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GOVERNMENT PATENT POLICIES

(The Ownership of Inventions Resulting From Federally Funded Research and Development)

FRIDAY, OCTOBER 1, 1976

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
SUBCOMMITTEE ON DOMESTIC AND INTERNATIONAL
SCIENTIFIC PLANNING AND ANALYSIS,
Washington, D.C.

The subcommittee met, pursuant to notice, at 8:15 a.m., in room 2325, Rayburn House Office Building, Hon. Ray Thornton, chairman of the subcommittee, presiding.

Mr. THORNTON. The hearing will come to order. On this probably the final legislative day of the 94th Congress, we are very fortunate in having with us on our last day of this series of hearings on Government patent policies, Dr. Betsy Ancker-Johnson, who has appeared before our subcommittee on many other occasions and who is not only the Assistant Secretary for Science and Technology of the Department of Commerce but who has served as Chairwoman of the Committee on Government Patent Policy of the Federal Council on Science and Technology. Dr. Ancker-Johnson is very familiar with patent policies and several months ago was the first person to highlight to us the difficulties which resulted from a disorganized patent policy among the different agencies.

We appreciated that input at that time.

We are delighted to have you with us this morning.

You are accompanied by Dr. Robert B. Ellert who is the Assistant General Counsel for Science and Technology of the Department of Commerce, and Mr. O. A. Neumann who is Executive Secretary of the Committee on Government Patent Policy of the Federal Council on Science and Technology, and Mr. David Eden, special assistant to you in the Department of Commerce.

We are pleased to have all of you with us.

I have had an opportunity to review your testimony which is very excellent. I would like to ask that you proceed as you prefer, whether to give that as a narrative or to summarize it, in which case I would be pleased to make the entire testimony a part of the record.

[A biographical sketch of Dr. Ancker-Johnson, Dr. Ellert and Mr. O. A. Neumann follows:]

BETSY ANCKER-JOHNSON

Dr. Betsy Ancker-Johnson was appointed Assistant Secretary for Science and Technology, U.S. Department of Commerce, in April, 1973.

Dr. Ancker-Johnson is a solid-state and plasma physicist with experience as a research scientist and engineer, as an industrial and government executive, and as a university professor.

She received a B.A. degree in physics with high honors from Wellesley in 1949 and a Ph.D. degree, magna cum laude, also in physics, from Tuebingen University, Germany, in 1953.

Dr. Ancker-Johnson's research career began in 1953 at the Minerals Research Laboratory at the University of California in Berkeley and continued in the R&D laboratories at Sylvania, RCA, and Boeing. Concurrently, she was a member of the faculties of the University of California at Berkeley and the University of Washington. Before entering management at Boeing, she produced over 70 papers and several patents. Her executive positions included manager of advanced energy systems and supervisor of electronic sciences.

As Assistant Secretary of Commerce for Science and Technology, she serves as the chief advisor on science and technology for the Secretary of Commerce and she is responsible for the 7,500 employees and quarter billion dollar budget

of the Patent and Trademark Office, National Bureau of Standards, National Technical Information Service, Office of Telecommunications, Office of Environmental Affairs, and the Office of Product Standards.

She is a member of the Federal Council on Science and Technology and chairman of its Committee on Government Patent Policy. She is a chairman of the Commerce Technical Advisory Board. As a member of the Joint U.S./U.S.S.R. Commission on Science and Technology, she headed the U.S. delegation responsible for the Intellectual Property Agreement signed in Moscow in December, 1973. She also headed the U.S. Patent Management and Licensing Delegation under the U.S./U.S.S.R. Agreement on Exchange. She is a member of both the Joint U.S./Japan and the Joint U.S./U.S.S.R. Commissions on Energy. She negotiated the agreement to establish the U.S./Israel Industrial R&D Foundation.

Dr. Ancker-Johnson is married to Professor Harold H. Johnson. They have four children and live in Reston, Virginia.

ROBERT B. ELLERT

Robert B. Ellert was born in New York on May 29, 1922. He was graduated from the College of William and Mary with a B.A. and LL.B. in 1949. He received a Postgraduate Diploma in Law from Kings College, University of London, in 1956 and a Doctor of Juridical Science from George Washington University in 1962. In 1960 he attended the Hague Academy of International Law. In 1970 as a Princeton Fellow he did post-doctoral study in political science at Princeton University.

Mr. Ellert has been Assistant General Counsel for Science and Technology, Department of Commerce since 1966. In this position he is responsible for providing legal advice and support to the Assistant Secretary for Science and Technology, the National Bureau of Standards, the Patent and Trademark Office, the Office of Telecommunications, the National Technical Information Service, the Office of Product Standards, and the Office of Environmental Affairs. In this position he has devised new legal frameworks to accommodate the introduction of technology in our society in such areas as consumer product standards, environmental pollution regulations, technology transfer, and technology assessment. He was one of the architects of the Flammable Fabrics Act and has been responsible for the legal aspects of its implementation by the Department of Commerce. He also has had extensive experience in the development of voluntary domestic and international engineering standards. More recently Mr. Ellert drafted and assisted in the enactment of The Federal Fire Prevention and Control Act of 1974 (P.L. 93-498) and The Metric Conversion Act of 1975 (P.L. 94-168).

From January 1975 to June 1976 Mr. Ellert was Acting Deputy Assistant Secretary for Product Standards. In this position he has been Chairman of the Interagency Committee on Standards Policy and headed the U.S. Delegation to the Economic Commission for Europe dealing with Standardization Policies. In this capacity Mr. Ellert has been active in working with the public and private sector to assure that international and regional standards are compatible with U.S. engineering practices. Mr. Ellert was responsible for establishing and developing the procedures for the National Voluntary Laboratory Accreditation Program which provides in cooperation with the private sector, a national voluntary system to examine upon request and accredit the professional and technical competence of private and public testing laboratories. He also directed the publication of the *Guide to Federal Agencies Standards Activities*. Its objective is to strengthen United States participation in domestic and international commerce of the United States by providing detailed information on Federal Government involvement in U.S. standards activities. The development by the ICSP of a uniform Federal Government policy for interaction with non-Federal standards-setting bodies was also initiated while Mr. Ellert was Chairman.

