You just gave me an idea, because we had the gentlemen from NASA testify yesterday. Most of the testimony stated that the waiver provisions were rather simple, not too extensive, and probably not costly. Do you have any idea what it cost you in time to get that waiver?

Mr. MANBECK. May I turn and ask Mr. Schlamp about this?

Mr. SCHLAMP. The indication I have is that it took 2½ years and it involved a great deal of completion of appropriate forms to justify why the contractor should retain or obtain the waiver.

Mr. ERTEL. How many work hours?

Mr. SCHLAMP. That, I don't have.

Mr. ERTEL. Two-and-a-half years; if you only did one thing once a year, it wouldn't take a lot of time.

Mr. MANBECK. Congressman, we will get you a more exact answer.

Mr. ERTEL. I will be glad to incorporate it into the record.

Mr. MANBECK. I do not think you will have much march-in activity. Frankly, it is infrequently that licenses are solicited from us under inventions stemming from Government contracts. And this is because the contractor, as I say, if he's doing a job, is far enough ahead usually that it's difficult for anybody to catch up. I don't mean to say it doesn't happen. I don't think the possible abuse justifies all the administrative effort, as we view it, involved in advance waiver proceedings. I think you would have a heck of a lot less effort if you wait until you can show an abuse.

Mr. ERTEL. I think what your argument seems to point out to me is that the provision of march-in rights wouldn't affect your company, and specifically, in that contract with the jet engines. Why? It took so long to develop them in any event. Even if we had taken the patent and said to Pratt Whitney you can use this as well, you were so far along the line that I don't see how it could harm or be of any detriment to innovation. And, in fact, it probably would have prodded you to do things a little faster.

Mr. MANBECK. Sir, I agree it wouldn't have hurt us. It wouldn't have prodded us because I think the prod is to get there with the product. If you can get there with the product and sell it and make some money, that's—

Mr. ERTEL. That prod is always there, but that prod is a little stronger, it seems to me, if somebody may beat you to that point in making that money and getting that product. That is a little bigger prod.

Mr. MANBECK. Let me say, if it can be shown—

Mr. ERTEL. I am just asking you if that is a reasonable conjecture, and if you have any evidence that it is not true or it is true, one way or the other?

Mr. MANBECK. Hard evidence? No. I think this, that you and me—and I don't mean to indicate your question sets a position—

Mr. ERTEL. You can bruise my feelings. It wouldn't bother me. [Laughter.]

Mr. MANBECK. I think that actually, I am in agreement with you that march-in-rights will not hurt the affected contractor and will not act as a disincentive to the innovation process. Absolutely.

Mr. ERTEL. What's your feeling on that, Mr. Maurer, being with Monsanto? Do you think that the Government should retain march-in rights? Should we have to have an extensive hearing before we would walk in? Let's assume for a moment that your position entitled you to retain the contract.

If we retain march-in rights, would it be a prod to commercialization? Would it make the contractor act more rapidly in development in the commercial sector? Is it unreasonable for us to have those march-in rights? If you reach the conclusion that we should, how should we exercise them?

Mr. MAURER. I guess it occurs to me that the answer might be that march-in rights may—in going back to what my cohort said—that march-in rights might have more of an effect on a small university or small business than on a large company, the latter having a lot less trouble, if you will, getting things off the ground.

If that stone of a march-in right is hanging over their heads, it may promote activity on their part to either find somebody else to do the job if they can't, or get another licensee to come in and help them, et cetera.

I think in the case of a large corporation, if we are interested, we are going to go as fast as we are capable of. I don't think the fact that there is a march-in right would have a significant effect on our decisionmaking process.

For that reason, I advocated that I think they are appropriate. In trying to answer your question, I don't think in our case they would be that significant.

Mr. ERTEL. Have you tried to reach a waiver agreement with any Government agency that you know of?

Mr. MAURER. I was thinking about that when you asked the question, and I can't think of a particular one offhand, although we have obtained waivers. I can think of one example where we have gone ahead and commercialized a development started under a DOD contract, really for the same reason that we knew where we stood from the beginning and were able to go ahead without having to worry about it. I cannot personally provide an example—I will check back in the corporation and see if we can get some examples where we have had difficulty with obtaining a waiver and submit that, if I may.

Mr. ERTEL. I'd be interested, too, if you can pick up the information in your companies. For instance, we have had the contention that obviously, if the contractor had basically title to the patent, they would tend to commercialize that more. That's been a contention.

We have had no evidence of that. Everybody has argued that. Since DOD as a matter of contractual relationship does give title to the contractor and I'm sure you've done business with other entities who have not, for instance, NASA—I'm sure General Electric does—I'd be interested in seeing if you commercialized more out of the DOD contracts where you actually have title as opposed to NASA where you have to go in and get a waiver.

Have you not moved in that area at all? I would be interested in seeing what the commercialization rate from DOD contracts is as compared to those, because you would be a test case.

Mr. Hance?

Mr. HANCE. As far as Federal patent policies are concerned—I also have a question for the next group—as far as any preferential treatment is concerned, should small businesses or universities be given any preferential treatment whatsoever?

Mr. MAURER. As I indicated in my testimony, I think that's putting the Government in a disadvantageous position. My thought is that if you are going to fund R. & D., you ought to fund it where you believe it has the best opportunity of the inventions being made, and also where there is the best opportunity for the further advancement of that invention into an innovation that benefits the public's lives.

It seems to me—I can't give you an exact example—but, if a large corporation happens to have an expertise that would be appropriate for the funding, the government shouldn't put itself in the position where we say we can't deal with them or we can't make it worth their dealing with us, if you will.

To me, that's just not good judgment. You ought to be in a position where from an administrative standpoint, you can say where is the best place? Where am I likely to have the results that I want to get from my investment?

Mr. HANCE. Thank you, Mr. Chairman.

Mr. ERTEL. Thank you, Mr. Hance. We have to go vote. What I will do is stand in recess and hope you gentlemen can remain. We will be back in approximately 10 minutes. The subcommittee will stand in recess until 20 minutes of 3.

(Voting recess).

Mr. ERTEL. The subcommittee will come to order.

Yes, Dr. Stacy?

Dr. STACY. Mr. Chairman, with your permission, I'd like to ask if I might have my colleague, Dr. Marcy, discuss the point that you were concerned about in regard to waivers on one hand and march-in rights on the other and the ACS views on them.

We commented on it very briefly in our statement, but I think Dr. Marcy could clarify it quite quickly for you.

Mr. ERTEL. I'd be happy to have his comments.

Dr. MARCY. I think the ACS position is that the title for these inventions ought to reside with the contractor as a matter of policy, a matter of Government patent policy. The Government, then, if it didn't feel that the contractor was adequately fixed and in a position to exploit these positions, would then argue this point.

This would be, in effect, a reverse waiver sort of thing. We are getting mixed up, it seems to me, in the testimony so far as to what the distinction between a waiver procedure and a march-in rights procedure is.

A waiver procedure takes place before the contractor exploits the invention. The way it is now, particularly at DOE and NASA, if the contractor wants to get the patent rights either through an exclusive license procedure or through a title procedure, which are almost identical, they have to then petition the agency to get that title.

Now, there are many inventions that people would like to exploit that are not really going to make it in the marketplace, so that there are many more cases that have to go through this initial waiver procedure at the very beginning, than there are march-in rights problems at the end.

The administrative costs and the time consumed at the march-in rights end, and in the waiver procedure, are essentially the same on a case-by-case basis. The problem is that there are very many more waivers necessary at the beginning than there are march-in rights problems at the end.

If you take that kind of position, or you understand that, then the administrative costs we were talking about in the DOE situation, which you heard about yesterday, have to do with all of the inventions that come out of the DOE contracts that have to be going through this waiver procedure.

Now, at the other end, with the march-in problem, this is something that occurs so rarely that there are only very few of these. In fact in my own experience, I know of none that have occurred in the past 15 years. So, there is essentially in effect no cost.

Mr. ERTEL. How many exclusive licenses have been granted by agencies with which you have dealt that there would have to be march-in rights? You may say there are very few of them, but if there are very few exclusive licenses, obviously, there would be very little, if any, march-in rights.

Dr. MARCY. If I may wear my Research Corp. hat instead of my ACS hat, I gave data on that point to Senator Bayh earlier this year. In the case of our organization, in the case of the chemical industry, we are talking not about DOE or NASA inventions, we are talking about HEW and NSF inventions.

In my particular instance, we are talking about somewhere on the order of 100 to 200 of these.

Mr. ERTEL. Exclusive rights were granted to you or your company?

Dr. MARCY. That's right, either through a waiver procedure by these agencies or through the institutional patent agreement procedure. Now, we probably represent no more than 15 percent of the total population, so there is perhaps as many as 1,000 or 1,500 of these that have been granted by these agencies.

I just thought that this might be worthwhile clarifying so that the subcommittee understands that we are talking about two different things when we are talking march-in rights and waiver procedures.

Mr. ERTEL. Thank you very much. Mr. Brenner, you never commented on what you think of the administrative burdens; being a former Commissioner of Patents, I thought you might have some view on that.

Mr. BRENNER. I think our position is that it would be best to minimize wherever possible this administrative burden that is involved, particularly in the waiver provisions and the other administrative areas and follow, as much as possible, granting the title to the contractor.

Whenever that is done, I think you substantially minimize this front-end administrative burden that Dr. Marcy has just been talking about. Then, when you come around to march-in rights, our position is this should be employed only in emergency situations for the public interest and we would anticipate there would not be a large number of activity there.

So, by moving the thrust of the legislation toward title to the contractor, you automatically eliminate a lot of this. I agree with Dr. Marcy on the march-in rights. I think that this will be relatively low activity. Furthermore, in my mind, it is much simpler to decide these things at the end with respect to march-in rights because then, you have some factual situations, whereas dealing with waiver way up on the front end, who knows what the situation is going to be 5 or 10 years hence?

Mr. ERTEL. You have all addressed the problem with the contractor. But, how about the in-house inventions when the Government itself, within its national laboratories, develops an invention and we want to move that into the commercial sector and to commercialize that? What,

then, do we do to promote that particular thing being commercialized? How do we handle that end of that? I don't think any of you addressed that in your testimony. Have you any thoughts on that?

Mr. BRENNER. Well, if I may start, I would say that again, it seems to me that it's got to be either under an exclusive license or, say, granting the title of the patent to some third party in the private sector that's in a position to do this.

It's got to be an exclusive right, I think, in almost all cases because, like I mentioned before, 90 to 95 percent of the cost of bringing an invention into the marketplace is in the innovation stage.

There, you've got to have this exclusive right to protect your invention, to provide an incentive to do that. Otherwise, if it was a non-exclusive license, after you had spent all this time, money, and effort, and taken the risk and were successful, any competitor could just move in and actually be able to undercut you, because he did not have all this expense of the innovation.

So, to me, what the Government needs is an improved technology transfer system in which you would grant these exclusive rights.

Mr. ERTEL. That brings up, then, the following question which is going to be addressed to all of you, and you might comment. What do we do about the royalty? What do we do about the payback to the Government? Specifically, in the in-house, there has been no investment by the commercial sector at all. It has been in-house research and development, all paid for by the taxpayer.

One could argue as a matter of equity that we ought to get a return on it. We may in fact be entitled to a profit, because we act no differently than any private enterprise in that situation in the research and development end.

If you follow that along and say that we are entitled to a return, then why are we not entitled to a return when General Electric or Monsanto develops something with our money? Why shouldn't we get a payback then? Why shouldn't that be part of the contractual provision, that there be some sort of payback, whether it's called a recoupment or a royalty?

I know the argument is going to be, well, we will pay it back in taxes after it's developed. But, everybody pays taxes, too. That's an equalizer. You don't pay anything in addition to what anybody else pays.

No. 1, you are getting the contract, which you probably make a profit on, so you have already benefited. Now, if we allow you to take title to the patent and commercialize it, you have received two benefits. You have the benefit of the profit in the initial research and development phase of it because you entered into the Government contract.

I'm sure you do that for your benefit, and there is nothing wrong with that. But then, you get a double benefit because you get all the patent rights. If we don't get any recoupment or any royalty from it, whatever term you want to use, is that not unfair to the American public?

And, if you have reached that conclusion, then how do we set it up without going through this extensive negotiation at the beginning to provide for some sort of automatic provision?

Anybody want to tackle that multitude of questions?

Dr. STACY. I think again, Dr. Marcy can give a more lucid description of this than I might. So, if we may, I will bring him in.

Dr. MARCY. The ACS position on this is the Government should be entitled to recoupment not only of original cost, but something in excess of that.

Mr. ERTEL. I understand that, but I wonder how you logistically and administratively apply it? The question is how do you do it?

Dr. MARCY. To respond to what I guess was your first question, how does the Government handle its in-house inventions, I think the Government must go into the licensing business, just like any commercial organization. In fact, the National Technical Information Service has a pilot operation in this area right now. They try to negotiate nonexclusive licenses where they can and they have been successful in doing this in many cases.

They will also, or have also negotiated exclusive licenses where they haven't been able to negotiate nonexclusive licenses. They charge royalties, they charge fees, they charge all kinds of things in these licenses just like any commercial organization does.

In this case, the Government not only recoups its original investment, but it can get back considerable income in addition to that obtained through the royalty route.

Mr. ERTEL. A very time-consuming process.

Dr. MARCY. It has to be. It's that way in industry. Licensing is very time consuming and a very risky process. I kind of lost track of the questions.

Mr. ERTEL. How do we do it administratively, especially if it's a contractor that we are dealing with, and that's what we are specifically interested in here.

Dr. MARCY. You could use the same principles and apply it to the contractor who has title by saying the contractor has to send back a portion of whatever profit he gets to the Federal Government until the Federal Government's original investment was recouped and, in addition to that, some x percent beyond that.

This could be written into the legislation and I think if done on a reasonable basis, it would be acceptable. Most every contractor that I know of, both industrial and university or small business, would be agreeable to this kind of an arrangement.

It's when it becomes confiscatory that people begin to take exception to this kind of thing, or when the total money coming back is so much greater than the original investment that it looks as though people—the Federal Government, for that matter—is going to profit more than it should by virtue of its investment.

I think I should say another thing is that even though the Federal Government has put a lot of money into the original research, by no means is the research necessarily ready for the marketplace.

The point that Mr. Brenner was trying to make was that normally this kind of invention, that is supported by Federal Government funds—aside from some of the Department of Defense and Department of Energy inventions—requires a great deal more input of money, time and investment by the commercial sector before you can get to the marketplace.

The chemical society is oriented toward the chemical industry, and this is exactly what happens in the chemical industry. Most Gov-

ernment-supported research is just the beginning. It's not really fair to say that the Government has put all the money into it and the industrial organization reaps all the profits because, in fact, the industrial organization has to make a major investment here before they can get to the marketplace with this type of invention.

Mr. ERTEL. Mr. Maurer, do you have a comment on that?

Mr. MAURER. My comment is I don't think there is a universal answer, a panacea, from an administrative standpoint even though I think I understand your desire to have it that way.

Mr. ERTEL. Oh, I'd love to have it that way, and so would everybody else, because it would be administratively simple and there would be no discretion in the agencies, so you wouldn't have all the problems.

Mr. MAURER. From a practical standpoint, I'm having great difficulty believing that there is some simple, universal truth, if you will. Once you make the decision, in the case that you presented, that you want some return to Government, I think you've got to negotiate an agreement at that point, simply because of the diversity of the things that you are dealing with.

Going back to what Mr. Brenner said, if you are dealing with something that is almost essentially ready for the market once you do it, chemistry versus a device, for example, there is tremendous latitude in the kinds of situations that you are going to run into.

As I pointed out in my testimony, I think we have always got to keep in mind that from a commercial standpoint, in industry, certainly, there is no relationship between what Monsanto will pay to Dow Chemical for something they have done.

There is no relationship on what it cost Dow to develop it. That's not the issue. It's what is its value? Value has no bearing to what it cost to develop. I think you've got to keep that in mind. I think it would be nice if it was very directly related, but it isn't.

I think that's where the fundamental problem comes in—in trying to develop a universal norm.

Mr. ERTEL. Your position, I take it, is that we waive all rights to a royalty or payoff, and basically give title to the contractor and hope that he'll commercialize it, and maybe have march-in rights to insure that.

Proportionately, the U.S. Government has contracted business, contracting out for those firms that hire 25,000 or more employees, they get 90 percent of the research and development dollar. Are we not now basically creating a situation where we are going to develop big business to an even bigger extent?

They are going to get the benefits. Small business doesn't get it. Universities don't get it. We are channeling a large percent of it into very large companies.

Sure; they will pay taxes on the profits, but so will small business. It's making our multinational corporations even larger. Not only that, but these multinationals really aren't American companies. In many cases, they are international companies. Is that good Government policy when we don't get any recoupment?

Mr. MAURER. I will try to answer that by saying, what's the reason the Government wants to fund the research in the first place?

Mr. ERTEL. The original reason is we want a benefit to us.

Mr. MAURER. I'm not sure that's the main issue. If the Government makes a decision that there is an area of research which is desirable from the public standpoint, I personally believe that that's got to be the first consideration.

Then, they ought to look to who can do the job. Now, if we are caught in a dilemma that there are only certain people who can do the job, I recognize that what you are saying may actually happen. But don't we get into the philosophical issue of the tradeoff of public benefit, do we want or don't we want it? I'm not sure that there is a nice, simple answer to the problems that you pose.

Mr. ERTEL. I don't think there is, either. That's why I posed the question. [Laughter.] But, I would like to have some sort of guidance on it.

Mr. MAURER. It's a trade-off.

Mr. ERTEL. Anybody else have any comments on that problem? I think it is a major problem. The primary benefit is the research the Government gets. We are talking about fringe benefits, the incidentals. They may, in fact, turn out to be much more important than the primary benefits.