In 1975 Mr. Ellert was awarded a Gold Medal by the Department of Commerce for meritorious and distinguished legal services in the scientific and technological activities of the Department.

Mr. Ellert taught at George Washington University and the American University. He is a member of the American, Federal, and Virginia Bar Associations. He is also a member of the Law of the Sea Panel, American Society of International Law and the International Standards Council of the American National Standards Institute.

His publications include: *NATO "Fair Trial" Safeguards: Precursor To An International Bill of Procedural Rights*, Martinus Nijhoff (1963), The Hague; and several articles in various law journals.

O. A. NEUMANN

O. A. Neumann was appointed Executive Secretary of the FCST Patent Advisory Panel, now merged with and known as the Committee on Government Patent Policy, in January 1967.

As Executive Secretary of the Committee, Mr. Neumann is responsible for providing the liaison, data and research support upon which the Committee bases its activities in proposing, developing and implementing Government patent, data, and copyright policy.

Prior to joining the Department of Commerce, Mr. Neumann was employed as a Staff Attorney in the Patents Division, Office of The Judge Advocate General, Department of the Air Force, from 1959 to 1967, and as a Patent Examiner in the U.S. Patent and Trademark Office from 1956 to 1959. From 1953 to 1955, Mr. Neumann served in the United States Coast Guard, District of New York.

Mr. Neumann was graduated from the Institute of Technology, St. Louis University, St. Louis, Missouri, in 1953, and from the George Washington Law School, Washington, D.C., in 1958. He is a member of the Washington Patent

Lawyers Club, Government Patent Lawyers Association, Phi Delta Phi Fraternity, and the Virginia Bar. Mr. Neumann was admitted to practice before the Virginia Supreme Court of Appeals and the Supreme Court of the United States, and is registered to practice before the United States Patent and Trademark Office.

Mr. Neumann, his wife, and five children reside in Rockville, Maryland.

STATEMENT OF DR. BETSY ANCKER-JOHNSON, DEPARTMENT OF COMMERCE

Dr. ANCKER-JOHNSON. Thank you, Mr. Chairman. It is a pleasure to be back in this committee room where I have spent many pleasant hours.

I am particularly gratified, of course, to be testifying on this subject which is so close to my heart, and as you indicated, one that I did suggest in earlier appearances here, would be a very good subject for your committee to review.

And I certainly do appreciate the fact that you have been holding these hearings whereby patent policies, regulations, and practices employed by the Federal agencies in conducting their research and development programs are being reviewed.

In preparing this statement, I have attempted to present new information—that is, information which has not been covered in the volumes of background material prepared by your subcommittee or previous witnesses.

To make sure this background is complete, with your permission, Mr. Chairman, I would like to introduce into the record my May 7, 1975, comments made in response to four questions raised by Senator Philip A. Hart. These questions are concerned with the desirability of uniform Government patent policy, the licensing of federally owned inventions, allocations of rights to inventions and also safeguards when title or exclusive rights are retained by the contractor.

Mr. THORNTON. Without objection, that introduction will be made.

[The material referred to above follows:]

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Dr. ANCKER-JOHNSON. Thank you, sir.

In addition, the Government Patent Policy Committee responded on June 17, 1974, to questions asked by Senator William Proxmire concerning its activities. He asked about its past published reports, actions taken to improve the transfer of technology, the licensing program of the Federal Government including exclusive licensing of federally-owned patents, the alternative approach outlined in the Commission's Report, and also technical data. I would also like to introduce this response, if I may, into the record.

Mr. THORNTON. Without objection, it will be included in the record.

[The material referred to above follows:]

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Dr. ANCKER-JOHNSON. As I will show, it is becoming extremely difficult for industry, universities, other nonprofit institutions, and the general public to deal with the increasingly complex and diverse patent policy regulations and practices of the Federal Government that you referred to in your opening statement, Mr. Chairman.

In late 1965, the Federal Council for Science and Technology established the Committee on Government Patent Policy for the purposes of assessing how the 1963 Presidential statement on Government patent policy had worked in practice. It was also established to acquire and analyze additional information that would contribute to the reaffirmation or modification of that policy and to identify principles that would underline sound legislation in this area. The prime impetus for creating this interagency committee was the Federal Council's desire to formulate a uniform Federal patent policy, and the committee, composed of policy level officials, provided a forum for developing such a position.

The major accomplishments of the committee over the first 10 years of its existence are: the support of the four-volume publication reporting the study conducted by Harbridge House, Inc.; its recommendations for revising the 1963 Presidential statement which resulted in the issuance of the 1971 Presidential patent policy statement; and the drafting of the Federal procurement and patent licensing regulations which implemented this statement.

A continuing important task of the committee is the collection of data that provide valuable insight into Federal agency patent practices, the present size of the Federal patent operations, and future trends. These data aid the committee in policy review.

For the purpose of my later discussion of the more recent and, to date, unpublished data compiled by the committee, I would like to have entered into the record a copy of table I, showing data for fiscal years 1970 through 1975, and table II, making a comparison and analysis of the total data accumulated during these years. While the data are wanting in some respects, they represent the most accurate information and certainly the latest available on the subject.

Mr. THORNTON. Without objection, the two documents, table I and table II will be made a part of the record.

[The material referred to above follows:]

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Mr. THORNTON. While as you say, they may be in some respects incomplete, they are the most complete collection of data which I have been privileged to see and a lot of work has gone into these tables, and I thank you very much for bringing these to our attention.

Dr. ANCKER-JOHNSON. You are most welcome, Mr. Chairman.

Recently, the committee undertook the task of drafting a suggested uniform patent policy covering: (1) the allocation of rights to all inventions resulting from federally sponsored R. & D. conducted either by contractors or Federal employees; and (2) the protection and licensing of all federally owned inventions. This action was taken for three reasons: To respond to recommendations of the congressionally established Commission on Government Procurement; second, to overcome legal uncertainties raised by past and pending litigation regarding the Federal procurement and licensing regulations; and to provide uniformity among Federal agency practices so as to permit the public to do business with the Federal Government with greater ease and predictability.

We are now engaged in the final stages of completing this suggested policy and, with the exception of a few unresolved minor issues, we have agreement within the executive branch.

Prior to settling on this policy, the committee considered all the available options. The committee has agreed unanimously to draft a policy that would do these three things, stated extremely briefly: first, permit the contractor to retain title to any invenion as long as the contractor sought patent protection and he commercializaion of the invention, and simultaneously, require the Federal agencies to acquire all rights necessary to safeguard the public interest; second, codify the basic policy concepts of Executive Order No. 10096, add incentives, and make the law applicable to all Federal employees; and finally, authorize the Federal agencies to protect federally owned inventions, as warranted, and to license the inventions so as to enhance commercial utilization.

I would like to turn your attention to the first aspect, contractor inventions.

Concerning the policy concepts available with respect to contractor inventions, the Committee reviewed the various policies set forth in existing legislation, the 1971 Presidential statement, and the alternative approach of the Commission's report. In analyzing the diverse policies presented, the committee considered these policy objectives—note that they are seemingly inconsistent:

First, encourage the participation of the most qualified and competent contractors;

Second, foster competition;

Third, promote the widespread utilization of inventions resulting from such research; and

Fourth, reduce the burden of both the Federal agencies and their contractors in the administration of invention matters.

The first three of these policy objectives were considered by Harbridge House, Inc. in conducting the committee-sponsored study that I mentioned just a moment ago. The fourth is a new topic.

From a review of the numerous diverse patent policy statutes and regulations printed in the background materials compiled by the subcommittee, Mr. Chairman, it quickly becomes apparent what difficulties the public must face when doing business with the Federal Government. Additional insight to the problem is possible by reviewing section IV of table I that I submitted for the record a moment ago. It shows the numerous types of patent rights clauses used by the Federal agencies in their R. & D. contracts and grants.

After extensive deliberations, the committee adopted the basic policy concepts of the alternate approach as that policy which best responds to all of the competing policy desiderata—namely, maximum participation, competition, and utilization—while at the same time reducing the administrative burden and maintaining, and even strengthening, the safeguards for the public interest.

The policy concepts incorporated in the alternative approach by the Commission on Government Procurement and endorsed by the Committee on Government Patent Policy would permit the contractor to retain title to all patents resulting from Federal contracts and grants, and require the contractor to license others in certain specified situations so as to safeguard the public interest. In particular, the contractor would be required to license others if he fails to commercialize an invention covered by the patent. Even where he commercializes his invention, the contractor would be required to license others to meet specific public interest needs such as health, safety, and welfare, or to correct a situation inconsistent with the antitrust laws. It is expected that, in these licensing situations, the contractor would generally be willing to license third parties without a Federal agency determination requiring him to do so. Should a contractor refuse to license a third party, the Federal agency itself has the right, in appropriate circumstances, to license the third party, subject to the contractor's right to a hearing and an appeal.

The proposed policy would reduce drastically—I can't emphasize that enough—the administrative burden of deciding the type of patent rights clause to be used in the some 30,000 R. & D. contracts executed annually, and would obviate the need for processing waiver petitions.

Now, regarding Federal employee inventions; how should the rights to inventions made by Federal employees be allocated? The committee believes that the basic policy concepts of Executive Order 10096 issued by President Truman in 1950 should be codified.

Briefly, under the proposed policy, the Federal Government would retain ownership to all inventions made by Federal employees where the invention bears a relation to the duties of the employee-inventor or is made in consequence of employment. That is entirely symmetrical with the industrial situation. The policy encourages employees to invent because an incentive awards program is incorporated and income sharing is provided.

The committee believes the draft policy should contain specific provisions for Federal employee inventions, especially since not all Federal employees are covered by the Executive order.

Last, the protection and licensing authority that this policy calls for is concerned with insuring that all Federal agencies obtain adequate domestic and foreign patent protection on inventions owned by them, and that licenses are granted on a uniform basis. Such a policy would enhance the Government's ability to transfer its technology to the private sector and to commercialize the inventions which it retains, thus providing new jobs.

To recapitulate, currently Federal patent policies are set out in numerous statutes, several Executive orders, and the 1971 Presidential memorandum and statement of Government patent policy. These policies spell out which invention rights are to be acquired by the U.S. Government and which are to be retained by the contractor.

An examination of the Federal patent policies mentioned above discloses a significant diversity in agency practices in this important area. As you have noted, Mr. Chairman, some agencies are obligated because of statutory requirements to use a clause acquiring title to all inventions resulting from the contract. Other agencies are required to use a clause acquiring title to all inventions made under the contract, but may waive title to the contractor under certain circumstances. In addition, other agencies may use any one of several clauses, either acquiring title, acquiring only a license, or deferring the allocation of rights determination until an invention is made under the contract, as provided by the 1971 Presidential statement.

As a result of the diversity in agency practices, there is an enormous and needless administrative burden placed on both the Federal agencies and their contractors as extensive negotiations occur respecting the rights to be granted the contractors and those to be retained by the Government. This administrative burden often deters the most qualified and competent contractors from seeking Federal R. & D. contracts, thus inhibiting competition and curtailing the widespread utilization of inventions resulting from such research.

We believe that a policy which leaves title in the contractor subject to strong "march in" rights in favor of the Government will protect the public interest and reduce substantially the administrative burden of both the Federal agencies and their contractors. In addition, we believe this change will stimulate more qualified and competent contractors to participate in federally sponsored R. & D. contracts. We believe further that this policy will be especially beneficial to individuals and small business concerns since they will no longer be obliged to cope with the existing diversity in agency practices and the uncertainty respecting rights to inventions which may result from the contracts.

In addition, such a single patent rights clause will provide the contractor with a greater incentive to invest his own funds to commercialize an invention resulting from the contract. This incentive is especially important as most inventions require a potential manufacturer to invest substantial development funds before the invention can be marketed. By granting the contractor a limited period of exclusivity, the Government improves the contractor's ability to recover development costs, thus encouraging him to commercialize his invention. Such commercialization benefits the Government, the contractor, and the general public.

That concludes, Mr. Chairman, my formal statement.

But before the questioning begins, if I may, I would like to submit some information via some charts that I have brought.

Mr. THORNTON. Excellent. We would be pleased to have that information presented.

[The material referred to above follows:]

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Dr. ANCKER-JOHNSON. Mr. Chairman, the purpose of these charts is to place the Federal patent policy in perspective with respect to the broader research and development policy of the United States.