Another question is—as some of you are patent attorneys—if we give title to the contractor, does that make the issuance of foreign patents easier to obtain by the contractor? Do you have to have title, or can you use an exclusive license to go abroad and then file for foreign patent rights?

Mr. BRENNER. Well, I think it definitely makes the filing of foreign patent applications simpler because you then have complete control over what you want to do and when you want to do it on your own particular time frame.

In this matter of foreign filing, you have to move along within a certain tight time frame. If you have to worry about negotiations with some other party such as the Government, I think it definitely hampers your ability to foreign-file.

I think also, maybe from a secrecy standpoint, you could have some problems. Foreign patent laws say that unless you keep something secret, you are barred from getting foreign rights. And, if you have to deal under certain circumstances with the Government this way, you can have a problem with losing your rights.

Mr. ERTEL. What's the rate of commercialization of patent inventions arising out of research funded privately? We have had different estimates of that. What's the commercialization of your patents within your specific areas?

Mr. MAURER. I'd be glad to try to answer it for you. I guess I ought to preface my remarks by saying that one of the problems you get in response to that kind of a question is how do you count utilization.

In other words, you can have a hard count or a soft count, OK? In other words, some people would count——

Mr. ERTEL. How about a mean count?

Mr. MAURER. Let me explain. Some people would count patents on alternate products that aren't commercialized as being part of the commercial use.

Mr. ERTEL. Protective patents?

Mr. MAURER. That's right. We did a study some years ago, I've forgotten when, precisely, with the criteria that either the patent covers a

commercial process, product, or an alternate product or process or even use patents where the product was commercial.

We ran about approximately 30 percent utilization at that time using those rough criteria. There are a lot of arguments, but it was in the 30-percent range.

Mr. ERTEL. How does that compare with the patents that you obtained through utilization of patents that you had the ability to utilize from the Federal Government? Do you have a comparison on that?

Mr. MAURER. I do not have a comparison on that.

Mr. ERTEL. Mr. Scoville?

Mr. SCOVILLE. Yes, Mr. Chairman.

Mr. BRENNER. I was——

Mr. ERTEL. I'm sorry. Please proceed.

Mr. BRENNER. I was going to comment further on your question. There was a study made by the Patent Trademark and Copyright Research Institute of George Washington University that canvassed all of American business, and the figures indicated that approximately 50 percent of the patents in their sample were commercially utilized. Many of us were surprised it was that high, but it was a scientifically conducted experiment. It came out about 50 percent are commercially utilized.

Mr. ERTEL. Do you believe that those statistics would apply today with the changes in the environment, probably the difference in the research and development establishments?

Mr. BRENNER. If I had to estimate, I would think it would stay about the same because I think to a large extent, people are now filing more selectively on the inventions per research dollar per research man. So, therefore, being more selective, I would think it would tend to increase the percentage utilization.

But, there may be other factors that would work the other way. I would say if it were 50 percent 20 years ago, I would think it would be about 50 percent today.

Mr. MAURER. I would like to say we would like to see that number higher as far as the corporation is concerned. On the other hand, I think that it does—and we do try to be selective, as Mr. Brenner has pointed out, very much so, as a matter of fact.

And yet, I think it points out the very nature of the business, if you will, of unpredictability. No matter how hard you try, you aren't going to be right all the time. I think we have to keep that in mind in terms of this whole question.

Mr. ERTEL. Mr. Manbeck's assistant, I've forgotten your name.

Mr. ESPE. James E. Espe. We did a study recently at General Electric which showed that approximately 50 percent of our patents were in actual use. The inventions covered by the patents were in commercial use sometime during the life of the patent; approximately 50 percent.

Mr. ERTEL. Would that be if you were filing protective patents or improvement patents, you would consider that as use?

Mr. ESPE. We would look at the——

Mr. ERTEL. It falls strictly within the claims of the patent?

Mr. ESPE. Yes. That may mean that one product would be covered by two or three different patents. But, during the survey, we looked at the claims of each patent.

Mr. ERTEL. Now, Mr. Scoville.

Mr. SCOVILLE. Thank you, Mr. Chairman.

Just one very brief question about which is there is a constant theme throughout these hearings, the question of the possible return to society. One thought which struck me is you obviously make a profit in normal circumstances on a research contract that you carry out.

At the same time, there has been a suggestion that there should be some form of recoupment if it could be arranged, to a Government investment in research. I guess my question to you is from a business point of view: would you prefer to have a contract where you did research on a completely nonprofit basis?

In other words, you don't make a profit and then, you get the title plus the right to reap whatever profits later you might get from the patent, or would you rather have a case where you can make a profit on the actual research, but you might have to have some form of recoupment later?

Do you see the tradeoff I'm trying to get at? If we agree that in some sense, society should benefit from its inventions and that the company should not be profiting twice from the result of a Government investment in research, there are two alternative ways to handle it.

One is the recoupment alternative and the other is to have nonprofit research. Which of those two alternatives might be more attractive in terms of actually getting innovations and inventions out in the marketplace?

Mr. MAURER. That strikes me as a Hobson's choice.

Mr. ERTEL. I was going to suggest the answer may be needed.

Mr. MAURER. Yes. That's why I was hinting at that. I think I understand the philosophy of what you're saying, but I'm not sure it's really an appropriate question, if you will, if we are trying to say what it is we are trying to do for the country.

If you go back to the nonprofit situation, I guess I feel from a corporate standpoint, that if we can't make some profit on anything we do, we certainly have to question why we are going to do it.

Now, if you have a wartime situation, et cetera, I think that's a totally different question. But in the normal course of events, you only have so many resources. You have to face the issue, what are you going to do with those resources. If you are going to give us the alternative of a no-return investment, I think we might have to think pretty hard about—

Mr. SCOVILLE. I wasn't trying to imply no return. It's a question of where the return came to whom, at which stage in the process.

Mr. MAURER. I think the other point there is, then, that generally, based on what I'm told and my own experience as well, we have to recognize I think that Government R. & D. tends to be put into those areas where the risk or the uncertainty is so high that there is not a commercial interest in doing it.

So, I think you've got to sort of put that into the perspective of your question, because you're trying to get something done that from a commercial standpoint isn't quite attractive enough to do it. And yet, you see a public need. I think to make that kind of a tradeoff may be to your disadvantage.

Mr. SCOVILLE. That answers my question.

Mr. ERTEL. I'd like to thank you gentlemen very much for your enlightened testimony, and also your throwing back some of the questions to us that we threw at you. Thank you very much for participating in our discussion. We are hoping that this will be meaningful and that we will be able to come up with a coherent Federal patent policy. Thank you.

If you don't mind, we'd like to send you possibly some written questions and hope that maybe you will follow up.

Mr. MAURER. We'll be very glad to do that.

Dr. STACY. We'll be happy to.

STATEMENTS OF A PANEL OF WITNESSES CONSISTING OF PATRICK IANNOTTA, PRESIDENT, ECOLOTROL, INC., BETHPAGE, N.Y.; DR. CHARLES M. COLEMAN, INDEPENDENT INVENTOR, PITTSBURGH, PA.; AND DR. RALPH L. DAVIS, PATENT MANAGER, OFFICE OF PATENT MANAGEMENT, PURDUE RESEARCH FOUNDATION, WEST LAFAYETTE, IND.

Mr. ERTEL. Our next panel is of small business and university witnesses. We have Mr. Patrick Iannotta, president of Ecolotrol, Inc.; Dr. Charles Coleman, independent inventor from Pittsburgh, Pa., and Dr. Ralph Davis, patent manager, Office of Patent Management, Purdue Research Foundation, West Lafayette, Ind.

Gentlemen, I welcome you to the committee.

Doctor, Mr. Walgren asked me to indicate to you that he is sorry he could not be here. He said you are a distinguished citizen and a good constituent of his. I'm happy to welcome you on his behalf. We will start with Mr. Iannotta.

Mr. IANNOTTA. I found the innovative process somewhat different than that discussed earlier. Eleven years ago, we started a company with an idea about a process. And, for the first 5 years, we found great difficulty getting anyone to believe the process would work.

I think that's probably characteristic of major inventions. Right now, we have about 100 patents around the world. We have a licensee. This year there will be two international symposiums on the technology. Last week, we won a major international award for the technology, the Thomas R. Camp Award: from the National Water Pollution Control Federation.

Independent work by DOE has shown our system to be 10 times more effective in treating some of the contaminants coming from coal conversion than other processes that are currently available. They found us four times more efficacious in treating low-grade nuclear waste. We have had great international recognition for technology.

The problem is that we are a small company and the technology is a major technology—in our opinion. Today I'd like to address two fundamental points. One, I believe, is a fundamental, inherent and structural prejudice against small companies in Federal R. & D. programs. I think that derives primarily from the conflicting value systems of large bureaucratic organizations, whether they be governmental or business vis-a-vis the risk nature of entrepreneurial organizations.

This is an issue not ordinarily covered in this type of hearing. To put it succinctly, I think with big companies, the Government works and negotiates. With small companies, they use the Golden Rule. We have the gold; we make the rules. Small companies usually have little or no option but to accept.

I was interested in the former speakers' testimony that when the rules weren't right on a desalination project, the large companies decided not to participate. Small companies do not have those options.

For 20 years, we've developed a non-profit no-risk environment; capital gains changes and other things have worked against us. It's not coincidental, I think, that it was the Business Round Table that worked against capital gains reform last year. I think it's not coincidental that small companies need Federal Government support because they have no other options.

There is no secondary or private market, no viable one. The National Academy of Sciences defined innovation as follows: Ten percent invention, ninety percent commercialization. We agree with that. Innovation is important to this country. We recognize that.

Productivity statistics would indicate that we do not have the type of position in the world that we might need to keep our standard of living up. We have to compete in technology areas, according to a recent GATT report.

Small firms are very important to innovation. We mentioned figures earlier. The National Science Foundation did a study and found that one-half of all major inventions came out of small or medium-sized companies, not the large ones.

MIT did a study on patent innovation and found it was not the recognized leaders in fields that came up with innovations, but new companies that tried something different. The innovation is coming from places like California where you have a myriad of small companies, not the large ones.

Patents are extremely important to small companies. Big companies use commercial position. They use markets. They use distribution channels. They don't need patents. Small companies need patents because it's the only protection they have in the marketplace.

In fact, if a small firm is required to have a march-in right clause, they would find themselves structurally unable to take whatever venture capital may be available. The march-in rights have no impact on large corporations because they can always justify that under those provisions, that they are doing what is necessary to meet the demand.

Small companies are always able to be criticized for their size and not being able to meet the demand in the most cost-effective and efficient fashion. Government patent policy, I think, has to recognize the inherent value system conflicts between institutions.

I saw a show on public TV just last night called "Connections." They made a great example of gunpowder. They pointed out in China where it was first developed, it was never used in an aggressive fashion.

It was primarily the value system of Western culture that caused it to be used differently. I'm very sincere. I think this fundamental issue of a value system must be inculcated into the thinking on any legislation on Federal patent policy or to aid small business.

Not only is small business the major innovator—and individuals—but they give you the most for your money. The previous testimony was very interesting in that it said go where you get the best deal.

A report put out by the Office of Management and Budget indicated that you wind up with four times the productivity for every R. & D. dollar that goes to small companies. If you want to go for the best buy, maybe we should give 90 percent to small companies and 10 to large.

I recognize that there are programs that small companies can't handle. I think the reason that small companies don't participate more fully in the Federal R. & D. programs is risk. Going back to public television as an example, Gary Marshall puts together shows like "Laverne and Shirley" and several others.

He was asked about a week ago on public television in New York, why is it five people predominate 27 percent of all prime TV time? He said the reason is this: If you go to a stranger with a very good show and you put it on the air and it fails, you say you're out of a job.

If you have a Norman Lear, you say, who would have guessed? You tried and you failed.

Bureaucracy causes more of the public to be excluded. The problem, of course, is that in the real world, we are getting our brains beat out by the Japanese and the Germans. As an entrepreneur and innovator, we found the receptivity dramatically different in those countries than in this country.

We will submit documentation to show that we as a small company were unable to obtain from the Environmental Protection Agency the same patent rights that they gave Union Carbide. Theirs was up front and we were 5½ years into development. This was on the assumption that we would have a monopolistic position.

Mr. ERTEL. Did you subsequently develop that system?

Mr. IANNOTTA. That's my second point. The system was developed by the time the Government became interested. There was no risk. I sit here and I listen to them talking about the concept of background patents. Yet, there is a very important point—

Mr. ERTEL. Can we recess for about 3 minutes? I have a call outside I have to take.

[Brief recess.]

Mr. ERTEL. The subcommittee will come to order.

I'm sorry. I apologize for interrupting. Please continue.

Mr. IANNOTTA. One of the issues under discussion is the march-in provisions. One of the things that I'm not sure you're aware of is the primary reason we turned down the EPA grant. It's not because we invented or expected to invent anything new. It's because the mere fact that we would have taken a grant, whether we had a subject invention, new invention or not, we would have been forced to agree to a march-in rights clause which I thought was confiscatory since we had spent roughly \$700,000 of very difficult-to-obtain money to develop our system over 7 years.

And, if we took a \$100,000 grant which the Government gave us to get information the Government wanted, we would have had to agree to a march-in rights provision. Now, the march-in provision was such that we had to make the invention reasonably available, whatever that meant, at a reasonable volume, whatever that meant.

The problem is I don't know what any of those things mean. They change from person to person. When we first had the grant offer, we prepared the information they requested. We developed all the information requested by EPA for a waiver. We spent a full day negotiating the deviation. We were under pressure to begin the project because we were really a subcontractor to a municipality. We began to work.

Five months later, we received a letter from EPA that unilaterally changed the conditions of the waiver EPA had agreed to and asked us, or required us to do things that no other firm in the country would have been required to do.

When we asked for the same patent provisions that they gave to Union Carbide—at this time, you must realize we were 6½ years through the development phase and the technology had already won several major awards—we were advised we couldn't have that because it would not be used as a precedent and we would have a monopolistic position. We had a very specific example. It was a project which was bid at \$6.5 million. It was a federally funded project, 75 percent. We estimated our project cost a half million dollars. We said to EPA, we'd like a \$1 million fee which would have brought the total cost to \$1½ million with significant savings to the Government. The individual said, we would rather spend the \$6 million since you only put \$700,000 into it. We said, fine—we did not pursue the project.

We spent a great deal of time making sure we wouldn't have to give up our background patents, that is, those patents we paid for and we developed before the grant. There are ominous nuances to the regulations, like the specified work. The mere fact that you have contingent call on your patents can preclude one from getting an exclusive license or venture capital agreement.

Who wants to put money into a company that, anytime someone comes up and requests a license, we're going to go into battle? Let's take the best world, the argument that a large company comes to me and says, we are really interested in a license and we want to commercialize the technology on a national basis. You would think this would be beneficial to us because it would expand our distribution channels. It might be. The problem is a licensee is like a marriage partner. You have to trust the people. You transfer information.

What I have seen happen to small companies is this: A major firm will come in. They commercialize. They develop their market position and then, they sue to invalidate patents. At that point, you are cut off from your income stream and your options.

The risk to the large firm is whatever it had to pay you to begin with and you have to find and spend a quarter of a million dollars in a lawsuit to defend your patent.

What you usually do is capitulate. I know at least two presidents of small companies that won cases like that and went bankrupt. It isn't clear to me that march-in coordination is beneficial. With reference to the specific questions you asked, if you accept my hypothesis that structure and size impact value systems, then you must accept an inherent conflict. It is more difficult for small companies to get a fair hearing; therefore, I think we have to have a two-tier system.

I think small companies and perhaps universities should be treated differently than large companies. The key parameter is that large

companies have the time to participate and they have the option of not participating.

Small companies only participate at great detriment to themselves. There should be provisions for large companies to have more and fairer access. I think there ought to be two sets of criteria in terms of commitments, as was indicated.

Most importantly, in any program, you have to have a feedback loop. The problem is, too often, the Congress has not looked at these issues for 10 or 15 years and abuses develop which I'm sure they are aware of. In terms of payback, I don't have any difficulty with that. I wouldn't mind a payback provision if I were making money and large firms had to do it too.

I don't mind paying taxes. My problem is that the rules of the game have to be clear up front. I have to be able to make a decision with certainty in terms of the specificity of the deal. The problem is the Government says it shall be "reasonably available." What is "reasonably available" today to one administrator may be "unreasonably unavailable" to some other administrator.

I can't work that way. When you're an entrepreneur, you work in an area of risk and you can't put the whole future of your company on quicksand. You need certainty. The Government can't have all options on all conditions at all times. It has to make a commitment on way or the other. The very fact that you have that uncertainty is sufficient to keep you from getting venture capital which is sufficient to keep you from staying in business.

On the question of march-in rights, I don't have a particularly difficult problem with the subject inventions. I think the key has to be this: The small businessman or large businessman or whatever, has to have an irrevocable license.

Assume you had a waiver on a background patent and assume you had a major invention which, say, sells for \$1 million. Let's further assume we develop a 25-cent or \$25 gadget that goes on this initial invention.

If that's patentable, that very subject invention brings in all the background patents. I think it's important we protect background patents. It's also important that if the subject invention is significant, no one is going to really want to go after it if the background patents are secure.

On the other hand, if you start off with invention A and you develop a subject in invention B that is significantly greater, then you have an opportunity to negotiate. I think it's important that if you are going to have march-in rights, the burden of proof should be placed on the Government.

It is my opinion that you can come across a GS-12 or GS-13 administrator who is a follower of the Golden Rule and you're in trouble. It doesn't matter if the need is real or not. The best argument ever given to me why I should not disagree with subject inventions or march-in provision is that they are never used. I said, if they are never used, then take them out of the contract.