And so this first chart addresses the expenditures in the entire research and development field, in constant dollars to negate the effect of inflation, for the first part of this decade.

The message is very simple. Averaged over the first part of this decade the investment made by the Federal Government is over one-half of the entire investment in the United States in R. & D.

Universities and other nonprofits invest between 3 and 4 percent of that total and the rest is spent by industry.

The second column shows, in billions of constant dollars, the entire amount spent in the entire United States during each of the last 6 years.

The third column shows the Federal Government investment and finally the last shows the Federal percentage. You see at no time did it fall below 52 percent.

Mr. THORNTON. We have previously been told that in terms of real dollars, there has been a lowering of dollars spent, and I am pleased to have this chart.

I don't want to step too far ahead, but I often do look at the next chart as well, and the question which I want you to be thinking about as we go forward to that, is the decline in the number of patents that are issued and whether that is related to a lowering of expenditure dollars or whether it is related to the inhibitions of patent policy or just what factors might enter into that?

Dr. ANCKER-JOHNSON. Let me address that question, Mr. Chairman.

Let's look at the data themselves in the second chart.

Here I have shown in the green for that same period of time, the first part of this decade, the constant dollars invested by the Federal Government in R. & D., $16.2 billion in 1970 dropping down to $14.7 billion in 1975, and then next to that is plotted the number of invention disclosures made during that year, resulting from the research funded by the Federal Government.

The first thing you notice, as you just said yourself, is the amount of money being invested by the Federal Government in R. & D. has been going down on the average of about 9 percent in this period of time.

Now, the invention disclosures have been going down more steeply, indeed about four times as steep from something like 9 to 37 percent.

And it is interesting to speculate as you were beginning to, I believe, why this is so.

I might just mention one speculation that occurs to me. I am sure there are a number of explanations that could be offered.

In a period of declining budget, the research manager is going to be very loathe to spend any money on patent disclosures unless they advance his or her particular mission. The Federal agencies seldom find themselves in a position where a patent is necessary to further the mission of that particular piece of research and, therefore, it is a very obvious thing to say, "Well, I can save some money by not applying for a patent and I can invest that in R. & D. and I need those dollars since my budget is going down." You can't explain the whole decrease in patents obtained—four times the size of the budget cut—by such reasoning as there undoubtedly are other reasons that contribute.

Mr. THORNTON. There are probably a number of factors that enter into it. I was wondering if the trend which has been expressed to us by other witnesses of the growing use of more restrictive patent policies might have inhibited that in some measure. I don't suppose that can be precisely defined.

Dr. ANCKER-JOHNSON. It can't be documented precisely. I would agree with you that the very difficult negotiations that are required and the uncertainty which a contractor faces, do indeed make it difficult for him to know what will happen to an invention made with an investment of Federal funds. That is another inhibiting factor. Whether it can account for an even greater decrease in patenting than in funding is hard to say. But I think you are absolutely right, that any inhibiting factor, especially one which may involve litigation, is certainly going to cause a contractor to think twice before entering into an agreement with the Government.

Mr. THORNTON. I am sure that we can agree the cause of the decline is not because there is nothing more to be invented.

Dr. ANCKER-JOHNSON. No, sir. One other factor that I would like to call to your attention is, as shown on this chart, aproximately 28 percent, on the average, of the invention disclosures made from federally funded research and development become patented inventions.

If we may go on to the third chart, it has one very simple message that I want to make as strongly as possible.

And that is this—although you saw from our first chart that the amount of funds spent by the Federal Government in R. & D. is more than half of the total, nevertheless, as you see from this chart, the Government is responsible for only 6 out of every 100 patents that are issued.

It is interesting to speculate why such a small number of patents emanate from the investment made by the Federal Government.

Mr. THORNTON. My questions is whether the 6 percent is a figure defining the number of patents in which the Government has contributed research dollars, even though it may have only gotten a license, for example, or may have given a waiver or otherwise.

Dr. ANCKER-JOHNSON. Yes. Mr. Chairman, the 6-percent figure covers patents either owned by the Federal Government or in which it has a license. So this is a maximum pay off, you might say, in terms of patents generated by Federal Government funding.

Mr. THORNTON. Thank you.

Dr. ANCKER-JOHNSON. On the fourth chart, we see what happens to that fraction of the 6-percent figure which is actually owned by the Federal Government.

The data here go from fiscal years 1963 to 1975 and show the size of the portfolio of Government-owned patents. It has been increasing over these last years. Of those that are available for licensing, some 28,000 today, how many are actually licensed? The answer is shown by this lower line. You see that it is a small fraction and that it is relatively constant in spite of the increasing size of the portfolio. In 1963 licensed patents represented about 8 percent of the total portfolio, whereas in 1975 they represented less than 5 percent of the total available for licensing.

This leads to the question: why such a small number? One is then tempted to compare this licensing rate with industry's licensing rate. What sort of licensing rate does industry have?

It turns out that the royalties received annually by U.S. industry solely from foreign licenses represent a sum which is equal to 10 percent of the total annual investment by the U.S. Government in R. & D.—that very large number which we spoke of at the beginning of these charts.

Rather than compare the Government's performance with industry, let's compare its performance with that of the university community. Universities don't manufacture. They clearly have the same problem in achieving utilization of patents that the Federal Government does.

In making the comparison I deliberately overlook the fact that when universities license they expect a fee, whereas the Federal Government does not.

We now have the benefit of three studies, conducted by three different organizations, which evaluate the performance of universities in licensing their patent portfolios. One of these studies was carried out by the Department of Health, Education, and Welfare and it covers some 60 institutions. The second study, by the National Association of College and University Business Officers, includes 16 large institutions. Finally, Northwestern University did a survey covering 50 universities and colleges.

Now, in some cases, these studies included institutions which had no patent portfolio at all. Thus the results are not skewed toward those extremely active universities.

The first thing you notice on studying these three surveys is that their findings are very similar. Each indicates that approximately one-third of the patents owned by universities are licensed.

If the Federal Government had the same performance in licensing its patents, we could come to this curve on the fifth chart. You see that it is markedly more impressive than the performance which the Federal Government has in fact achieved.