With background patents, I don't see any justification at all for the Government to require such a clause because you participate in the research that they want and that they sponsor unless there are very compelling reasons.

You talk about profits. In the EPA grant our company had to absorb all the risk of being over budget. If we had come in under budget, we would have had to give back everything over 7.5 percent of the actual expenses. It's not a desirable position to be in.

It was helpful to us because we work in the municipal area and it was good for exposure. I feel strongly that the Government, if it requires background rights and feels strongly about it, should make that a condition prior to the negotiation, and not arbitrarily change its position at whim.

I think the way the laws are today, one can argue effectively any position and the Government can do anything it wants on any condition. The regulations don't stop them.

On the rights of inventors, it would be very difficult, I think, for large or small companies or universities to have terms and conditions or employment imposed by the Federal Government. I think the key to that is that it has to be left to their discretion.

We develop contractual relationships with people all the time. We are a small company. We work on a case-by-case basis. We can't have that imposed. I'm fearful about the concept of over rewarding Government employees, not because we shouldn't have Government employees being inventive, but primarily, because the Government employees have access to Government programs, funds, and policy.

You may find, as we have found, that you are going to be up against in-house projects. They are not going to want to foster your technology. They are going to want to foster their own technology.

The problem with a technological firm going to the Congress for relief is that most Congressmen don't feel very comfortable with those issues, and therefore try to stay away from them. You also end up with an inverted pyramid. And that is that the lowest rung in the bureau is allowed to make a decision that no one above that rung would change the position.

One of the reasons EPA has not been effective is that a lot of their people are pushing their own technology rather than pushing private sector technology. The end result is that they don't have a good track record. I don't want to be in competition with a well-financed group of pretty bright people with all the clout and financial resources in the world and the recognition of the Federal Government.

I think there is a danger if the Federal Government starts giving very generous rewards to its employees.

In summary, let me indicate the following: I believe there is an imbalance of power and an imbalance in the value system between the innovators and the bureaucrats. I think it's clear that the RANN study done several years ago on the value system in bureaucracy indicates that.

The regulations have to be made clear. You can't leave it to the discretion of bureaucracy. If you look at the Presidential statement on patents there are three options in patents. Option one is the contractor keeps it. Option two is that the Government keeps it. Option three is that it's negotiated.

If you look at EPA regulations or DOE or others, they say it is construed that all regulations will consider option No. 1 and we always have to justify whether we should have an exemption. That's wrong.

Feedback is essential. I think there have to be annual reports. This way, at least the abuses could be handled on a regular basis. The rules of the game have to be clear, concise, and something someone can live with. We can no longer accept as either viable or efficacious the Golden Rule where the Government just indicates that these are the rules, take it or leave it, and we will change it when we want.

I guess the only last point is "feedback." I think that Congress has a responsibility, since this is such an important area, to have regular oversight hearings. I know they are not the most glamorous things in the world, but they are important.

Mr. ERTEL. I certainly agree with your last statement. They are not the most glamorous things in the world, but they are important.

Dr. Coleman?

Dr. COLEMAN. Mr. Chairman, I appreciate the opportunity to speak as an independent inventor. I would like to skip some of this background on myself and go a little further into it.

I had copies made of Dr. Ernest J. Breton's article entitled "Inventor's Beaten Path Leads to a Mousetrap," from the late National Observer, of May 10, 1975 and I would like the committee to read it when convenient. I believe the fables within the article vividly, elegantly, and realistically represent the existing situations regarding the plight of the inventor within the large organizational frameworks of both government, and big business.

[The article follows:]

[From the National Observer, May 10, 1975]

INVENTOR'S BEATEN PATH LEADS TO A MOUSETRAP

(By Ernest J. Breton)

Ernest J. Breton, Ph.D., is a research chemist who holds a number of patents for his industrial inventions. The founder of Innovatis, an organization devoted to furthering invention, he lives in Wilmington, Del.

Our system of science and technology has developed a deficiency that is impairing its ability to meet the technical challenges currently facing our country. Technical creativity in the United States is being seriously undermined.

The large research establishments of industry and Government—popularly credited with originating most of our technological advances—have, in fact, obtained most of their ideas from independent inventors or from very small companies. Fewer than 30 percent of the major inventions of the Twentieth Century have been made by large research organizations, according to a study done by the U.S. Department of Commerce, even though they spend over 90 percent of our research-and-development funds. While the number of these organizations' research scientists has increased thirtyfold since 1925, the number of patents issued to Americans in 1973 was almost the same as in 1925. At the same time, the fraction of U.S. patents issued to foreign nationals has jumped to 30 percent, and in many fields foreign inventors are making most of the inventions. In yarn-spinning technology, for example, they are receiving 71 percent of U.S. patents.

Part of the difficulty is that the basic differences between scientific research and invention are not generally understood—even within the scientific community. While both involve experimentation, literature searches, and other tools of research, the perspectives and psyche of the inventor are very different from those of the scientist. They are cultivated differently. Yet the inventor is expected to function in environments that have been designed for scientific research.

The root of the problem appears to be that the scientific community has so emphasized rigorous scientific reasoning that it has smothered technical creativity. The scientific method requires that each step of advancement be a logical

extension of previous steps. The scientist's perception is circumscribed by the limits of his particular discipline. The inevitable consequence, as pointed out by T. S. Kuhn in *Structure of Scientific Revolution*, is the confinement of scientific advances to those permitted by established boundaries.

INTUITION ISN'T WANTED

Invention, on the other hand, is based upon perception that extends beyond accepted precepts—beyond the limitations of state-of-the-art technology. The inventor's intuitions lead him to recombine knowledge in unobvious ways to satisfy needs—as Carlson did when he combined electrostatics and printing to develop the Xerox office copier. The inventor works out from a need to whatever technology is required to satisfy it—whether it leads him beyond the realm of his field or even counter to time-honored systems.

To the academic community, the inventor's high degree of reliance on intuition represents an irresponsible state of mind that violates rigorous standards of science. The academic community cannot accommodate the uncertainties and high risk of failure associated with invention. Instead, university research is preoccupied with what Kuhn calls normal science—a puzzle-solving activity that focuses upon a small range of relatively esoteric problems recognized as valuable within a scientific tradition.

What ought to be an ideal niche for the inventor—universities and colleges with their reputations for freedom of thought—is in fact a very unfavorable climate for the inventor. Even though the academic community employs 41 percent of the nation's scientists and received 16 percent of our \$30 billion annual investment in research and development, it contributes fewer than 1 percent of our inventions.

Industrial research provides a somewhat better environment; however, it is primarily geared to reducing ideas to practice rather than to generating them. Those individuals with divergent thinking, bent on making a mutation in established technology, quickly encounter resistance.

The inventor's problems are epitomized in Vladimir Haensel's vignette giving a fanciful account of a kerosene-lamp company's research-review meeting in which Edison's request for funds is discussed. The president opens the meeting by emphasizing that research programs must be appraised in terms of the company's growth and profit objectives. A report on Edison's efforts to make a thread glow in a bulb is presented by the vice president in charge of research. He points out that even though the idea is far-fetched, the project should be supported because it is a minor program that would cost only \$3,000 over a two-year period. The vice president of finance takes a dim view of Edison's research because the company would be putting out a product in competition with its own major product line. More opposition comes from the vice president of corporate planning because the idea doesn't fit into thoroughly developed corporate plans. Supporting the development would be inconsistent with the company's recent acquisition of an oil-treating venture. Finally, the president resolves the issue by allocating \$750 for a two-year extension of Edison's work. The meeting then takes up the second item on the agenda—a high-priority program to develop an automatic wick-height regulator.

PRESSURES ON INVENTORS

This allegory dramatizes how the pressures of corporate research channel inventive expression away from major breakthroughs and toward incremental, narrowly focused advances. Analogous pressures are generated within mission-oriented laboratories of Government. The effect is to diminish the very will to challenge entrenched attitudes; yet challenging is the *sine qua non* of pioneering invention—viewing a need from a different perspective—daring to make unobvious (sometimes seemingly irrational) leaps. Reluctance to challenge guts the process of pioneering invention.

The loss of will arises in part from total dependence upon a single employer. The employee's standard of living is directly related to his boss' impressions of him. Gradually, imperceptibly, the desire to please forces even the most creative individuals to conform. Against a backdrop of sincere exhortations by management to be creative, the scientist learns to perceive the walls of his compartment, beyond which he cannot explore unless authorized. He either moves into a submissive, less creative role, or out of the organization.

But where can the inventor go? Independent status is not the answer either. Our present system is particularly stifling to the type of independent invention that has produced the ideas for the Xerox copier, for automatic transmissions, power steering, jet engines, air conditioning, television, radio, cracking of petroleum, Kodachrome, the helicopter, magnetic recording, ball-point pens, and the Wankel engine. The contemporary lone inventor encounters many barriers. One is that of isolation. The training of creative scientists and engineers primes them to work on complex technical needs. However, access to information essential for invention is denied to them by the prevalent all-or-nothing policy governing employment of inventors.

Another barrier, encountered when an inventor seeks financial support from private industry to develop an idea, is the standard policy of respecting the rights of only those ideas that are protected by patent applications. When ideas are not so protected, the inventor is often asked to waive rights to confidentiality and ownership. One major manufacturer of medical supplies even asks the inventor to agree in advance of disclosure to sell his idea for less than \$1,000.

Usually the lone inventor cannot afford the cost of reducing an advanced technological idea to practice, much less the expense of patenting it. In order to demonstrate the validity of his idea, he needs support; but in order to gain support he must agree to practically give the idea away. So he is trapped—and drained of his incentive to invent.¹

Neither can his problem of financing be solved by support from the National Science Foundation (NSF), whose purpose is to foster the nation's advancement of science and technology. NSF submits researchers' ideas to three authorities for assessment. This procedure effectively eliminates ideas that are not consistent with currently accepted precepts. Yet the essence of invention is to penetrate beyond these precepts.

Should the inventor wish to contribute to satisfying basic technical needs of our country, he encounters a procurement system that also stifles invention and discourages all but the professional proposal writers. Typical is a recent NASA "request for proposal" for a liquid-gas separator. It contained 36 pages of formal instructions and 22 pages of forms to be completed. The technical statement of the problem was presented in 11 pages and was so narrowly defined that it effectively precluded innovation.

Not surprisingly, most creative scientists and engineers opt for the generous technical support and secure livelihood offered by universities or mission-oriented laboratories of industry and Government.

This crippling of creativity cannot be ignored. Historically, invention has been the mechanism by which man has freed himself from the limitations of established technology. Gutenberg's insights, for example, freed mankind from the limitations of reproducing books by tedious hand-copying.

By impairing creative insights that extend beyond state-of-the-art technology, we are undercutting our ability to change directions—at a time when we are on a course that is threatening the habitability of our planet. The call for greater creativity was sounded by Buckminster Fuller in his recent response to the question, "Is there an energy crisis?" "No," he replied, "there is only a crisis of ignorance and a shortage of ideas."

Specifically addressing the issues before this committee, I want to make it unequivocally clear that the patent reforms under consideration dealing with allocation of Government patent rights should be restricted to small businesses and nonprofit institutions. While I was considering how I could make a persuasive presentation in the areas of concern to this committee, I learned less than 2 weeks ago that a very important bill had been introduced onto the Senate floor, S. 1860.

The Congressional Record of October 4, 1979, pages 14068 through 14092 covers S. 1860. Within that report are presented some of the best arguments I know for the allocation of rights, on inventions made under Government contract support, to small business and nonprofit institutions, as opposed to large corporations.

¹ Worst of all, in the vast majority of cases, the inventor is deprived of his rights because a plaintiff needs \$100,000 to \$1,000,000 to prosecute an infringement case. The judicial system deprives the inventor, *de facto*, of his rights!

A report from the M.I.T. Development Foundation in 1975 showed that the compound average annual growth from 1969 to 1974 was 0.6 percent for mature companies—Bethlehem Steel, Dupont, General Electric, General Foods, International Paper, and Procter & Gamble comprised this example—versus 40.7 percent for young, high-technology companies—Data General, National Semiconductor, Computer-graphics, Digital Equipment and Marion Laboratories were in this group. Annual sales ratios were 11.4 percent for the mature company group, versus 42.5 percent for the young, high-technology group.

The report states:

It is worth noting that during the five-year period the six mature companies with combined sales of \$36 billion in 1974, experienced a net gain of only 25,000 jobs, whereas the five young high-technology companies with combined sales of \$857 million had a net increase in employment of almost 35,000 jobs.

Other studies show similar conclusions, that small business, especially when tied to science and technology, is a critical factor in maintaining productivity for our economy. However, unhappily, government regulation, and confiscation or restriction of capital are very oppressively focused upon small business, usually to a much greater degree than on large corporations.

Well-intended legislation applied to regulate the environment, protect against toxic chemicals, provide for occupational health standards, protect the public against securities fraud, protect pension funds against high-risk investments, and provide revenue for the operation of the government frequently make nightmares for entrepreneurs coping with red tape, expense, drain on management time, and working capital.

These provide an extremely inequitable burden upon small business vis-a-vis the mature corporation. Large corporations have tremendous staffs to cope with government regulations. In partial redress of this grave inequity, the provisions of the Dole-Bayh bill providing for allocation of rights to small businesses and academic type institutions should be supported.

On the other hand, large corporations should be excluded from obtaining title to patents derived from Government contracts because they are structurally biased against innovation. They clamor for innovation, new ideas, creativity; what they want are brand new products that are time-tested.

Obviously, with the sociopolitical organization of the large corporation, incremental innovation rather than breakthrough innovation will usually prevail. The rewards of shared risk, and consensus thinking cannot structurally provide the environment for risk-taking that is the essence of innovation; organizational rewards for success in a technical breakthrough are often only slightly greater than that for an incremental advance.

The fear of ever-present failure often dominates corporate attitudes and decisions toward technology. I mean marketing failure at least as much as actual technological failure.

In the area of clinical chemistry, the inventor—on his own time—of the AutoAnalyzer, Leonard Skeggs, a scientist at the VA Hospital in Cleveland, approached about six different large, technologically oriented companies, including IBM and Eastman Kodak before he

convinced a small company in the laboratory field, Technicon, of the merits of his instrument.

His invention revolutionized operating procedures of clinical chemistry. This brought on the era of automation to clinical and industrial laboratories throughout the world.

I would like to know why General Electric doesn't manufacture samarium-cobalt magnets anymore? I was recently informed by a friend of mine in the chemistry department at the University of Pittsburgh that an eager young company which has started making motors using these super magnets from the samarium-cobalt alloy must now import these critical components from Japan. General Electric sold their interest to Hitachi.

Motors manufactured from these samarium-cobalt alloys have an efficiency 30 percent greater than conventional motors. With samarium-cobalt permanent magnet components, motors can be made so that a 10 horsepower unit would be the same size as a conventional one-quarter horsepower motor.

What would General Motors have done in the way of energy efficient cars without pressure from Japan, Europe or the Federal Government? What have they done in the way of promulgating safety, or voluntary pollution reduction? Because they react so poorly to opportunities, I believe inventions produced under government contracts should only be allocated to small businesses and university type organizations.

The points of paycheck measures, march-in rights, or background rights have not yet then been considered, but payback has been considerably improved under S. 1860 over S. 414, in my opinion.

In the new Senate omnibus bill, the provisions of section 204, payback to the Government has been limited to 5 percent over amounts of \$1 million, and this is the upper limit to the amount that can be negotiated by the Government for the return of its interest.

This is an important improvement over the almost confiscating amounts which could be attained under S. 414 by negotiation. March-in provisions appear to be reasonable in S. 414, and are kept intact in S. 1860. The matter of background rights, in my opinion, is adequately covered in paragraph (f) of section 202 of S. 1860, which is an extension of the disposition of rights section of S. 414.

Title-in-the-contractor approach is preferable in my opinion, but it does not seem to me to be a critical issue as a practical point. I would be interested in knowing whether it really is significant. From what arguments I have heard, it seems to be marginally significant.

The last point concerns rights of the inventor. I feel strongly that the inventor in any organization should have some equity, otherwise he is in intellectual bondage.

I must now register a heartfelt plea for a restitution of the original intent under article I, section 8, of the Constitution, wherein Congress is empowered: "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."

By the evolution of our society, the industrial revolution has provided a scenario whereby our corporations, by virtue of their bargaining power, impose contractual agreements providing forced assign-

ment of patent rights, contrary to the intent of the Constitution, as stated above.

I feel it is particularly ironic, and rather dispiriting, that Nazi Germany instituted the leadership in statutory allocation of royalties to the inventor as an incentive for German inventors to aid their war effort. I can't say whether it affected the conduct of the inventors in producing a greater creative output.

However, I consider it to be an important matter of fairness and equity for the creator of intellectual property of value to have special compensation for its creation. H.R. 8595, the Thornton bill, in my opinion is a god bill, with regard to the allocation of rights and rewards for the Government inventor because it is fair to the Government employee.

It is unreasonable, on the other hand, for corporation management to consider commissions, and special compensation for management, as "good business," but royalties or equity participation for employed inventors to be "bad business," when in point of fact, they are the intellectual capital for new products and revenues.

I strongly advocate that legislation patterned after the German method of compensation be instituted as an aid to innovation.

While I have the opportunity to speak before this committee, I would like to bring forth what I consider to be the most important single defect in the U.S. patent system. This, of course, is not addressing the issues that were brought out in the letter to me, but I would like to put this in here. The independent inventor has practically no defense of his patent "rights" under our court system as presently constituted. Litigation costs run \$100,000 at a barebones minimum, and \$1 million now is not a rare attorney's fee for large-scale situations.

Fraud on the Patent Office is a common feature perpetrated by the large corporate infringer. I have experienced that very frequently corporate patent attorneys will misrepresent the nature and properties of the prior art to the examiner and claim that their applications have invented new devices or processes, when what they manifest are merely variants of an inventor's intellectual property that has been recorded in that prior art.

Frequently, the corporation will take a license from the inventor, when they see an attractive new market or have their company scientist/technologists work on the innovation, instructing them to produce a variant, and then terminate the license with the original inventor after a minor modification has been made.

The unfortunate inventor is admonished by his patent attorney not to even contact the infringers and inform them of their wrongdoing because to do so would be an invitation for the corporation to sue the inventor for a declaratory judgment on the patent's validity, usually at a location strategically selected by the corporation's patent lawyers; for this purpose the patent staff seeks favorable venues to render their cases as noninfringement.

They seek a jurisdiction in which the district court judge, and an appellate judge would look upon the patent system itself as contrary to the public interest. To redress this, it would be better to have a special Patent Court. Nevertheless, whatever the resolution of the problem of diversity of attitudes in different jurisdictions, it is difficult to employ a patent attorney on a contingency basis, for independ-

ent inventors because of the tremendous discovery costs involved and other structural factors in patent litigations.

In effect, circumstances in our Federal court system have, de facto, made inventor's patent rights worthless when an invention attains a moderate degree of commercial success. The predatory corporations regard themselves as virtually immune from infringement suits as a result of the enormous cost of litigation, unaffordable in the vast majority of cases, to the independent inventor.

I would like to end with a plea that this committee address and provide legislative means to relieve the current situation. Would it not be possible to provide funds of some sort to assist the independent inventor in litigating patent infringement cases?

The very fact that funds were available for the independent inventor and small businessmen to litigate patent infringement cases would greatly diminish the corporation's cavalier disregard for the patentee's rights. Thank you.

Mr. ERTEL. Thank you very much for your statement. We will certainly return with questions for you after we hear from the next witness, Dr. Ralph Davis. Dr. Davis?

Dr. DAVIS. Yes. Thank you, Mr. Chairman.

The opportunity to participate in the hearings today is very much appreciated. My remarks are made on behalf of the Society of University Patent Administrators which is a professional society of individuals, all of whom have some responsibility for administering inventions and patents in connection with some university and which now counts over 100 members associated with 77 separate universities; the American Council on Education which is the Nation's largest association of colleges and universities, numbering among its members approximately 1,300 institutions of higher education, 20 national and regional associations, and 80 affiliated institutions and organizations concerned with higher education in the United States; the Committee on Government Relations of the National Association of Colleges and University Business Offices, which committee is supported by 119 leading universities which, as a group, are the recipients of over 90 percent of the funds made available to higher education through grants and contracts for scientific activities.

I have been involved in the transfer of technology developed by our faculty at Purdue University for the past 15 years as patent manager, Office of Patent Management, Purdue Research Foundation, which foundation functions as the invention and patent administrative arm of Purdue University.

Academic institutions receiving public support have long had an objective to encourage the development of new knowledge and new ways of putting knowledge to practical use. Now, we firmly believe that technology developed with public funds must accrue to public benefits. Many of such benefits can only accrue through the patent system.

Many academic institutions receiving Federal funds for support of research have a well-defined patent policy which, one, stimulates creativity; two, encourages industry to invest risk capital to bring the technology to the marketplace for public benefits; and three, protects the public interest.

The vast majority of inventions at academic institutions are embryonic in nature. Without risk capital to bring these inventions to the marketplace, the technology will not get developed and not accrue benefits to the public.

Risk capital can only be attracted when technology can be licensed expeditiously and exclusively for a period of time that will permit the licensee to recoup investments. The funds required to bring the invention to the marketplace is 10 to 20 times the cost of "making" the invention.

Much has been published recently concerning the "technology gap" being experienced in the United States. The U.S. Government has title to over 28,000 patents with approximately 5 percent licensed, indicating most of the new technology in the hands of the Government never accrues benefit to the public.

On the other hand, a recent survey of 48 universities by the Society of University Patent Administrators showed that 50 percent of the patents titled to academic institutions were licensed.

In an article in *Science*, volume 202, November 17, 1978, Mr. William Carey stated, "If budget dollars are to be scarce, Government can help the utilization of R. & D. it has funded by overhauling its static patent policies."

In another article in *Science*, volume 205, July 27, 1979, with reference to innovation, Mr. John Welsh states:

As to what government can do, there is widespread sentiment that government could help most if it stopped hindering. The blame is put squarely on "disincentives" built up in Federal regulator rules, tax policy, and patent and antitrust laws.

Government patent policy to date has been on an agency-by-agency basis resulting in some 20 or more "policies" varying from those with the "title" policy to those with the "license" policy and all variations in between.

Governmental agencies operating under the "title" policy insist on acquiring title to all patents developed by contractors and grantees and then dedicating them to the public through either offering a royalty-free, nonexclusive license to any and all, or publishing the results. The argument, of course, is that title should be acquired since they had been "paid for" by the Government. This results in another patent for the Government archives but little technology transfer.

The "license" policy of some of the agencies permits the grantee and contractor to retain title with the Government having a royalty-free license to practice the invention for governmental purposes.

In academic institutions, most inventions are incidental to the specific research; consequently, the Government asks for nothing more than a royalty-free right to practice the invention under this license policy.

However, within the universities, the research is frequently funded by more than one Government agency and, at times, funds from other sources, including the institution's own funds. Uncertainties of patent policies result in delays and adverse effects on the transfer of technology.

Philosophically, the university community believes that a uniform patent policy providing incentives for technology transfer should

apply to all grantees and contractors. However, as a practical matter, the greater need lies primarily with the universities, nonprofit organizations, and small business.

With universities and nonprofit organizations, technology transfer depends entirely on the strength of the patent position. With small businesses, the patent right is essential for it to compete.

Although, as mentioned earlier, the development of the invention is only a very small part of the cost of making the technology available to the public, a reasonable payback provision from royalties received would be acceptable in legislation establishing a uniform patent bill.

In order for academic institutions to maximize the results of its research programs and accrue benefits to the public through technology transfer, the university community seeks a Government patent policy that will have the following characteristics:

1. Any policy must permit to the maximum extent incentives for commercialization of university inventions made under Government grants and contracts. An important ingredient in technology transfer is the continued interest of the inventor. Any successful transfer requires the know-how of the inventor. Such is not possible if titled to the Government. There must be some reward for the inventors' efforts through sharing of royalty payments. However, the amount of royalty sharing should be left to each institution's own policy.

2. Any policy must encourage cooperative efforts between the universities and industry in both the transfer of technology and in research support. The university is oriented to basic and fundamental research and differs from the R. & D. undertaken by large commercial companies. It does not manufacture and sell goods, but can license and cooperate with industry in developing the product or process. The university must retain title to inventions, attracting the risk capital through industry to develop the invention so that the public can realize the benefit of their tax dollars. Any discussion of disposition of inventions should not be whether the Government or contractor should take title to such inventions when developed in whole or in part by Government funds, but in whose hands will the technology most likely result in benefits to the public.

Mr. ERTEL. Dr. Davis, we have another vote. I will have to proceed to the floor to vote and I will return. We will stand in recess for approximately 10 minutes.

Dr. DAVIS. All right.

[Voting recess.]

Mr. ERTEL. The subcommittee will come to order.

Dr. Davis, you may continue, if you will, please.

Dr. DAVIS. Mr. Chairman, I would like to reemphasize a point I made earlier relative to the university retaining title to the inventions and stress again how important it is for the inventor to participate in this program of technology transfer.

With academic institutions, as I mentioned earlier, most of the inventions are very embryonic. Without this individual to continue working and continue developing and interfacing with a licensee, one has difficulty ever bringing an invention to the point that it has any use whatsoever.

Continuing now, any policy must be such that the results are a simple and uniform system that minimizes administrative burdens for

both the university and the Government. It must be one that does not require deferred determination, petitions, waivers, Government committees. Investigators—inventors—at academic institutions are not interested in pursuing inventions that are delayed through Government redtape and committees. They lose interest rapidly because one of the things they wish to do is get on with their research, publish, make it known to their colleagues and continue the program which they have without returning to work on inventions.

4. Any policy must have a system that will recognize the equities of the university and, in many cases, the State that supports the university.

5. Any policy must permit the Government to “march in” and license any technology when the licensee has not taken or is not expected to take, within a reasonable time, effective steps to achieve practical application of the invention. Every effort must be made to assure that any developments accrue benefits to the public.

I'd like to add that with our licensing arrangement at Purdue, irrespective of the source of the funds, all our agreements have some type of march-in rights clause.

6. Any policy must contain appropriate provisions which will protect the contractor against arbitrary acts by agency individuals that would deny rights of the grantee or contractor or delay the effort to transfer the technology. It should not provide for the surrender of background patents and should not have compulsory licensing provisions.

Much concern has been expressed relative to windfalls resulting from permitting contractors to retain title to inventions. It's been my observation that much of this concern was in reference to large companies that already have a dominant technological position. Academic institutions do not make or sell any product or process; therefore, there would be no way they could dominate any market. It would be unlikely that a small business would have a dominant technological position and, hence, dominate the market.

S. 414 attempts to recognize this situation. The various Federal agencies could continue to relate to large commercial companies as they have in the past.

S. 1215 has provisions which cause concern to academic institutions. Definition of a “qualified technology transfer program” is somewhat open ended and could perhaps be an agency-by-agency determination, thereby resulting in an institution being qualified by some agencies and not others.

There is the likelihood of a case-by-case determination of patent title by each agency, thereby resulting in a nonuniform policy.

And, the presumption of title in the government, resulting in delays in technology transfer.

Experience over a number of years has indicated the case-by-case and other delays in determinations curtail technology transfer. In my opinion, S. 414 and H.R. 2414 adequately meet the needs of the universities, provide the incentives to maximize the transfer of technology, and protect the Government's and more importantly, the public's interest.

I thank you, Mr. Chairman, for this opportunity.

Mr. ERTEL. Thank you very much for your statement and your elucidation of the issues with regard to academic institutions.

I am interested in one statement that you made on page 7. It would be unlikely that a small business would have a dominant technological position and, hence, dominate the market. How about a breakthrough invention?

Some years ago, for example, I worked on a patent case in a rather tangential role. It had to do with pyroceramics, and was a breakthrough patent by Dr. Staats that was done by Corning Glass. If it had been done by anybody else, they would have dominated that industry.

It was the biggest breakthrough in the glass industry in a hundred years. Couldn't a small company have dominated with that, assuming it was a valid patent?

Dr. DAVIS. Yes; I think we could all find cases where a small company could dominate a market. But I think the likelihood of this one breakthrough happening that we all hope we will encounter at one time or another is one that the odds are against.

Mr. ERTEL. Certainly, but we always hear about the one that does.

Dr. DAVIS. That's right.

Mr. ERTEL. Color television patents are another. How would extension of exclusive rights to all Government contractors hurt small businesses? Mr. Iannotta, you and Dr. Coleman want to protect small business and you are concerned about the big companies cutting them apart.

If we gave exclusive rights, whether it's title or exclusive license—let's forget the arguments about which is better, title or license—how would that hurt you as a small inventor or you as a university?

Mr. IANNOTTA. Let me answer that. I know if I were president of a large company and I had a major breakthrough, I wouldn't go to the Federal Government. I'm president of a small company and I go to the Federal Government. The primary difference is that many good inventions out of small companies wither on the vine because they can't get access to funds.

Large companies have the options of either "taking it" or "leaving it," not bringing it up at all, or bringing to the Government either secondary projects or projects that have no patentability. They don't take their best shot and go to the Government for R. & D. funds.

Very few things ever get invented on Government contracts. The reason why more small companies have a poor track record is that they are pretty honest. I know of a case where one firm had a Government R. & D. contract. They had a technical problem. They solved the problem someplace else other than that contract—and circumvented the terms of their agreement.

Mr. ERTEL. If that is the reality, that big business won't develop an invention on Government money, but they do a lot of work separately and then get exclusivity anyway; how does that hurt you?

Mr. IANNOTTA. I'm going to argue that if I did a study at EPA I wouldn't find a small company that did get exclusivity.

Mr. ERTEL. We are not changing the large companies' position, but we are helping you.

Mr. IANNOTTA. Except that they have to commercialize it. The problem is that in any sort of bidding, the large companies are going to get 90 percent of it. Not because you get the best bang for the buck or the best creativity or the best return for the investment, but because they are structurally prepared to deal with the mechanism.

Mr. ERTEL. I don't want to argue, but I want you to answer my question. How does the fact that you both would get exclusivity through the legislation proposed affect you as far as patent rights are concerned?

You might argue that big business is going to get more contracts because they are bigger and there is a contract awarding system. How does exclusivity hurt you or any small contractor?

Mr. IANNOTTA. I'm going to tell you exactly how it hurts me. It has been my own experience that big companies have a predisposition to getting exactly what they want. If they don't, they don't enter into the contract. The small companies are biased against in the structure. They need the exclusivity because it's fundamental to them. The large companies license each other. When Union Carbide got its license out of EPA, they licensed another large company. They will license each other. They will open it up because they are concerned about antitrust.

I'm concerned about the formation of businesses. You need the patent to protect a company. I should be so lucky as to have a big breakthrough. The largest—

Mr. ERTEL. If you're the one that has it.

Mr. IANNOTTA. No; anyone. The largest employer in the State of Massachusetts is Digital equipment, a small technology company that did not exist 25 years ago. We in New York are trying to develop a program to get 100 companies a year formed and maybe one will be that breakthrough. That will give us the employment we need in the State, plus the type of international trade balances we need. You can't worry about maximization of profit. What you have to worry about is maximizing opportunities to participate. A lot of good ideas are dying because they can't get to the forefront.

Mr. ERTEL. I can agree with everything you've said. But, you still have not addressed my question. How, by giving exclusivity to large companies and small companies alike, do we hurt small companies?

Mr. IANNOTTA. I haven't taken a position against giving exclusivity to large companies. My argument is that they are already getting what they want. The terms should be clear. I think when you have options, you know, the argument was made—everyone on the first panel said you could get the best bang for the buck by going to the guys who can do the best job.

Mr. ERTEL. I understand your argument and that's with the contracting system. We are not having a hearing on that. I don't have jurisdiction over that. That's my problem.

But over the patent system, we do have jurisdiction and we can change that. I'm talking about one very small thing which is exclusivity which we give to the person who develops it.

Mr. IANNOTTA. I don't have a big problem with the big companies having exclusivity permanently. Many in the small business community do. I understand their position.

Mr. ERTEL. I'm trying to find out their position to see if it makes sense.

Mr. IANNOTTA. If you accept the stipulation that patents are important for small companies to survive and that patents are not important for big companies, they are not, they usually work on market positions, what happens is that since they get overwhelming preponderance of Federal dollars, they already have the advantage.

They have the market structure. They don't need it. What you are doing, then, is concentrating it into fewer and fewer hands.

One of the things that never concerned me about giving an exclusive license to a small company, if I really got greedy and my profits got large, I would have three big companies in there against me and I would be fighting in the patent courts.

I think you have to have some faith in the market system. I think they are interested only in the short run bottom line. This is a management predisposition in this country. They make determinations that way. To me, march-in rights are crucial. To the people on the first panel, they are insignificant.

I don't think whether General Electric gets exclusivity or not, they would still be building those engines.

Mr. ERTEL. Dr. Coleman, would you have a comment on my questions?

Dr. COLEMAN. Well, I personally admit to some bias against large corporations as a result of their better capital position and better market position. I essentially feel that small businesses and academic institutions should have the advantage because basically, it would attempt to redress some inequities.

Mr. ERTEL. I don't see any advantages vis-a-vis a major corporation. He says the exclusivity makes no difference to a major corporation because they have dominant market power and a distribution system. So, they develop. Maybe they don't need a patent. They will come out, anyway.

What difference does it make if we give exclusivity?

Dr. COLEMAN. I don't agree with him about their attitude toward patents. They certainly put a lot of money into patent departments. The large amount of patents that they obtain, it seems to me are part of their overall marketing structure.

I don't really feel that Mr. Iannotta is correct about that. I don't really agree with him.

Mr. IANNOTTA. I'll give you one good——

Mr. ERTEL. I'll come back to you after Dr. Davis. Do you have a position on that, Dr. Davis?

Dr. DAVIS. Philosophically, we favor a patent reform provision that applies to all grantees and contractors. However, as I further stated, it was my impression that the large companies with the Government R. & D. contracts have been able to either retain the inventions and many of these have, as mentioned earlier, DOD has had a policy for a long time where they granted title to the inventions to the contractors in the large R. & D. developments.

Either that, or they were in a sufficiently dominant position they really didn't need to retain title. But, as I said earlier, philosophically, we favor one that applies to all grantees and contractors.

Mr. IANNOTTA. With that provision, I don't think the bill has a chance of passing. I'm not happy with the bill the way it is now.

Mr. ERTEL. I guess we'll make the political judgments. The question is what should be in the bill as a proper policy issue.

Mr. IANNOTTA. I don't have a major problem with major companies getting exclusivity with the caveat that they get it off the shelf and into the hands of the public. The problem is they don't commercialize.

GE has a good track record because they sell patents. Other large companies don't do that.

Mr. ERTEL. What about inventions? What are we going to do with them? One of the problems we have brought out in these hearings relates to those inventions that the Government obtains through a contracting provision. It appears that when the Government has title to them, they stay on the shelf.

Are we better off giving them to big business and having them developed? I guess the whole purpose is to try and get more innovation in the private sector, because Government has not been very good at it. What do we do with those?

Mr. IANNOTTA. First, you make an open ended and aggressive program to let people know they are available, and you set the rules of the game so entrepreneurs can exist.

Mr. ERTEL. Those are conclusions. Tell me how I do that.