I conclude, Mr. Chairman, from these kinds of data, that the policy which we are espousing is needed. This policy has three salient points: first, the contractor would retain rights to the invention; second, those inventions made by Federal employees would be aggressively licensed; and third, strong march-in rights would protect the public interest.

Mr. THORNTON. Dr. Ancker-Johnson, that chart really highlights the need to develop some alternatives as far as patent policy is concerned, and I assume that in the main the efforts which you are engaged in are looking ahead prospectively to what will be done with patents in the future. As inventions are made and innovations occur they will come under a new patent policy to be formulated and developed.

But looking at that chart made me wonder why the Government should not assign all of its Government-owned patents to universities, by random choice perhaps, preserving only the right of the Government to be protected as to its use of the devices which have been invented and patented, which I believe is protected in university patents, anyway.

I wonder if any consideration might be given to a policy of just randomly assigning to universities, or alternatively assigning the rights back to the real inventor to get them off of the Government shelf and to put them back in the sector of the economy where it be more possible to see that they are developed?

Dr. ANCKER-JOHNSON. You are referring now, I believe, Mr. Chairman, to the following question; let me make sure by restating it, that I understood you correctly:

You are asking why should the Government retain rights to any inventions, including those——

Mr. THORNTON. Yes.

Dr. ANCKER-JOHNSON (continuing) made by employees.

Mr. THORNTON. Yes. I do ask that basic question and that is one question which should probably be first addressed.

Then, second, I was asking whether we might reasonably go back and look at those patent rights which have already——

Dr. ANCKER-JOHNSON. That is certainly a possibility.

Counsel advises me that a program of the type you describe would probably not require legislation. I might raise one problem that I would see in permitting Federal employees to retain ownership of inventions made on the job, so to speak. Universities have one great advantage over the Federal Government; that is to say that a university professor has one large advantage compared to a Federal employee.

Since universities are very interested in obtaining royalties from inventions made by their employees, they have aggressive licensing programs. We have seen that some are exceptionally successful. I know of one university which has licensed 70 percent of its portfolio.

Indeed, it is a very important source of income to many universities; it offsets to some extent the decline in Government. R. & D. expenditures which I spoke about earlier.

Before attempting to pattern the Federal Government precisely after the universities, we must recognize the fact that there is not a close relationship between those in the Federal Government who generate inventions and those that might market inventions. In particular, the Federal Government is not well organized to do the kinds of things that the licensing officers of universities do. Absent an organizational effort of this type, I think it might be quite difficult for an individual inventor to market his own invention.

We do have a budding program within the National Technical Information Service that would be the counterpart of that university group that aggressively seeks to market inventions. Unless we are prepared to match the university effort on a dollar-for-dollar and man-for-man basis, I fear that the transition from an employee-owned patent to commercialization might break down. That is something to consider at least.

Mr. THORNTON. Going back to the idea of authority to adopt policy, just to say that the 28,000 presently owned Government patents are going to be assigned to the universities by some method of choice, random or otherwise, or to the original inventors, if that were the choice, while it may be correct that in most instances the Government agencies would have the statutory authority to do that, I wonder if they would have the courage to make a choice of that kind.

Mr. ELLERT. Mr. Chairman, in regard to the statutory authority that Dr. Ancker-Johnson was referring to, the executive branch could decide in regard to an employee to leave the invention with such employee.

However, the other 28,000 Government-owned patents present a very interesting question. I am glad that you brought it up because we have in the past 2 years been trying to figure a way to sell them or otherwise dispose of them, but we are pretty much bound by the GSA Surplus Property Disposal Act which makes it extremely difficult to sell a patent. We have been thinking very seriously of what you are saying, how can we dispose of 28,000 patents. They are just sitting there. Again, it goes back to the fact many people don't want nonexclusive licenses. They want exclusive rights. This is a problem and we are thinking of ways to get the inventions in this portfolio utilized.

Mr. THORNTON. They are not being used right now, and potentially they have value and it would seem to me that if an identification could be made of a group, such as universities, which would be logical conduits for these patents into a useful utilization process, that I for one would certainly be happy to work toward development of legislation to afford that opportunity. And if some selection of classes of people to whom something like this applied. I would be very interested in talking about it.

Dr. ANCKER-JOHNSON. I might add, Mr. Chairman, that since NTIS began to license patents—Government owned, of course—and to charge royalties in a number of instances, its accomplishments have been quite remarkable. This success has been achieved by aggressively looking for users, holding conferences, and by inviting inventors to be on hand so they can talk directly to possible licensors. So I think that we haven't yet given a real test to what would happen if the Federal Government were to really say, "We are going to do everything we can to make sure that portfolio is used."

Mr. THORNTON. Absolutely.

Dr. ANCKER-JOHNSON. That is one step. If that fails, even simultaneously, we could try some experiments in putting Government-owned patents at the disposal of private organizations that market patents. I think it would be difficult to figure out some equitable way to turn these patents over to the many universities.

Mr. THORNTON. Yes. It would be a very difficult problem, that is why I suggested the possibility of a random assignment.

Dr. ANCKER-JOHNSON. We can certainly design experiments and, knowing of your interest, I think it would be very appropriate for us to maintain a dialog about the things we are already doing, how they are working out, and about some others that we might launch in the future.

Mr. THORNTON. Of course, I don't think either of us would want to let the work toward developing a patent policy for ongoing inventions be set aside or delayed in any way by an effort to do this. Perhaps both objectives could be looked at.

Dr. ANCKER-JOHNSON. Yes. It is certainly clear that the policy itself is much broader in its implication than is this particular aspect you have been focusing on in the last few moments. I agree with you we wouldn't want in any way to delay consideration of the uniform patent policy I have described to you this morning, while thinking about the fraction of inventions made by Federal employees.

Mr. THORNTON. I was most interested in your comments with regard to the importance of the administrative burden in deciding the type of patent rights clauses to be used in these many contracts. The administrative burden is not only a burden to the administrative agencies but it is also a burden to the private sector, to the universities, and everyone else who was to cope with those requirements from the other side.

Dr. ANCKER-JOHNSON. Absolutely, Mr. Chairman.