Mr. IANNOTTA. All right. You change the capital gains tax to reflect the risk inherent—

Mr. ERTEL. Let's deal with the patent system.

Mr. IANNOTTA. One of the things I think you should do is open it up. Make people aware of it, put it to a bidding system. They are not going to dominate the market. They are going to be the most aggressive. The DOE contract for a major company to develop a computer 4 years ago. They spent a quarter of a million dollars.

They are still 2 years from production. Our own firm spent \$40,000 of our own money and are already in production. We have already sold many units this year.

I think to the extent you focus in and make the small firms aware of it and secondarily give them an opportunity to participate, they will. I have looked at the patent profile. You get a list this thick, two words, no way to make any sense of it. The whole Government patent system works against the transfer of technology.

Mr. ERTEL. Did you ever spend much time going through patents?

Mr. IANNOTTA. Not very frequently.

Mr. ERTEL. How do we make that knowledge available? That's a problem. We have had hearings on that technology transfer. I don't know of many companies that send people to Washington to sit there and go through the files. I have done it.

Mr. IANNOTTA. They are all Japanese.

Mr. ERTEL. That may or may not be. I'm not sure about that. I don't know of too many companies that do that. Maybe they do.

Mr. IANNOTTA. I don't have any difficulty with a large company getting the information if there is some clear gain in having it commercialized. Or, if you go to a bidding process and use the SBA to try to disseminate the information. Right now, there is no way to know what is available. I have no idea what's available. Let me tell you what the real problem is in patents, by the way—

Mr. ERTEL. Let me take you to the Patent Department and I'll sit you down.

Mr. IANNOTTA. We set up a very efficient computer, which is geared to schools and hospitals. They can save 7 to 10 percent of their fuel bill. We couldn't find a U.S. manufacturer of sensors. The only sensors GE made are \$100 apiece. Talking about infrastructure, you can't get the technology. When we tried to get the information out of NASA in terms of the work they did on sensors, we were running around for 3 or 4 weeks.

If you accept the assumption that entrepreneurs are going to take advantage of opportunity, the only problem is to make them aware of the opportunity. It is not that hard.

Mr. ERTEL. I think you can see the whole premise of these hearings is that people do not take advantage of those opportunities, because only 5 percent or less of Government patents are commercialized. Those patents are owned by the Government and they are available on a nonexclusive basis to anybody. Now, if they are available, then why haven't the entrepreneurs developed them?

Mr. IANNOTTA. I have a friend, a minority, who went from zero to \$20 million a year. He went out and got a whole list of Government patents but couldn't make heads or tails of them. They are not presented in a way that makes any sense to a small company.

I didn't give you a written statement today, but I wish I had, and I will send you one. I'm running two companies, and we are too busy. You have to understand that the small guy doesn't have the staff to go to the library and sit there for 4½ weeks to come out with a list of possibilities.

Mr. ERTEL. I don't want to appear unsympathetic, Mr. Iannotta, but we can't spoon feed you.

Mr. IANNOTTA. The big companies are already spoon fed the contracts.

Mr. ERTEL. Anybody else have any comment on that? I think you have disputed the basic question we are trying to decide here. The evidence doesn't seem to substantiate that point of view because they are available. Technically, they are available.

The whole purpose of a patent disclosure is disclosure to the public. We, in exchange for the knowledge, put it into the public domain, and give somebody exclusive license. That is in the Government files, the Patent Office. We go one step further. If the Government has a patent, you have a right to use it.

Mr. IANNOTTA. OK. The Government has to be in a position to negotiate with a small company on an exclusive basis. There is no way that a small company can go on a nonexclusive basis. That's a point I missed. I apologize. Because, all the risk is up front. I will send you massive studies done on innovation. There are two phases, the introductory phase, the knowledge phase, and the acceptance phase.

Once you are in the acceptance phase, anyone can sell. It's in the introductory phase, the knowledge phase where the dangers are. Once people accept the product, people are going to buy it. But that's where the risk is. I think small companies are the best driving force. Also, I think one of the reasons you don't find Government R. & D. contracts meeting the commercial objectives is the considerations is to

commercialization. To a big company, one of their considerations is what in my existing product lines does it impact.

Most small companies have one or two products and they want to milk everything they can out of it. It's a difference in mentality and I think objective.

Mr. ERTEL. Are there any other comments on that particular area of question?

Dr. DAVIS. Mr. Chairman, I would just like to mention that during the years that I have been associated with patenting and licensing attempting to obtain title to patents made under Government grants and contracts, working through institutional patent agreements, discussing the problem with various agencies, working with waivers which, by the way, is a time-consuming situation, and attempting to interest various agencies in the type of legislation we are discussing today, I always get one answer: Well, this could result in windfall profits to large companies. This always comes through.

And, as I said earlier, it was my impression that large companies with the Government R. & D. contracts have been able to retain title where it was feasible and agreements were made between the companies and the contracting agency.

Mr. ERTEL. I don't understand that argument. If I might, you always talk about windfall profits to large companies.

Dr. DAVIS. Excuse me. I was—

Mr. ERTEL. What about windfall profits to a university or a small company? If Patrick Iannotta makes \$20 million as an individual at the Government's expense and the Government should have that money, does it make any difference if he got it or if General Motors got it, or if Purdue University got it?

Mr. DAVIS. I'm still waiting for Purdue.

Mr. ERTEL. I'm sure he is still waiting, too. Does it make any difference who the recipient is? I have as much interest in that as you do. I pay taxes every day. Some people don't believe that. But, does it make a difference who winds up with the money, which I guess one would have to say, under our philosophy, belongs to all of us? Why just limit the large corporations?

Mr. IANNOTTA. That is one thing. Big business is monopolistic. That's one reason why when demand goes down, the price doesn't.

Mr. ERTEL. Is there any reason why you deserve that money?

Mr. IANNOTTA. Make the rules of the game clear, keep the Government's hands out of our background contracts and if you want to commercialize, you need a driving force.

One of the reasons you had such a pleasant first session today is that the big companies are happy with the rules of the game the way they are. Big companies got millions of Federal dollars. All of those people walked out with patent rights. I asked the question why. Right now, the Federal Government is funding the big companies and they are walking out with exclusive rights.

I never argued that. There is nothing in the Bayh-Dole bill that says that can't happen. The big guys are going to walk out with the patent rights and not have a payback provision.

Mr. ERTEL. Let me go to another area. I think we have beaten that one to death at this point. I think I understand your position.

Mr. IANNOTTA. I really wish we knew what the statistics were on an across-the-board basis.

Mr. ERTEL. We'll find that out. This march-in right you are talking about on background patents, is the Government saying to you that if you develop an improvement patent, they are saying that they are going to march in and take away your patent rights and deal them on the market?

Mr. IANNOTTA. No. If the Government says to me gee, I want you to do a study and they want to fund it and I do nothing, the mere fact that I did that study gives them a march-in right to my background patents.

Mr. ERTEL. They can sell it to anybody?

Mr. IANNOTTA. They can force you to license it. I will be happy to send you the regulations.

Mr. ERTEL. I would be interested in that.

Mr. IANNOTTA. It's called the specified work object.

Mr. ERTEL. Patents you have developed, you already had the knowledge, you put that in the public domain?

Mr. IANNOTTA. It's not in the public domain. You control it. But if it doesn't meet their criteria or reasonably available, whatever it is, then they can force you to license. We are doing \$300,000 a year as a company. We turned down a \$100,000 grant.

Mr. ERTEL. What is your total volume?

Mr. IANNOTTA. \$8 million for fiscal 1980—I hope.

Mr. ERTEL. How many employees?

Mr. IANNOTTA. We have about 30 employees.

Mr. ERTEL. Mr. Scoville?

Mr. SCOVILLE. Thank you, Mr. Chairman.

One question that occurs to me, and it grows out of a suggestion Dr. Coleman made, is that it may be less important—Mr. Iannotta said it's critical for a small company to have exclusive rights.

You didn't quite in my mind address whether it was actually bad for a big company to have exclusive rights. But, what may be more important than making divisions as to who has exclusive rights, big or small, is that at the very least, the small companies have effective exclusive rights.

In this sense, somebody mentioned that it costs \$100,000 to get in to defend a patent if a big company comes in and tries to challenge it. What I'd like to know—

Mr. IANNOTTA. That's a minimum.

Mr. SCOVILLE. Whatever the figure is, it's a lot of money in terms of the operating expenses of a small company, plus tying things up. What I'd like to know is, is it perhaps more important that in fact, we have some provisions to insure—which would perhaps give a greater tilt toward business—to insure that they have, perhaps through some mechanism like intervenor funding or whatever, to insure that they have the public somehow going to bat behind them to be sure that they can effectively stand up to a big corporation to defend their exclusive rights.

What would you suggest about that thought? The choice is not between who has the exclusive rights, but the fact that everybody, particularly a small company, can defend them. Of course, you made

one suggestion. I don't know if you want to go that way. I would be interested in all reactions.

Mr. ERTEL. There is one proposal to have a redetermination in the Patent Office which would give a more secure patent. Therefore, you wouldn't have the question of prior art and eliminate a lot of these things. At the present time, the search procedure in the Patent Office, as I understand it, is pretty poor, pretty cursory. You get a patent and you really don't know if you have a patent or not.

The other end is, it's going to be tougher to get a patent. Today, I guess you can obtain a patent pretty easily because the search isn't very good. The searcher doesn't really look at the prior art in depth. So, if you get a better search, then it's going to be harder to get the patent in the first place. Will you be back here saying, hey, I can't get a patent?

Mr. IANNOTTA. It took us 6 years to get our patent. I'm not concerned about getting a patent. I have a licensee. The reason was to have someone behind me with the money to defend the patents.

Mr. ERTEL. Dr. Coleman, you suggested intervenors' rights, which I have looked at and I have not been impressed by the idea, frankly. It sounds like a patent lawyer's unemployment bill. We'll have every patent lawyer in the world in there working on the Government's pay-roll.

Dr. COLEMAN. Everybody will decide to become a patent lawyer?

Mr. ERTEL. We're going to have a lot of patent trials if we pay for everybody's patent attorneys.

Dr. COLEMAN. Don't you think it would be feasible to have some kind of screening or examination by somebody before intervening was undertaken, some idea of the justification of the case, or something like that? I think maybe even link it with fraud on the part of the defendant in a case like that. Say, if the corporation could be shown to have been involved in fraud or something like that. As unclear hands.

Mr. ERTEL. It's very difficult to prove and very expensive to get the information. You are asking for an initial investigation, which would be expensive.

Dr. COLEMAN. Well, that's basically the critical reason why your patent suits are so expensive, anyway, is the discovery.

Mr. ERTEL. No question about that. I agree with that 100 percent. I question the Government picking up the tab.

Dr. COLEMAN. Maybe they wouldn't have to pick up the tab completely. Maybe it could be something like a guarantee or something like that; you know, the way some SBA loans are.

Mr. ERTEL. There is one proposal that the winner in the litigation got his attorneys' fees paid per the English system. The attorneys' fees are paid by the loser. That makes the attorneys' fees on the loser pretty heavy. Not only does he pay any damages, but he pays attorneys' fees as well.

Dr. COLEMAN. I think that's a reasonable proposal. You were talking about, before, strengthening the basic patent system. I'm strongly in favor of that. I think patents are generally awarded pretty easily. A lot of it depends on the tenacity of the attorney in keeping after the examiner and so forth rather than, necessarily, the merits of the case.

Mr. ERTEL. Dr. Davis, do you have any comments, one way or the other, on that?

Dr. DAVIS. No, sir.

Mr. ERTEL. I think at this point, the hour has arrived where we ought to adjourn. I appreciate your testimony. I want to emphasize just because I've argued with you doesn't mean I necessarily don't agree with you. Sometimes it's valuable to be a devil's advocate.

Mr. IANNOTTA. Something just occurred to me. If there were a march-in provision and a firm was required to license, if you precluded that licensee's ability to sue and validate the patent, that would solve the problem. You would do away with that—

Mr. ERTEL. You take a license or you go to court. You might choose to take the license, even though you don't think the patent is valid, because it's the cheaper of the two, the old theory being that I give you a license and say well, if you don't like it, sue me.

You weigh the cost of the suit versus the cost of the license. So, what we do is we get a holding of an invalid patent only because nobody will attach it. So the guy, as long as he can get through the Patent Office and get his patent, then he's unassailable if he can drop his license fees low enough.

Mr. IANNOTTA. I'm suggesting something where the Government has a hand in forcing someone to license. If the Government is going to take the responsibility to license, then they should take the responsibility to be sure you are not going to be sued by a particular licensee.

Mr. ERTEL. OK.

Thank you very much for your testimony. This hearing stands adjourned.

[Whereupon, at 5 p.m., the hearing was adjourned.]

the house, No. 10.

After dinner I went at five o'clock to the house and arrived about six o'clock. I found a gentleman, your secretary, I want to say, waiting for me. He showed me to a room and I remained there until about seven o'clock. He then showed me to a room and I remained there until about seven o'clock.

The gentleman, I believe, was your secretary. He showed me to a room and I remained there until about seven o'clock. He then showed me to a room and I remained there until about seven o'clock.

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APPENDIX I

ADDITIONAL MATERIAL
FOR THE RECORDLIST OF SUBMITTED MATERIAL

1. EPA Rules And Regulations No. 30.1150, Federal Register, Vol. 40, No. 90, Thursday, May 8, 1975.
2. Letter to Mr. John Plock, Jr. from Benjamin H. Bochenek, EPA Grant R804654-01--Sub-agreement with Ecolotrol, Inc. February 22, 1977.
3. Letter to Mr. Frank Flood from Mr. Patrick J. Iannotta, EPA Grant R 804-65401, April 29, 1977.
4. Letter to Commissioner H. John Plock from Mr. Patrick Iannotta, EPA Grant R 804654-01, June 8, 1977.
5. Letter to Mr. Patrick Iannotta from Mr. Benjamin H. Bochenek, EPA Grant R804654-01, July 8, 1977.
6. Letter to Mr. Francis Flood from Mr. Benjamin H. Bochenek, EPA Grant R804654-01-0, Ecolotrol-Patent Clause, February 10, 1978.
7. Letter to Mr. Francis J. Flood from Mr. Patrick J. Iannotta, EPA's Patent Clause, July 7, 1978.

to EPA (generally, to the Project Officer) a written appeal addressed to the Administrator.

§ 30.1115 Rights of the grantee and the Government.

In connection with an appeal proceeding pursuant to § 30.1110 the grantee shall be afforded an opportunity to be heard, to be represented by legal counsel, to offer evidence and testimony in support of any appeal, and to cross-examine Government witnesses and to examine documentation or exhibits offered in evidence by the Government or admitted to the appeal record (subject to the Government's right to offer its own evidence and testimony, to cross-examine the appellant's witnesses, and to examine documentation or exhibits offered in evidence by the appellant or admitted to the appeal record). The appeal shall be determined solely upon the appeal record.

§ 30.1120 Decision of the Administrator.

The decision of the Administrator or his duly authorized representative for the determination of such appeal shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent or capricious, or arbitrary, or so grossly erroneous as to imply bad faith, or not supported by substantial evidence.

§ 30.1125 Questions of law.

Any question of law may be considered in connection with decisions provided for by this Subpart. Nothing in the grant agreement or related regulations, however, shall be construed as making final the decision of any administrative official, representative, or board, on a question of law.

§ 30.1150 Appeal procedures [Reserved].

APPENDIX B—PATENTS AND INVENTIONS

A. Definitions. (1) "Background Patent" means a foreign or domestic patent (regardless of its date of issue relative to the date of the EPA grant):

(1) Which the grantee, but not the Government, has the right to license to others, and

(2) Infringement of which cannot be avoided upon the practice of a Subject Invention or Specified Work Object.

(2) "Commercial Item" means—

(1) Any machine, manufacture, or composition of matter which, at the time of a request for a license pursuant to Part D of this Appendix, has been sold, offered, for sale or otherwise made available commercially to the public in the regular course of business, at terms reasonable in the circumstances, and

(2) Any process which, at the time of a request for a license, is in commercial use, or is offered for commercial use, so the results of the process or the products produced thereby are or will be accessible to the public at terms reasonable in the circumstances.

(3) "Specified Work Object" means the specific process, method, machine, manufacture or composition of matter (including naturally occurring modifications thereof) which is the subject of the environmental developmental research or demonstration work performed under this grant.

(4) "Grantee" is the party which has accepted this grant award and includes entities controlled by the grantee. The term "controlled" means the direct or indirect ownership of more than 50 percent of outstanding stock entitled to vote for the election of directors, or a directing influence over such stock; provided, however, that foreign entities not wholly owned by the grantee shall not be considered as "controlled."

(5) "Subagreement" includes subagreements at any tier under this grant.

(6) "Domestic" and "foreign" refer, respectively, (1) to the United States of America, including its territories and possessions, Puerto Rico and the District of Columbia and (2) to countries other than the United States of America.

(7) "Government" means the Federal Government of the United States of America.

(8) "Subject Invention" means any invention, discovery, improvement or development (whether or not patentable) made in the course of or under this grant or any subagreement (at any tier) thereunder.

(9) "Made" when used in connection with any invention, means the conception or first actual reduction to practice of such invention.

(10) To "practice an invention or patent" means the right of a licensee on his own behalf to make, have made, use or have used, sell or have sold, or otherwise dispose of according to law, any machine, design, manufacture, or composition of matter physically embodying the invention, or to use or have used the process or method comprising the invention.

(11) The phrase "to bring to the point of practical application" means to manufacture in the case of composition or product, to use in the case of a process, or to operate in the case of a machine and under such conditions as to establish that the invention is being worked and that its benefits are reasonably accessible to the public.

(12) "Statement" means the President's Patent Policy Statement of August 23, 1971, 36 F.R. 16889, August 26, 1971.

→ (B) Domestic patent rights in Subject Inventions. (1) The grantee agrees that he will promptly disclose to the Project Officer in writing each Subject Invention in a manner sufficiently complete as to technical details to convey to one skilled in the art to which the invention pertains a clear understanding of the nature, purpose, operation and, as the case may be, the physical, chemical, biological, or electrical characteristics of the invention. However, if any Subject Invention is obviously unpatentable under the patent laws of the United States, such disclosure need not be made thereon. On request of the Project Officer, the grantee shall comment respecting the differences or similarities between the invention and the closest prior art drawn to his attention.

(2) Except in the instance of a determination, pursuant to paragraph (3) of this Section, by the Administrator to leave to the grantee rights greater than a nonexclusive license, the grantee agrees to grant and does hereby grant to the Government the full and entire domestic right, title, and interest in the Subject Invention, subject to retention by the grantee of a revocable, nonexclusive, royalty-free license to practice the Subject Invention. Any such license granted shall extend to any existing and future companies controlled by, controlling or under common control with the grantee and shall be assignable to the successor of the part of the grantee's business to which such invention pertains. Said license to the grantee may be revoked by the Administrator or his designee if it is determined that it is necessary to issue an exclusive license, pursuant to then applicable Government regulations, in order

to more expeditiously bring the invention to commercialization; provided, however, that the grantee shall be provided the opportunity to present to the Administrator reasons why said license should not be revoked.

(3) Not later than three (3) months after the disclosure of a Subject Invention pursuant to paragraph (1) of this Section, and without regard to whether the invention is a primary object of this grant, the grantee may submit a request in writing to the Project Officer for a determination by the Administrator leaving the grantee greater rights than that reserved to the grantee in paragraph (2) of this Section. Such request should set forth information and facts which in the grantee's opinion, should justify a determination that:

(i) In the case of a Subject Invention which is clearly a primary object of this grant, the acquisition of such greater rights by the grantee is both consistent with the intent of Section 1(a) of the Statement and is either a necessary incentive to call forth private risk capital and expense to bring the invention to the point of practical application or is justified because the Government's contribution to such invention is small compared to that of the grantee; or that

(ii) The Subject Invention is not a primary object of this grant, and that the acquisition of such greater rights will serve the public interest as expressed in the Statement, particularly when taking into account the scope and nature of the grantee's stated intentions to bring the invention to the point of practical application and the guidelines of Section 1(a) of the Statement. The Administrator will review the grantee's request for greater rights and will make a determination, either granting the request in whole or in part, or denying the request in its entirety. The grantee will be notified of such determination.

(4) In the event greater rights in any Subject Invention are vested in or granted to the grantee pursuant to paragraph (3) of this Section:

(i) The grantee's rights in such inventions shall, as a minimum, be subject to a non-exclusive, nontransferable, paid-up license to the Government to practice the invention throughout the world by or on behalf of the Government (including any Government agency) and State and domestic municipal governments, unless the Administrator determines that it would not be in the public interest to acquire the license for the States and domestic municipal governments; and said license shall include the right to sublicense any foreign government pursuant to any existing or future treaty or agreement if the Administrator determines it would be in the national interest to acquire this right; and

(ii) The grantee further agrees to and does hereby grant to the Government the right to require the granting of a license to a responsible applicant(s) under any such invention;

(a) On a nonexclusive or exclusive basis on terms that are reasonable under the circumstances, unless the grantee, its licensee or its assignees demonstrate to the Government, at the Government's request, that decisive steps have been taken within three (3) years after a patent was issued on any such invention to bring it to the point of practical application, or that it has been made available for licensing royalty-free or in terms that are reasonable in the circumstances, or can show cause why the time period should be extended; or

(b) On a nonexclusive or exclusive basis on terms that are reasonable in the circumstances to the extent that the invention is required for public use by Governmental regulations or as may be necessary to fulfill

(g) Definitions pertaining to this section may be found in 40 CFR 3.103.

(h) The provisions of this section may be waived only by the Administrator or Deputy Administrator (1) upon a written determination of the General Counsel that the award or the administration of the project would not be likely to involve a violation of 18 U.S.C. 357 or other EPA regulations respecting conflicts of interest, 40 CFR Part 3, and (2) if the Administrator or Deputy Administrator determines that the best interests of the Government would be served by an award of the grant or subagreement or existing administration of the grant in view of the limited extent of the conflict of interest and the outstanding expertise of the former employee.

§ 30.420-5 Employment practices.

A grantee or a party to a subagreement shall not discriminate, directly or indirectly, on the grounds of race, color, religion, sex, age, or national origin in its employment practices under any project, program, or activity receiving assistance from EPA. Each grantee or party to a subagreement shall take affirmative steps to ensure that applicants are employed and employees are treated during employment without regard to race, color, religion, sex, age, or national origin.

§ 30.420-6 Conservation and efficient use of energy.

Grantees must participate in the National Energy Conservation Program by fostering, promoting, and achieving energy conservation in their grant programs. Grantees must utilize to the maximum practical extent the most energy-efficient equipment, materials, and construction and operating procedures available.

§ 30.425 Special conditions.

The grant agreement or any amendment thereto may include special conditions necessary to assure accomplishment of the project or of EPA objectives. However, special conditions inconsistent with the provision and intent of this Subchapter may not be utilized.

§ 30.430 Noncompliance.

In addition to such other remedies as may be provided by law, in the event of noncompliance with any grant condition or specific requirement of this Subchapter, (a) a grant may be terminated or annulled pursuant to § 30.920, (b) project work may be suspended pursuant to § 30.915, (c) payment otherwise due to the grantee of up to 10 percent of the grant amount may be withheld (see § 30.615-3), (d) the grantee may be found nonresponsible or ineligible for future Federal assistance, (e) an injunction may be entered or other equitable relief afforded on behalf of the United States by a court of appropriate jurisdiction, or (f) such other administrative or judicial action may be instituted as may be legally available and appropriate.

Subpart D—Patents, Data, and Copyrights**§ 30.500 General.**

This subpart sets forth policy and procedure regarding patents, data, and copyrights under EPA grants or fellowships, and the grant clauses and regulations which define and implement that policy.

§ 30.502 Definitions.

Definitions applicable to this Subpart D, in addition to those in § 30.135, are set forth in Appendices B and C to this Part.

§ 30.505 Required provision regarding patent and copyright infringement.

(a) The grantee shall report to the Project Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this grant of which the grantee has knowledge.

(b) In the event of any claim or suit against the Government, on account of any alleged patent or copyright infringement arising out of the performance of this grant or out of the use of any supplies furnished or work or services performed hereunder, the grantee shall furnish to the Government, when requested by the Project Officer, all evidence and information in possession of the grantee pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where the grantee has agreed to indemnify the Government.

(c) The grantee shall include in each subagreement (including any tier subagreement) in excess of \$10,000 a clause substantially similar to the foregoing provisions.

§ 30.510 Patents and inventions.

It is the policy of EPA to allocate rights to inventions that result from federally supported grants or fellowships in accordance with the guidance and criteria set forth in the Statement of Government Patent Policy by the President of the United States on August 23, 1971 (36 FR 16887), hereinafter referred to as "Statement." Section 1 of the Statement sets forth three major categories (1(a), 1(b), and 1(c)) of contract or grant objectives, and prescribes the manner for allocation of rights to inventions that result from a grant or contract which falls within the particular category.

(a) Under Section 1(a) of the Statement, the United States, at the time of grant award, normally acquires or reserves the right to acquire the principal or exclusive rights to any invention made under the grant or contract. Generally, this is implemented by the United States taking all domestic rights to such invention. However, section 1(a) permits the grantee in exceptional circumstances, to acquire greater rights than a nonexclusive license at the time of grant award where the Administrator certifies that such action will best serve the public interest. Section 1(a) also prescribes circumstances under which the grantee or contractor may acquire such greater rights after an invention is identified.

(b) Under section 1(b) of the Statement, the grantee normally acquires principal rights at the time of grant award.

(c) Section 1(c) applies to grants that are not covered by Section 1(a) or 1(b), and provides that allocation of rights is deferred until after inventions have been identified.

§ 30.515 Required patent provision.

Every EPA grant involving research, developmental, experimental, or demonstration work shall be deemed subject to Section 1(a) of the Statement and shall be subject to the patent provisions set forth in Appendix B to this Part. The requirement is not applicable to fellowships.

§ 30.520 Optional patent provision.

The following clause may be inserted as a special condition in the grant agreement when requested by an applicant or grantee:

Authorization and consent. The Government hereby gives its authorization and consent for all use and manufacture of any invention described in and covered by a patent of the United States in the performance of this grant project or any part hereof or any amendment hereto or any subagreement hereunder (including any lower tier subcontract).

§ 30.525 Data and copyrights.

EPA's data policy is to expedite general utilization or further development of new or improved pollution prevention and abatement technology and procedures developed under EPA grants and fellowships. Therefore, it is most important that the results of EPA sponsored research include data that is sufficient to enable those skilled in the particular area to promptly utilize or further develop such technology and procedures. Availability of adequate data permits accurate assessment of the progress achieved under a grant or fellowship so that EPA priorities can be established. Access to data accumulated by the grantee shall be made available to the Project Officer on request.

§ 30.530 Required data and copyright provision.

Every EPA grant or fellowship shall be subject to the rights in data and copyrights provisions set forth in Appendix C to this Part.

§ 30.540 Deviations.

Any request for deviation from the patent provisions in Appendix B and from the rights in data and copyrights provisions in Appendix C to this Part must be submitted in writing pursuant to Subpart I of this Regulation. No deviation or waiver of patent or data rights shall be granted without the concurrence of the EPA Patent Counsel.

Subpart E—Administration and Performance of Grants**§ 30.600 General.**

The grantee bears primary responsibility for the administration and success of the grant project, including any



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

FEB 22 1977

OFFICE OF
GENERAL COUNSEL

Mr. H. John Plock, Jr.
Commissioner of Public Works
County of Nassau
Department of Public Works
Mineola, New York 11501

Re: EPA Grant R804654-01 -- Sub-agreement with Ecolotrol, Inc.

Dear Mr. Plock:

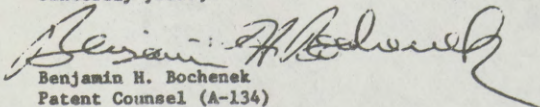
Enclosed is a draft patent clause developed in this office in response to a request from Ecolotrol for a deviation from the standard patent clause used in EPA grant regulations. Specifically, Ecolotrol requested that it be permitted to retain title to any invention conceived or first actually reduced to practice in the course of or under its sub-agreement with the County of Nassau under the referenced grant. As a result of numerous discussions within EPA it has been concluded that a waiver of the type requested is essentially justified, and the enclosed clause in paragraph (b) reflects this view.

However, in view of the apparent likelihood of a Step 1, 2 and/or 3 grant under EPA's Construction Grant Program, to the County of Nassau to perform further, extensive work in connection with the Ecolotrol proprietary technology, it was felt that any waiver of rights to new inventions should be subject to an agreement by Ecolotrol that in the event any such Step 1, 2 or 3 Construction Grant is awarded, the rights granted under the referenced grant would be subject to re-negotiation. This position is taken, since any such further grant support would unquestionably serve to further enhance the background proprietary position of Ecolotrol, and very probably also the value of any new inventions made under the above referenced grant. In addition, it is recognized that any other construction grants awarded by EPA which use the Ecolotrol technology could very likely result in, one, a monopoly position to Ecolotrol and secondly, and perhaps even more importantly, result in a situation where EPA would have funded development of foreground inventions, further perfection of background inventions and then would be in the position of paying significant royalties to Ecolotrol via the EPA Construction Grants Program.

It is respectfully requested that the enclosed clause be forwarded to Mr. Patrick Iannotta, President of Ecolotrol, for his review and any comments he may wish to make. Either you or other representatives of the County of Nassau and Mr. Iannotta may feel free to contact the undersigned at (202) 755-0794 regarding this matter.

It should be noted that any construction grant awarded by EPA is deemed, itself, subject to and to include the EPA patent rights clause contained in 40 CFR Part 30, Appendix-B.

Sincerely yours,



Benjamin H. Bochenek
Patent Counsel (A-134)

Enclosure

(6) To "practice an invention or patent" means the right of a licensee on his own behalf to make, have made, use or have used, sell or have sold, or otherwise dispose of according to law, any machine, design, manufacture or composition of matter physically embodying the invention, or to use or have used the process or method comprising the invention.

(7) "Administrator" means the Administrator of the U. S. Environmental Protection Agency or his authorized designee.

(b) Licensing Requirements.

Ecolotrol hereby agrees that, to the best of its ability, it will either directly or through its licensee(s) or assignee make available an embodiment of its Background Patent(s) as a Commercial Item, for use or practice with a Specified Work Object or Subject Invention. If the Contractor, its licensee(s) or assignee feels it no longer desires, or if it is unable, to make such Commercial Item(s) available, it shall notify the Administrator, and upon request by the Administrator, or his designee, will license such Background Patent(s) to any designated responsible applicant for practice on reasonable terms and conditions including reasonable royalties.

(n) RENEGOTIATION OF PATENT RIGHTS

The Contractor (Ecolotrol, Inc.) hereby agrees that in the event EPA, either has, or in the future, awards a Step 1, 2 or 3 construction grant that involves any form of experimental, developmental, research or demonstration work on processes covered by Background Patents or otherwise proprietary to Ecolotrol, its licensee(s) or assignee, Ecolotrol, its licensee(s) or assignee, as appropriate, agrees that, the portions of this clause related to rights in Subject Inventions and/or Background Patents shall be subject to renegotiation at the option of the Government of the United States.

ECOLOtrol, INC.
Environmental Specialists
1211 STEWART AVENUE
BETHPAGE, NEW YORK 11714
-- --
(516) 938-6622

April 29, 1977

Mr. Frank Flood
Nassau County
Dept. of Public Works
Sanitation Water Supply
One West Street
Mineola, NY 11501

Re: E. P. A. Grant R 804-65401

Dear Frank,

Pursuant to our meeting of April 19, 1977, our phone call this afternoon, and with reference to Mr. Ben Bochenek's letter to Commissioner Plock dated February 22, 1977, I would like to indicate that we at Ecolotrol will require additional time to complete an adequate response to this correspondence. As you are aware, the "official" response that E. P. A. has now communicated in writing is quite different from the terms of an agreement reached with E. P. A. last September. In our opinion, Mr. Bochenek's correspondence of February 22, 1977 appears to be ambiguous, lacks specificity, and addresses issues never before raised. We, to say the least, are not only surprised, but shocked and in a state of disbelief.

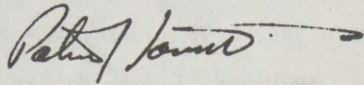
We are, obviously, pleased that the first paragraph of this letter states that "as a result of numerous discussions within E. P. A., it has been concluded that the waiver of the type requested is essentially justified". However, the second paragraph of this letter goes on to request concessions on our part which are not only inconsistent with our previous agreement, but appear to be inconsistent with E. P. A.'s own regulations. These concessions, if accepted, would seriously jeopardize our company and our ability to commercialize this technology within the United States. Mr. Bochenek's concern that Ecolotrol may have a "monopoly position" is difficult to understand. We are a small business in

competition with some of the nation's largest firms (i. e. Union Carbide, F. M. C., Air Products, etc.); most of whom have already received significant E. P. A. support. It is for these reasons that we must carefully study the proposed terms of this agreement.

Since E. P. A., after eleven months, has raised new and substantive issues for the first time, we must prudently conduct research as to their meaning and implication. Also, since we are a small company and a number of our key employees who have been intimately involved in these negotiations will be out of the country for the next several weeks, it is estimated that we will require at least 30 to 40 additional days to develop an adequate response. Nevertheless, at this time we do not believe that we can comply with the terms of this agreement. I have also enclosed for your information, a history of our negotiations with E. P. A. concerning this matter.

I hope this meets your requirement. If I can be of any further assistance, please do not hesitate to contact me.

Very truly yours,

A handwritten signature in dark ink, appearing to read "Patrick J. Iannotta", with a long horizontal flourish extending to the right.

Patrick J. Iannotta
President

mp
enc
cc: J. Plock

4/29/77

HISTORY OF PATENT NEGOTIATIONS
EPA - Grant NO. R-804-65401

MARCH 30, 1976 - Grant package was submitted to E.P.A. requesting a deviation from the normal patent rights clause.

JUNE 30, 1976 - Received letter from Tim Oppelt, E.P.A. Project Officer advising us that "review process is completed" and that "all review comments have been highly positive."

AUGUST 26, 1976 - Grant was officially signed by E.P.A.

AUGUST 30, 1976 (week of) - Received a phone call from Mr. Bochenek, E.P.A.'s Patent Counsel, requesting material to support our request for a deviation (This was our first contact with E.P.A.'s patent office - 2 months after the review process was supposedly completed and 4 days after the grant was signed.).

SEPTEMBER 8, 1976 - In response to Mr. Bochenek's request one of our employees flew to Washington D.C. specifically to hand deliver to Mr. Bochenek all the supportive information he had requested.

SEPTEMBER 13, 1976 - Patrick Iannotta, President of Ecolotrol

flew to Washington and met personally with Mr. Bochenek from 10:30 A.M. to 5:30 P.M. to hammer out an agreement. By the end of the meeting, a mutually acceptable patent clause had been developed.

OCTOBER 15, 1976 - After repeated inquiries to Mr. Tim Oppelt asking him to determine the status of the agreement within E.P.A.'s patent office, Mr. Bochenek called Mr. Iannotta to inform him that the agreement was still acceptable but since our grant had already been signed "he had put our (paperwork) on the back burner" because he had more pressing matters to resolve with grants which had not yet been signed. He told Mr. Iannotta "not to worry, there was no problem".