Mr. THORNTON. And the present situation. as I understand it, is that in very nearly—these people are having to approach patent policy, on a case-by-case basis. under a whole series of different laws policies and procedures. As a lawyer, I know it is difficult enough to approach problems on a case by case basis even when the laws are uniform. If you have a whole series of different laws. well, I prefer even the complexities of being a Congressman to the contemplation of being a lawyer faced with that many different complexities.

Dr. ANCKER-JOHNSON. It would indeed be a great step forward in cutting down this unnecessary burden if there were one clause that were formally employed.

Mr. THORNTON. Of course, this does not mean, I am sure, that everything will be just automatic in the policy which you propose. There will still have to be some decisions made. I assume. as to commercialized, whether the "march-in" rights should be exercised, is that correct?

Dr. ANCKER-JOHNSON. Yes, sir. That is quite correct. And in that event, as is readily apparent, the number of cases coming to the attention of the Federal Government will be much smaller, miniscule, I would say, compared to the 50,000 per year that now demand attention. If some abuses should be observed or reported by, let's say, another company, those few cases would, of course, get a lot of attention.

I personally feel that such cases will be extremely small in number and we will not then be spending so much time at the front end of this contract on needless details. Most importantly, the uncertainty will be removed for the contractor. In my opinion, this uncertainty has deterred both small businesses and the most competent of our larger concerns from taking Government contracts. This means we have not been spending Federal dollars as wisely as we might. The policy we propose will correct this situation.

Mr. THORNTON. A recurring theme of our hearings has been the hope that a patent policy might be developed which would provide a degree of predictability or certainty and that the absense of those qualities is one of the chief problem areas.

Dr. ANCKER-JOHNSON. I believe, Mr. Chairman, that one of the chief virtues of this policy, besides that of cutting down the administrative burden, is the very clear predictability that it provides.

Mr. THORNTON. I realize that it is difficult to talk in detail about the policy, and, of course, I am looking forward to getting some specific language to look at it at some point and I know you are working very hard toward having that available. I believe it was nearly available for this session of Congress.

Dr. ANCKER-JOHNSON. Yes, sir.

Mr. THORNTON. I want to digress for a moment, going back to the executive order, and the discussion about the employee rights because I neglected to put a question in at that time.

The statement was made that the agencies presently have the authority to give the employees those rights. I believe you cited executive order 10096, and it is my understanding that the constitutionality of that order has been challenged and perhaps one district court has ruled that that order is not a constitutional order.

Do you have any comment with regard to that?

Mr. ELLERT. The Executive order, Mr. Chairman, to which you refer takes the rights away from the employees and places them in the Government. It makes an analogy between a common law situation where the employer hires an employee and the employee's work is owned by the employer. This concept of the Executive order has been challenged as you say in a lower court and we don't know just how this will end up.

Going back, however, it more or less, confirms the point that the Government doesn't have to take the employees work—product. Even now, the Executive order could be changed to leave it with the employee under suitable circumstances—possibly with the Government retaining march-in rights if the employee doesn't develop it. We do not know what the ultimate fate of the Executive order will be.

Mr. THORNTON. Well, the reason I digressed and went back to that is because I think it would be useful to highlight the question whether there should be some delineation between classes of inventors, Government employees as opposed to employees of private contracting companies, and also whether there is any need to have some delineation of patent rights according to the particular objectives of a different agency?

Dr. ANCKER-JOHNSON. Under the policy we propose, Mr. Chairman, all non-Federal employees will retain rights to their inventions, be these rights then assigned to their employers in the private sector or not. The assignee may be a company if the company employs the inventor and the work is done pursuant to a Government contract. The policy that we have formulated in draft form also provides for a uniform policy vis-a-vis Federal employees. It allows for those cases when an employee makes an invention not in the line of duty—it allows for that invention to become the property of the inventor, with no Government strings attached.

Mr. THORNTON. I think this is a point which I was mentioning. Even though it is a uniform policy, it does set up or contemplate different classes of applicants and perhaps different missions or objectives?

Dr. ANCKER-JOHNSON. Perhaps we could state it slightly differently and say "inventions developed under different circumstances." We delineate those two I just mentioned in the case of Federal employees. Inventions arrived at in the course of the employee's

normal work belong to his employer, the Federal Government. Any inventions that an employee may make either on his own time or not as a result of the mission of the organization to which he belongs—those under this policy would be retained by the employee.

I think it is interesting to note that individual inventors are sometimes rather reluctant to pursue or prosecute applications themselves, first of all, because it does require a front-end investment, and second, because most individuals, particularly Federal employees, have no easy way to market their inventions.

If there were a really aggressive full-blown method or process in the Federal Government today for marketing federally owned inventions, I suspect that quite often an inventor would prefer to have the Federal Government prosecute a patent application, at no expense to him, and proceed to market his invention. Under our policy, the inventor would enjoy a return on his effort, a royalty return and an incentive award. This method works in the private sector and we anticipate it would work in the public sector as well.

If we reward Government employees by returning to them part of the royalty obtained on the licensed patents. I believe we will see a decided increase in the number of inventions disclosed and also in the quantity of these, in terms of their commercial potential.

Mr. THORNTON. Dr. Ancker-Johnson. A couple of days ago I started asking each witness if he or she had any examples to bring to us of where an inventor made an enormous or inordinate profit from some invention which was funded in part by Federal dollars, prefacing that with the statement that the fear that someone may make a windfall from a Federal research dollar has undergirded some of the very restrictive patent policies.

So I began exploring to see if anyone can give me a citation, an instance, where someone has in fact made such a windfall profit from an invention and so far I haven't found an example.

Do you have any that you know of?

Dr. Ancker-Johnson. No, Mr. Chairman, I cannot cite a specific instance of the type you describe.

Mr. THORNTON. Of course, should anyone be able to offer an example where a patent has been highly successful, and has rewarded the inventor, I think that it would be generally perceived that the public was the real beneficiary.