OCTOBER - On the basis of this phone call Ecolotrol continued to work in good faith on the project and met on October 27, 1976 with Mr. Oppelt to get the project "moving faster".

February 1977 - Mr. Bochenek sent E.P.A.'s "official" response to Ecolotrol's patent deviation request. (A response which E.P.A. has taken without any consultation with Ecolotrol and which is inconsistent with the mutually agreeable terms worked out last September. This response has come 11 months after the grant package was submitted and 5 months after the deviation was supposedly "worked out".

ECOTROL, INC.
Environmental Specialists
1211 STEWART AVENUE
BETHPAGE, NEW YORK 11714
(516) 938-6622

June 8, 1977

Commissioner H. John Plock
Nassau County
Department of Public Works
One West Street
Mineola, NY 11501

Re: E.P.A. Grant R 804654-01

Dear Commissioner Plock,

With reference to our correspondence to you dated April 29, 1977 and Mr. Bochenek's letter of February 22, 1977, we have tried in good faith to analyze the terms and conditions of the patent clause attached thereto in as much detail as time will allow. We are, of course, pleased that "As a result of numerous discussions within E.P.A., it has been concluded that the waiver of the type requested is essentially justified." Unfortunately, we find the patent clause attached thereto to be inconsistent with that statement, with the agreement we reached with E.P.A.'s patent council in September, 1976, and with stated E.P.A. policy and objectives.

The thing that strikes one immediately when trying to evaluate the terms and conditions set forth in Mr. Bochenek's letter is a lack of specificity upon which an adequate evaluation can be made. Without a clear definition of their terms' meaning and a better understanding of E.P.A. objectives, we must state categorically that we cannot accept the terms of the patent clause as presented. This is particularly true in light of our recent experience in negotiating with E.P.A. in September of last year when an agreement reached in September, 1976 was unilaterally changed in February, 1977 without consent.

E.P.A.'s requirement that, as a condition of this grant, Ecolotrol must agree to renegotiate if Nassau County, or if anyone else is ever to accept some future Step 1, 2 or 3 grants under the construction grants program, with or without Ecolotrol's participation, is to our mind discriminatory and unreasonable. If such terms were accepted, it would destroy for us or anyone else any incentive

to undertake the cost and risk required to fully commercialize this technology. We would be put in the position of incurring all the initial risk and then having to share the benefits of our labors at governmental whim.

Mr. Bochenek's argument that we will become a monopoly is patently absurd, when one considers that thousands of E.P.A. construction grants projects and the huge multi-national companies, many of whom have already received significant E.P.A. support, with whom we must compete.

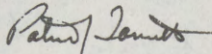
Mr. Bochenek's statement that E.P.A. would be put in the position of paying "Significant Royalties" to Ecolotrol via E.P.A. construction grants program is impossible to evaluate since he has never defined what "Significant Royalties" are. Thus far our only experience with E.P.A.'s thinking are the terms of the research grant currently under consideration. In this grant E.P.A. has required us to accept a gross profit before taxes of only 7-1/2%. We can do almost as well in the bank. In fact, most mature American companies have an after tax profit of 10%. Obviously, high-risk, new technology companies must have higher profits to survive and grow.

There is also the unanswered question as to what would trigger such patent clause renegotiations. The mere granting of a patent? The issuance of a Step 1, 2 or 3 grant with or without Ecolotrol's participation? Domination of the industry? Five hundred million dollars in annual sales? What would we be expected to renegotiate? What would one hope to accomplish? These are all unanswered and have not been addressed in Mr. Bochenek's correspondence. Therefore, we must conclude that the patent clause as presented is totally and completely unacceptable and must be rejected.

Unfortunately, we believe no other response can be appropriate.

If you should have any questions or if I can be of any further assistance, please do not hesitate to contact me.

Very truly yours,



Patrick J. Iannotta
President

mp

cc: F. Flood
T. Oppelt

RECEIVED JUL 13 1977



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUL 8 1977

OFFICE OF
GENERAL COUNSEL

Mr. Patrick Iannotta
President
Ecolotrol, Inc.
1211 Stewart Avenue
Bethpage, New York 11714

Re: EPA Grant R804654-01

Dear Mr. Iannotta:

This is to confirm that it will take about one week for me to obtain a copy of the patent rights clause used in the Union Carbide contracts of about 1969-70 that were awarded by the Department of the Interior. Since I will be on vacation July 10-16, I shall call you on about July 18 regarding this matter, and other aspects of our patent clause negotiations.

Incidentally, the use of certain clauses in the Union Carbide contracts will not be considered a precedent for use thereof in your contract with Nassau County. Thus I suggest we narrow the remaining issues to the matter of the "renegotiation" provisions of the proposed patent rights clause I sent to Mr. Plocks in February 1977, and which you discussed in your letter of June 8, 1977, to him.

I shall contact you on about July 18, upon my return from vacation, and hope that we can confine further negotiations to the single matter of paragraph (n) Renegotiation of Patent Rights in the aforementioned proposed patent rights clause.

Sincerely yours,

A handwritten signature in dark ink, appearing to read "Benjamin H. Bochenek", written in a cursive style.

Benjamin H. Bochenek
Patent Counsel (A-134)



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

H-15.78
2-15-78

JNO
not discuss
to me

OFFICE OF
GENERAL COUNSEL

FEB 10 1978

Mr. Francis Flood, P.E.
Director of Environmental Engineering
County of Nassau
Department of Public Works
Mineola, New York 11501

Re: EPA Grant R804654-01-0
Ecolotrol - Patent Clause

Dear Mr. Flood:

This is in response to your letters to me of October 17, 1977 and December 12, 1977, and to confirm my telephone conversation of December 28, 1977 with Mr. Oliva regarding the referenced grant and patent clause.

We have considered the letter of September 22, 1977 to you from Mr. Iannota. As I advised Mr. Oliva during our telephone conversation, we cannot accept Mr. Iannota's proposed patent clause changes set forth in his letter to you of September 22. We feel that the clause that would result from said changes, would unjustifiably leave the Government with no control over either Subject Inventions or Background Patents.

It is recognized that the changes are proposed in connection with the Region II Step 1 grant to Nassau County, and that Mr. Iannota has not explicitly proposed them for the referenced grant. However, in the interest of attempting to move matters forward, we have taken the liberty of considering the proposed changes for both grants. Since we can not accept the proposed changes for the Step 1 grant, we can not accept them for the referenced grant. In no event should Government rights under one of the grants (Step 1 and the referenced grant) be less than Government rights under the other of the grants. *

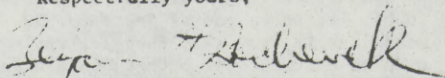
We still consider our clause of September 2, 1977 (copies enclosed) to be the basic working document with respect to any waiver. Notwithstanding any existing agreement with Dorr-Oliver or others, we will not consider any restrictions or substantive changes in the portions of the clause dealing with Subject Inventions, including of course section (c).

In connection with section (m) - Background Patent Rights, we are reviewing our position and will forward to you by about February 21, any changes we feel are appropriate. Since Dorr-Oliver,⁷ along with Ecolotrol, would very likely benefit from the results of the referenced grant and the Step 1 grant, it seems reasonable that the agreement between Ecolotrol and Dorr-Oliver should not be the dominant factor in connection with the matter of Background Rights. Our main concern is still that there always be adequate competition with regard to future government funding of the subject matter of the referenced and Step 1 grants, when such subject matter is involved in funding under the EPA construction grants program, consistent with Sec. 204(a)(6) of the Federal Water Pollution Control Act, as amended and 40 CFR 35.936-3. X

As of now, standard patent provisions are in effect as to Step 1 and the referenced grant.⁷ We hope that a mutually satisfactory basis for waiver can be agreed on not later than March. We request that after you receive our next offer, we have a meeting at EPA Region II on about March 3, to discuss the matter. In the hope that it might expedite matters, we feel that you, Mr. Iannota and your respective attorneys, and anyone else necessary to give final approval to a clause, attend such a meeting. We expect the meeting to result in a final decision regarding the clause for both grants. Therefore, any new suggestions regarding patent provisions, presented to us either prior to or at said meeting will be considered the best and final offer. X

Please rest assured that the referenced grant and the Step 1 grant will be amended to insure a royalty free nonexclusive license to the county under any Subject Inventions arising under either grant.

Respectfully yours,



Benjamin H. Bochenek
Patent Counsel
Grants, Contracts & General
Administration Division (A-134)

ECOLOTRON, INC.
Environmental Specialists
 1211 STEWART AVENUE
 BETHPAGE, NEW YORK 11714
 (516) 938-8822

July 7, 1978

Mr. Francis J. Flood, P.E.
 Director of Environmental Engineering
 Division of Sanitation & Water Supply
 Department of Public Works
 Nassau County Executive Building
 1 West Street
 Mineola, New York 11501

Dear Mr. Flood:

With reference to our recent discussion concerning E.P.A.'s patent clause, I find it very difficult to summarize the many years of ongoing negotiations into only two or three pages, but I will try.

FUNDAMENTAL PROBLEM: Every right granted under the waiver that E.P.A. has presented is sustainable by us only upon our ability to demonstrate that we have made the technology "reasonably available" or "available at terms reasonable under the circumstances." The problem is that E.P.A. does not wish to define precisely what "reasonable" means. This leaves their interpretation of reasonableness and our rights open to an ever-changing set of standards, which can be modified or significantly changed at any point in the future.

To test the validity of our assertion, one only need look at the record for these negotiations. In the name of "reasonableness," the E.P.A. has asked us to set aside valid and binding contracts, to sign a patent clause when we are not even a participant to a grant, unilaterally changed an understanding after we had been assured we had an agreement, and invested substantial corporate funds on the basis of said assurance, refused to grant us patent rights equal to those given a six billion dollar firm for fear that we would develop a "monopoly position," etc. etc.

Thus, E.P.A., who has admitted not having a unified patent policy, would ask us to leave the very foundation of our business open to the whims and impressions of any number of the E.P.A. individuals, who may meet from time to time, now and in the future, to determine what "reasonableness" is. This is not reassuring, particularly in light of the fact that during the entire course of these negotiations, E.P.A. has not, in our opinion, acted "reasonably" or in "good faith."

A FAIR WAIVER IS ESSENTIAL TO ECOLOTROL'S EXISTENCE: Ecolotrol is a small, high technology company, whose ability to exist and to carry on its normal corporate functions rests primarily on our know-how and patent position. We are in competition with significantly larger firms, many of whom have already received significant E.P.A. assistance. The ambiguity in E.P.A.'s position would not only cause us significant weakness in the market place, but would also preclude us from obtaining the necessary capital that is required to accelerate the availability of our technology.

E.P.A.'S POSITION: Mr. Bochenek, in his letter to you dated February 10, 1978, states, "...said changes will unjustifiably leave the government with no control over either subject invention or background patents." This is consistent with the tenor of our own negotiations. It is clearly E.P.A.'s position that it must have "control" of our patents. To offer E.P.A. this type of control, would probably cause our firm to go out of business.

ECOLOTROL IS ENTITLED TO THE WAIVER: Mr. Bochenek, in his letter to Commissioner Plock dated February 22, 1977, states, "As a result of numerous discussions within E.P.A. it has been concluded that a waiver of the type requested is essentially justified..."

ECOLOTROL HAS ACTED IN GOOD FAITH: It is important to realize that we had accepted a "good faith" agreement reached between Mr. Bochenek and myself, September 13, 1976, and proceeded to work under the terms of the grant, only after we had received a verbal assurance from E.P.A.'s patent council, that the waiver as agreed was granted and for us "not to worry."

We initially accepted a relatively risky clause based on our respect for the County and our assumption of E.P.A.'s good faith. When the E.P.A. unilaterally changed the terms of conditions of that patent clause, it became clear that a higher degree of specificity would be required in order to protect the interest of our company and our employees from further unilateral and arbitrary actions.

E.P.A. HAS NOT ACTED RESPONSIBLY: What is perhaps most disturbing to me, is the fact that E.P.A. has tried to bully concessions from us, which we were not prepared to make. They have completely disregarded their own regulations, asked us to set aside valid and binding contracts, have taken a position that impinges upon the rights of the County, and have even gone so far as to require us to sign a patent clause for a step 1 grant, even if we are not a participant to the grant. As far as we can learn, this is not standard operating procedure. We know of no one else who has been required to accept such arbitrary, capricious, and arrogant conditions. Thus, it is very difficult to assume that the E.P.A. has been working in "good faith."

ECOLOGROL HAS BEEN CONSISTENT: In our letter to Mr. Bochenek dated September 7, 1976, I stated, "...Equities require that we be allowed to protect our investment and commercial position... to do otherwise would be unreasonable and would require us not to contract with Nassau County in this important effort to accelerate the availability of fluidized bed technology." Since we have over one million dollars invested in this development effort, and feel that E.P.A. has taken virtually no risk, we believe that their desire for control over our background patents is arrogant and confiscatory.

ECOLOGROL AS A MONOPOLY: I think it important to realize that we have spent close to seven years trying to interest the government in helping to accelerate the development of the fluidized bed process. It has taken us in excess of five years alone to get a "fair" technical evaluation. It has taken us an additional year to define the grant so that it would be consistent with E.P.A.'s own budgetary restraints, and it has now taken several additional years of ongoing negotiations with an ever increasing, ever-changing definition of E.P.A.'s requirements to try and develop a patent clause.

It is also interesting to note, that E.P.A.'s stated concern in refusing a fair waiver, is that Ecologrol might develop a "monopoly position," and yet Mr. Bochenek has categorically stated that the terms that E.P.A. has granted to Union Carbide, a six billion dollar firm, for the development of a competitive process, would not be made available to us. This is striking, in light of the fact, that E.P.A. has stated that after months of consideration our request for waiver is "essentially justified." We believe E.P.A.'s position clearly discriminates against small business.

COMPETITIVE REQUIREMENT: Mr. Bochenek, in his letter to you dated February 22, 1978, indicates that "the competitive requirement" of section 204 (a)(6) of the Federal Water Pollution Control Act as amended are further reasons for E.P.A.'s position on this. This is not true. Section 204 (a)(6) requires "at least two brand names or trade names of comparable quality." It is clear from your letter to Mr. Bochenek dated October 17, 1977, that our licensee Dorr-Oliver, a major New York State Stock Exchange Company and equipment supplier is already in direct competition with us and is making this system available under the name Oxitron. Even if Dorr-Oliver were not in competition, the clause specifically allows the availability of a "or equal capability."

NOW 85% FEDERAL FUNDING FOR FULL-SCALE UNITS PLUS 100% GUARANTEE TO CORRECT ANY DEFICIENCIES WITH ABSOLUTELY NO PATENT PROVISION; Although we never discussed this with Mr. Bochenek, on December 27, 1977, the President signed PL 95-217, Clean Water Act amendment for 1977. Under section 17, E.P.A. will give any municipality which decides to utilize "innovative technology" even at a multi-million dollar installation, an additional 10 percent in Federal Construction Grants Funds; plus a 100 percent guarantee of the cost of correcting any deficiencies, with absolutely no patent clause or limitation on our profits.

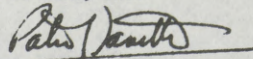
In light of these facts, it is absolutely absurd that the government can maintain the position that it should have "control" over our patents, on a \$100,000 grant, particularly in light of the fact that we were limited to a maximum \$7,500 profit before taxes, and on which we have actually lost money, not including the cost of trips to Washington, legal fees, etc. associated with the development of this patent clause.

CONCLUSION: It is our position that E.P.A.'s requirements are without merit, arrogant, discriminate against small companies, and inconsistent with the intent of Congress. The basic and fundamental problem is that E.P.A. has no patent policy and therefore, its interpretations are open to the whims and impressions of any number of individuals now and in the future. We cannot in good faith jeopardize the entire investment in our company to such a random procedure. It is, therefore, for these reasons that I must reject the terms of E.P.A.'s waiver. Particularly in light of Mr. Bochenek's latest "take it or leave it" option.

If I can be of any further assistance, please do not hesitate to contact me.

Very truly yours,

ECOLOTRON, INC.


 Patrick J. Iannotta
 President

PJI/ar

APPENDIX II

ADDITIONAL STATEMENT FOR THE RECORD

WASHINGTON, D. C., November 21, 1979.

HON. ALLEN E. ERTEL,
*Chairman, Task Force on Federal Patent Policy, Committee on Science and
 Technology, U.S. House of Representatives, Washington, D.C.*

DEAR CONGRESSMAN ERTEL: Thank you for your letter on November 2, 1979, enclosing copies of bills, HR 5427, 5715, S 414 and 1215. You ask that I respond to six questions on government patent policy. My answers to your questions are set forth below. For further comment and source information on government patent policy I refer you to my recent article in *The George Washington Law Review* (Harris, "A Centrist Program on Competition Derived from Patent-Antitrust Experience", 47 *Geo. Wash. L. Rev.* 1, 94 (Nov. 1978)).

1. In your opinion, if the government granted exclusive rights to contractors to commercialize a Federally funded invention, would the rate of commercialization of these inventions significantly increase?

I think it would increase, but I hesitate to forecast a significant increase. The major part of government supported R and D is directed toward government and military requirements where patents and public use are a secondary consideration, despite the fact that public use has received increasing attention in recent years. This type of "mission" oriented research is not likely to produce many inventive contributions for the marketplace.

Agencies seeking to satisfy government and military requirements are likely to place their contracts with companies that have the experience and capability to handle them satisfactorily. Such companies generally have commercial positions in relevant technology and, therefore, would seek patents, and would be more likely to commercialize. The products of such R and D, however, will generally require much larger investments than those of public oriented research before commercialization is feasible.

Despite the fact that march in rights might be used to license others anyway, these are companies that would probably hesitate to take contracts that do not include exclusive rights (preferably title) in patents.

Even if they did take contracts without exclusive rights, they would be forced to protect their interests by keeping their best men on other work of their own. Moreover, such an arrangement is less likely to generate the special sensitivity required to perceive and to actively pursue the patentability of advances in the design improvements that may be derived from the government contract. Where a patentable invention is not perceived and reported, there is nothing to commercialize.

Some of these companies will forego exclusive rights. In addition to the possibility of acquiring title or an exclusive license to patented inventions, companies derive significant advantages from obtaining government research and development contracts. They gain know-how for future production first hand, their other operations may benefit from experience with the new invention, and they come in close touch with government decision makers.

Although surveys conducted on the commercial use of patented inventions retained by government contractors indicate a very low rate, there are strong reasons for their desire to obtain title. The patent may require a competitor to pay royalties for use of the invention. The patent is also useful for cross-licensing or trading for special services or serve as an entree into a related technology. A significant patent ownership has a positive effect on the company's reputation in the business community and on current and potential technical employees who may be favorably influenced by this promise of inventor recognition. Where the government retains title it has shown an understandable reluctance to directly challenge use by the public.

2. Do you believe that the grant of exclusive rights (either by granting exclusive licenses or by permitting the contractor to retain title) would tend to lead to a great deal of anti-competitive situations in violation of current antitrust laws?

No. Generally, a patent policy that favors large corporations, even though they might be better qualified, will foster concentration. But this is less likely where government would probably be the only organization using the products resulting from a major portion of government supported R and D. The government can

gradually spread its procurement, since it cannot be enjoined from utilizing other sources for governmental purposes, as it nurtures small business along.

Studies conducted by research organizations have failed to find an evidentiary basis for the charge that license policy will encourage concentration of economic power.

The government does not generally enforce its title in inventions, and large companies might in effect be just as favored by title policy because their ongoing monitoring programs give them better knowledge of inventions, and they have the capital and know-how to develop them commercially. Without the protection provided by the patent system, however, even the large company would hesitate to invest much development capital in an invention. The favored position of the large company under the title policy would, therefore, not be likely to bring many inventions to the marketplace that had not already been developed for commercial use by the government.

Investigation by government authority and action by both government and private parties has been so intense in recent years with respect to the misuse of patents that there is very little likelihood that large companies that hold title to inventions derived from government contracts will not comply with the anti-trust laws. Moreover, title in the government may have little effect on concentration in the many cases where the know-how essential to the use of the patented invention belongs to the contractor.

With few exceptions, contractors are willing to license, and if the invention is used it will probably be used even before a patent issues. Furthermore, march in rights may require a contractor to license if the contractor does not itself use the patented invention. Also, enforcement of the patent is subject to be enjoined where public health and related matters are concerned. Finally, the bills you enclosed with your letter include language that would provide in general against the grant of any rights to a contractor on a government financed invention that tended to violate the antitrust laws.

3. I favor title in the contractor. A patent license is an agreement not to sue rather than a transfer of a property right. Although it does have the characteristics of a transfer when the licensor relinquishes the prerogative to seek redress for infringement, it is not, strictly speaking, a transfer of title as in an assignment. To be an assignment the assignee must obtain substantially the same rights, privileges and powers as granted to a patentee. However, an assignment is none the less an assignment even if it reserves to the licensor a license right. Moreover, an assignment may give but a special tenure to an assignee so that the assignment may be defeated by a condition subsequent, but an assignment which is expressly limited to run for less than the full term of the patent (for example, for a specified number of years) has been held a mere license because the patent statute does not provide for dividing a patent up according to time.

The quality research assistance needed by the government requires the contractor's best resources be applied to the contract and a high interest and competition in government research and development contracting. By giving the greatest incentive to the contractor most capable and likely to commercialize, while the government retains the right in certain cases to transfer the right to commercialize to other parties, will provide the best assurance for the commercialization of government supported inventions. As noted in my answer to your question No. 1, there are a number of reasons for the contractor's desire to retain title in addition to the right of exclusivity. Furthermore, although the exclusive license gives the licensee immunity from suit for infringement, title provides the assignee the right to sue others for infringement.

One of the objections raised to title in the contractor is that it would take legal action to secure title for the government where the contractor does not commercialize, and if title remained in the government it would only require administrative action to cancel the contractor's exclusive license. Government wide use of a single policy with respect to title in the contractor, with certain specified exceptions as in the bills you enclosed with your letter, offers as uniform and predictable a policy as government wide use of exclusive licensing even though it might entail some additional administrative effort. Moreover, title in the contractor avoids the question of whether the agency has the right to dispose of ownership or rights to use an invention since the determination that government would not acquire such rights, should invention occur, could be made at the time of contracting.

Also noted in my reply to your question No.1, is the low commercial use of patented inventions even for those retained by contractors. This is to be expected where the bulk of the contracting is in military or government "mission" oriented research. This is precisely the reason for giving contractors the best possible deal, while maintaining every safeguard for the public interest, to move the invention into the market place. If title will provide the incentive, even if only psychological, it may increase commercialization. Certainly, adding extraneous barriers, which do not currently exist, such as "return of government investment", and "preference for U.S. industry", included in the bills you enclosed with your letter, will not increase an already low commercialization rate.

(The foregoing is in response to your question: "Do you favor exclusive licensing over the title-in-the-contractor approach? If so, could you explain?")

4. Do you think that small businesses and universities should be given special treatment in Federal patent reform legislation?

Yes. The government seeks to maintain competition among its suppliers, but favored companies, particularly large ones, can strengthen their industry position to the detriment of smaller companies by obtaining procurement contracts. When the government needs speed, know-how, and mass production, it may be forced to contract with large corporations. The departments engaged in procurement have been seeking ways to favor small business, but the difficulties small companies have in meeting specifications, and the administrative problems associated with doling out large orders in bits and pieces, are not easily resolved.

Not only are patents important to the large companies, they are essential to small companies to counter the economic and technological advantages of the larger companies in the market. In many cases it may be the only legal bulwark small companies have to offset those advantages possessed by large companies.

Scale economies are exceedingly important in research and development. However, when a company grows beyond a certain critical size, the incentive for research and innovation begins to decrease. Apparently, relatively small team efforts, sparked by highly creative individuals, result in optimum inventive activity. Thus, small company research and the patents deriving therefrom can act as a procompetitive force.

Inventive contributions of universities are more difficult to commercialize. The products of their research are generally more basic and require a greater amount of development and financial support to make them commercially feasible. Universities generally encourage publication rather than patenting and do not possess the know-how and the patent portfolio necessary to facilitate the commercialization of an invention. Even when they engage outside organizations to administer patents arising from faculty research, they do not utilize their inventions directly. Moreover, out of a large portfolio of such patents, it is necessary that a few are very profitable to cover the costs of all the others.

5. Would you favor a provision in such legislation that would require payments to the Government (through royalty and/or profit sharing) in those cases where a Federally funded invention is commercialized under an exclusive rights agreement?

No. The inventive product that eventually reaches the market does so by the expenditure of additional private capital for development and marketing. Moreover, no government contract contemplates or requires that an invention be made. The government gets the benefit of experience, patents, and know-how of the contractor which already exists, but only pays the contractor for his services to make knowledge and know-how into information available for the government's use in order to achieve governmental goals. The right to exclusively commercialize, in effect, has been paid for by the contractor with his "background" contribution of experience, patents, and know-how, a past investment, which he should be allowed to recover.

As indicated in my answer to question No. 3, to saddle and already low commercialization rate with an additional burden of payments to the government will not increase commercialization. It would not be worth risking the full incentive of title in the contractor for the relatively small chance of a very large financial return to the government.

6. Three Federal patent reform bills are included with this letter. Do you have any specific comments on these bills as to their relative merits?

To specifically comment on the relative merits of the bills you enclosed with respect to their substance, procedure and drafting would require a more detailed

undertaking than a letter warrants. However, I must say that I am impressed with your attempt to deal comprehensively with the problem and the thought that appears to have been given to its solution. As noted in my answer to previous questions, I strongly disfavor provisions for "contractor's payments to the government" and "preference for U.S. industry." I think such provisions will be counterproductive. I do favor special treatment for small business and universities. On the whole, I think HR 5715 is the best of the bills you sent me.

I hope the foregoing will be helpful in your commendable effort to prepare sound legislation relating to government patent policy.

Sincerely,

L. JAMES HARRIS,

Patent, Trade Regulation and Antitrust Consultant.

APPENDIX III

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS



"Putting It All Together For The Engineer"

Address Reply To:

LEGISLATIVE AND GOVERNMENT AFFAIRS
OFFICE OF THE CHAIRMAN

October 17, 1979

Honorable George E. Brown, Jr., Chairman
Subcommittee on Science, Research & Technology
U. S. House of Representatives
3274 House Annex 2
Washington, D. C. 20515

Dear Chairman Brown:

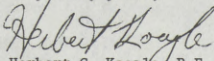
The National Society of Professional Engineers, a nonprofit organization representing nearly 80,000 individual members working in every aspect of the engineering profession, recently conducted a survey of its patent policy experts regarding the problems and promises of the current patent system.

I am enclosing a copy of the results of this survey. Nineteen people responded, however, not all of the people responded to all of the questions, hence the discrepancy in the numbers.

We would appreciate your efforts to include this survey in the official hearing record of the October 16 and 17 hearings on Federal patent policy.

If NSPE can be of further assistance, please feel free to contact us.

Very truly yours,


Herbert G. Koogle, P.E.
Chairman

Enclosure

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS



"Putting It All Together For The Engineer"

SURVEY ON

PATENT POLICY AND POTENTIAL SOLUTIONS TO PATENT PROBLEMS

Legislative and Government Affairs Department

Michael M. Schoor, Director

&

Joan E. Porte, Legislative Assistant

1. S.414, introduced by Senator Birch Bayh (D-Ind.) provides an option to inventors to seek patents and have exclusive use of products invented under government contract and allows the government to recoup money back from the inventor when the patented invention makes over a certain amount.

(a) Will this increase innovation in government-funded projects?

Probably - (3)

Yes, but government should recoup only business taxes - (1)

Yes - (9)

No, too much - a government inhibitor - (1)

(b) Is the concept of this bill too broad or too narrow?

Both - (1)

Narrow - (7)

Broad - (2)

Undecided - (2)

Neither - (1)

Comments:

- . The bill should also stop the Department of Justice from regarding patents as permanent monopolies;
- . Government should not limit profits and collect taxes on patents; bureaucratic strings should be cut to increase innovation;
- . People should exclude individuals specifically engaged by the government for research;
- . The bill should require an agreed amount to be recouped and should define contractors, subcontractors and inventors;
- . Payback should be limited to the amount of government input - repayment schedule should be favorable to the inventor;
- . There should be some split of the royalties after costs are recouped;
- . If the government supplies the equipment and money, they should have all "rights";
- . Government must not retain title under any circumstances.

2. Should there be a time limit in which an employer must apply for a patent application for new products or lose that right to the employee-inventor?

Yes - (17)

No - (2)

If so, What is a reasonable time limit?

1 year - (3)

2 years - (2)

7 years - (1)

4-5 years - (2)

1-2 years - (2)

9 months - (1)

6 months - (1)

If employers do not commercialize a patent within a reasonable time period, should the patent be released to the employee?

Yes within one year - (1)

Yes - (11)

Yes in two years - (1)

Yes in five years - (1)

Yes in 12 years for market research items - (1)

Comments:

- . Time limits should be established but should be flexible to allow the inventor to release his patent rights - when someone is given a salary, equipment etc. by a company, that company has the freedom to deal with that person's invention;
- . If the invention is out of the scope of the business, it should release rights to the inventor;
- . If the employee's duties include research, the employer should have the option to commercialize;
- . If the invention leads to an unexpected windfall for the employer, the employee should receive an award not to exceed one-third of the estimated value of the windfall and not to be less than one-twentieth;
- . Employees should not be able to commercialize unless the item is a trade secret which the inventor shares;
- . If the rights are released the employer should also have the right to use it at a later date.

3. Should employee-inventors receive remuneration on patents commercialized by the employer?

Yes - (13)

Employer's option - (2)

Comments:

- . Employee should get raises plus one to two percent royalty;
- . If the employee is "hired to invent" the profits should go to the employer, if the employee is "not hired to invent" he/she should receive support;
- . This should be agreed to in advance.

4. What do you feel are the major problems of current patent policy? How do you propose they be solved?

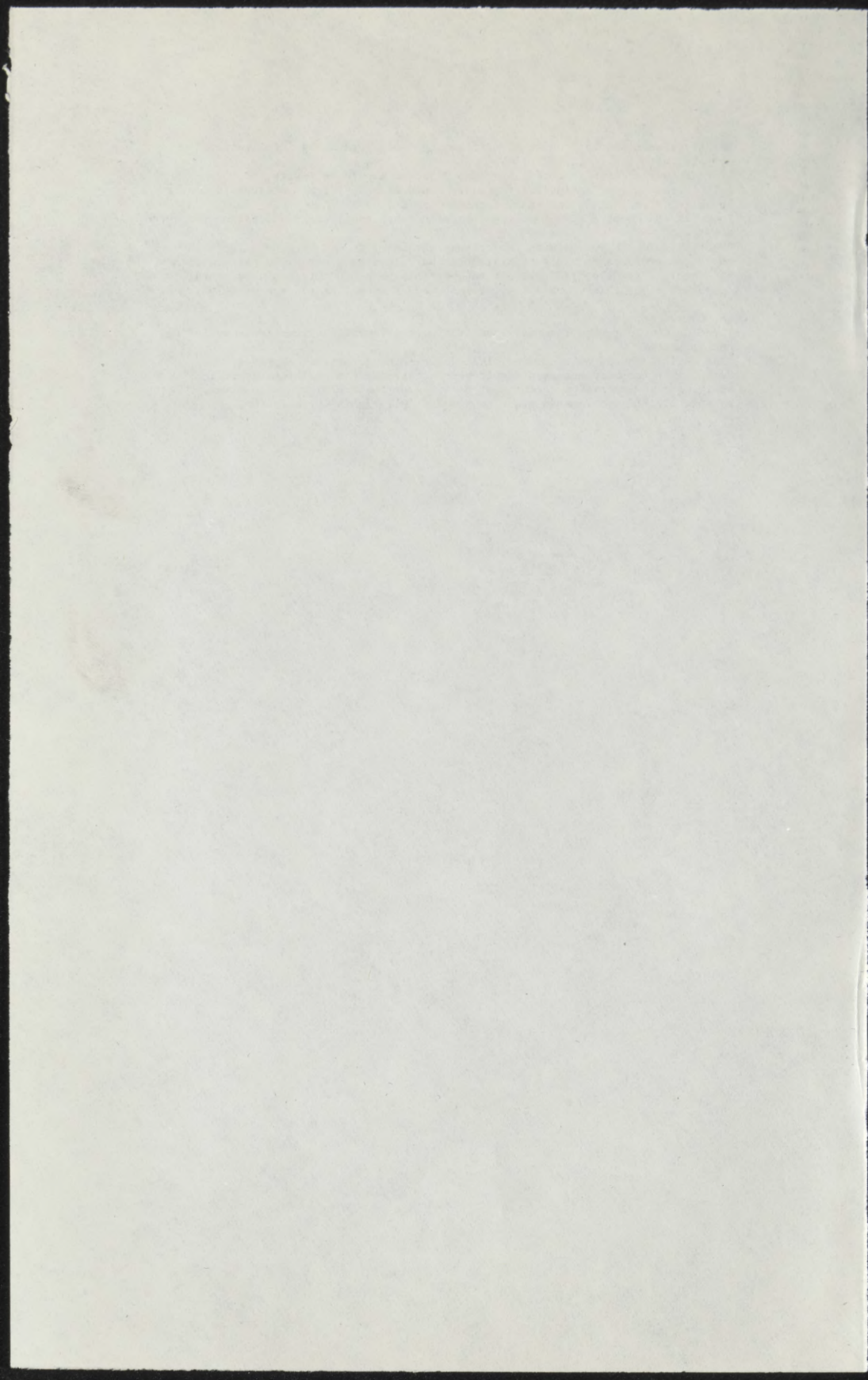
- . Contracts that employees must now sign stifle innovation - these contracts should specify that patent ownership will revert to the inventor if the corporation does not patent/market within a specific period of time;
- . Engineers should be employed on a contractual basis so they would not be terminated before a specific date without notice;
- . The government should not maintain ownership of patents;
- . The patent policy has nothing to do with productivity - other factors intervene;
- . It is too easy to get a patent - there is an "allow the patent and let them fight it out in court mentality";
- . It is too time consuming and expensive to get a patent (stressed several times);

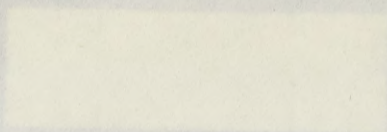
- . The government should standardize its policy towards handling intellectual property with its contractors;
- . "Patent courts" with technically oriented judges should be instituted;
- . Strict laws against patent infringement should be made (stressed several times);
- . Invention promotion is too risky (stressed twice);
- . There is too short a time (one year) between conceptualization and filing for a patent;
- . Products for sale vs. patents for company machinery to make products for sale under the products for sale royalties can be calculated, under the patents for machinery it is more difficult; it can possibly be a percentage of the annual cost reduction achieved or a flat payment and an annual percentage of sales.

Other Comments:

- . The U.S. should reward inventors and examine the invention incentives now in use in Europe;
- . Risk capital should be recovered first followed by government expenses;
- . Strict time and documentation requirements regarding the employees specific assignment and specific concept must be filed by the employer not involved in specific R&D programs in order to acquire full rights to the patent.









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