Dr. ANCKER-JOHNSON. I was about to say that myself, Mr. Chairman, both from the point of view of having the patented product available to the public and also by reason of the taxes returned to the U.S. Treasury. One might also call attention to the stimulation of the economy, the production of jobs resulting from a new idea, etc. So I do think there is a certain overcautiousness observable in the attitude of some in the Federal Government toward inventions, a fear that seems very large and unreasonable to me, of successful inventions. It is quite remarkable the sorts of fears that seem to arise. I think back, Mr. Chairman, to the time of the oil embargo, when I received. I don't know how many letters alleging that here were all sorts of suppressed inventions that would allow for enormous improvements in mileage, for example, in automobile use; allegations that someone suppressed marvelous pills they could be dropped in gas tanks, or a marvelous carburetor——

Mr. THORNTON. That particular one has been around long enough to undergo at least two patent expiration dates.

Dr. ANCKER-JOHNSON. Yes, sir. I daresay it was around long before I was born. Since all patents are available at 50 cents a piece from the Patent Office, anyone who wished to could certainly identify this allegedly suppressed patent. Still, no one has been able to find it. Indeed, patents do have a finite lifetime so that at the end of 17 years they certainly could appear and be exploited. I wrote many letters to that effect, as you might imagine.

Mr. THORNTON. Well, of course, the underlying fact here is that a patent is a disclosure. It is not a suppression of an idea, and the patent right is a reward to an innovator for his willingness to disclose an idea in which he has some property rights.

Dr. ANCKER-JOHNSON. The Constitution, itself, embraces that principle. And the patent system has served us extremely well, judging by our standard of living today.

Mr. THORNTON. I could continue to discuss this with you and want to do so, but I don't want to take too much of the questioning time, so at this time I am going to recognize Ms. Bracken.

Ms. BRACKEN. I have a couple of questions here.

The first one being is that I would like to get a better handle on the significance of administrative burdens. So you have already discussed it to some degree, the 30,000 contracts cases you were referring to are the initial negotiations when R. & D. contracts are being prepared with the company, is that correct?

Dr. ANCKER-JOHNSON. Yes.

Miss BRACKEN. Do you have any feel for the numbers of available patents that result from those 30,000 time-consuming negotiations?

Dr. ANCKER-JOHNSON. The only direct data is the sort that I have shown you already—and one additional fact that I could call to your attention. In those cases where the Government waives its rights to an invention, the patenting rate is very much higher than it is overall. In other words, if a company or an inventor obtains the rights to an invention, then the patenting rate is something well over 50 percent. I don't have the exact figure in my head. But it is roughly twice the average otherwise.

Ms. BRACKEN. And moving to your comment that perhaps comparison with industry's rate of patenting from research and development was not a fair comparison, I wonder if it might not be an unfair comparison not only because individual companies manufacture and develop their products but also because there isn't that much interest in patenting, that once a patent they disclosed a new device, other inventors are going to invent around it, improve it here and there, and come out with other products——

Dr. ANCKER-JOHNSON. I think I would contest the hypothesis that the private sector does not view the obtaining of patents as important. The statistics alone would suggest otherwise: over 100,000 applications are filed each year with the Patent Office. This number has remained more or less constant despite fluctuations in the economy.

Now, you are certainly right that we have no way of measuring how many inventions are not disclosed, but rather held in secrecy, protected to some extent under State laws. But I would wager, unhesitatingly, that the patent system is extraordinarily important to most of our industry and that is why such a large number of disclosures continues to be made year after year and why companies do spend the money and the effort necessary to prosecute patent applications. Patents represent a very important protection to industry. It is on the basis of that protection that investors are willing to risk the much larger sums that are called for in the postinvention stages to bring the invention to market. I am sure you are well aware of the sort of rule-of-thumb figures that are often quoted: the ratio of expense in the basic research phase to the development phase to the actual manufacturing phase is something like 1 to 10 to 100. In order to call forth that very large latter-end investment, we must give assurances that the invention in question is protected for a sufficient length of time, 17 years under present patent law, to permit full recovery and then some.

Ms. BRACKEN. I find your statistics very interesting because this is a boogieman that has come up frequently. I would like to ask if you would agree with the comment I heard in previous testimony that perhaps the more protection you give in a federally funded research endeavor, the less research money you are going to have to spend, that you might be able to find some correlation there?

Dr. ANCKER-JOHNSON. Well, as I was mentioning, one of the reasons why the number of disclosures has gone down in the last 6 years may well be that managers have been reluctant to pay out of their limited budgets for the prosecution of patents. However, if you look to the welfare of the economy as a whole, one cannot help but come to the conclusion that the revelation of ideas, in a protected way, is very important. The absence of protection for federally generated inventions, I believe the statistics show very clearly, means that they do not enter into the marketplace. They do not generate new jobs, they do not enhance our GNP, they do not enlarge the tax base of our country.

I would say that it is extremely important to have a policy which provides protection and, therefore, gives greater incentives for the commercialization of federally funded inventions.

Ms. BRACKEN. One last question that might help in giving us some data to back up statements that are frequently heard resulting from the data that is available from the current state-of-the-art: Have the 7 percent, patents that the Government holds that have not been licensed or used been looked at in terms of quality, could it be argued that they simply are not items that, or ideas that are developed at the current time? It has been suggested that little thought is given to commercialization and the benefits to society, when patents are applied for?

Dr. ANCKER-JOHNSON. Yes; we have in fact reviewed some of this portfolio in a systematic way to seek out those that look most promising for commercialization. The National Technical Information Service has been doing this as part of its new program.

Personally, I am even more interested in the future than I am in looking back. I would like to see this new policy instituted as soon as possible so that inventions having commercial value can be fully exploited to stimulate the economy. We will continue to go through that 28,000 portfolio, and search for those that are commercially viable, and we are a long way from completing that task. We will be busily doing that for some time. But as I say, I think it is even more important we draw out those inventions yet to be made which could have very significant impact on the economy.

Ms. BRACKEN. Exercising the woman's prerogative to change her mind, I still have one question.

Mr. THORNTON. I don't want to suggest that that prerogative is restricted to women.

Ms. BRACKEN. Yes, sir.

In our hearings, there was some disagreement over the question or the statement that has been made frequently that we lose, in the Government sector, a promising development and cooperation of some industries. They just simply do not want to undertake Government-funded research and development under conflicting and often confusing patent policies. We had a witness that indicated this really wasn't a problem. At the same time we had examples in the pharmaceutical industry where they felt they were losing the competent contractors. I would like your reaction to that?

Dr. ANCKER-JOHNSON. Here I think I could speak most helpfully from my experience in the private sector rather than as a Federal bureaucrat. It certainly was my experience in the private sector that private companies, those for whom I worked, were very reluctant to enter into contracts with the Federal Government because of the possible loss of rights already held by the company, plus the bleak situation prospectively. Frankly, I feel very definitely that companies frequently do not wish to enter into research sponsored by the Federal Government.

I think this is probably hampering ERDA very markedly. This is a matter of great concern to us because, of course, ERDA is one agency above all others that needs to see its R. & D. results commercialized.

Ms. BRACKEN. Thank you very much for your indulgence, Mr. Chairman.

Mr. THORNTON. Thank you.

Dr. Holmfeld.

Dr. HOLMFELD. Thank you, Mr. Chairman.

On this question of the willingness of industry to participate, in your review and the committee's review that you mentioned, Madam Secretary, what have you concluded, if you are prepared to say so, aabout the Government's right to what I understand is called background patents?

Dr. ANCKER-JOHNSON. I mentioned just a moment ago, as you know, that companies are reluctant to release their privately financed and prosecuted patents to the Government, particularly in an atmosphere of uncertainty as to what may happen in the future. I think that is a decided deterrent. It seems to me wholly unnecessary as long as we have, as we propose in this new policy, strong "march in" rights to overcome any negative effects that might result from the contractor's retaining rights. I see absolutely no reason for our add-

ing yet another burden, yet another potential wall over which some companies must jump if they want to do business with the Federal Government.

This kind of an approach for obtaining good research and development with taxpayers dollars is self-defeating. I believe we should be cutting back every one of these barriers to the absolute minimum. Let us assure that the research money is wisely spent for the mission which is intended in each specific case; then we will find as well that some commercialization is possible.

Dr. HOLMFELD. Thank you. There is a related question that several of the witnesses have brought up and that is the question of patents arising from independent research and development. That is what portion of the independent research and development is funded out of Federal payments of the overhead. There the ongress, especially the Senate in recent years, has taken the strong position and urged more detailed reporting specially in the case of the defense department and has injected itself in the industrial and industries planning activities.

Does your committee feel that patents arising in the independent research and development area should be subject to "march in" rights?

Dr. ANCKER -JOHNSON. I am very familiar with the sort of feeling that has been expressed in the Senate. And again I feel that this kind of concern is really unnecessary and tends to have exactly the reverse effect of that which we seek, the stimulation of the economy.

The injection of the Government into the private sector's own decisions about what fields will be pursued for hopefully very useful inventions seems to me to be another step in the wrong direction. We would far prefer to see the Federal Government stay out of the business of dictating to the private sector what it ought to do, by way of new inventions. So I would take quite a diametrically opposite view to that which I perceive as an unnecessary fear on the part of some members of the Senate.

Dr. HOLMFELD. On the question of "march in" rights, most of the witnesses that have appeared before the committee have suggested that "march in" rights ought to be heavily focused and really be justified on the basis of the contractor's willingness and ability to might be another circumstance, perhaps, that is when windfall profits take place.

The question I would like to ask you, Madam Secretary, is should any possible legislation define in great detail the circumstances and conditions and the authority under which "march in" rights should be available?

Mr. THORNTON. If I may interrupt, I don't want to be misunderstood as having suggested that "march in" rights might be applicable to cases where large profits are made. I don't know of any circumstances where such large profits have been made. And I am not sure at all that "march in" rights would be an appropriate remedy for that. It would seem to me that the purpose of "march in" rights is more properly aimed at those circumstances where commercialization does not occur, rather than a penalty for a too effective commercialization.

Dr. ANCKER-JOHNSON. You are right, Mr. Chairman. That was my understanding also and I quite agree.

In the case we were discussing before, that of a highly successful invention, highly successful in the marketplace, there would be a large amount of benefit reaped by the public who could purchase this obviously useful device. Second, there would be a stimulation in the economy, enlargment in the tax base, added jobs, all those good things we all seek.

On the other hand, should there be an antitrust abuse, we have remedies, and indeed the policy we are espousing not only lists the circumstances under which "march in" rights would be exercised but it spells them out in some detail. These "march in" rights are, I believe, universally viewed as constituting a very strong weapon.

So I feel quite comfortable there is just no way an abuse would occur. I would just love to see dozens of circumstances in which we scratch our heads and wonder if there is an abuse for reason of success, an incipient monopoly occurring on the horizon. I can't think of anything that would make me happier in terms of what would

be the result of this policy. I think it much more likely we will be occasionally aware of a lack of prosecution toward utilization and want to give a nudge in that direction. The "march in" rights are much more likely to be invoked to encourage commercialization rather than to inhibit someone who seems to be too successful.

Dr. HOLMFELD. There is now available in the Federal procurement regulations a comprehensive statement including suggested contract clauses which I understand is based on the most recent statement by the President about this.

The question I would like to ask you is: being rather detailed and spelled out, are the conclusions and recommendations that you and your committee are arriving at different from the Federal procurement regulations in this area, in any important respect?

Dr. ANCKER-JOHNSON. As I was saying, Dr. Holmfeld, the proposed policy follows the alternative approach suggested by the Commission and would give title to the contractor. Thus, it would represent a new large departure from the now incoherent policies—highly different policies—across the various agencies in the Government.

So it would indeed represent a very marked departure from the present circumstances.

Dr. HOLMFELD. In the Federal procurement regulations, and following up questions the chairman raised, there is not one single contract clause; there is a short clause and a long clause and there are a number of others.

Under the policy as it would be if your committee comes forward, would it be possible to have a single clause and would it be a short one?

Dr. ANCKER-JOHNSON. Yes, I think I can say unhesitatingly there will be one clause and it would be short and simple and it would grant rights to the contractor in all circumstances. The rights would be subject to march in provisions. Let me just state for the record that the Government in all cases would maintain rights to use the invention itself. This would always be the case in respect to any patent granted to the private sector. This license, of course, would be royalty free.

Dr. HOLMFELD. The committee—as we understand it—the committee that you chaired and reviewed this whole question was made up—it was a Federal Council Committee and it was made up, therefore, we would think, entirely of civil servants. The question would be: To what extent has outsiders, particular industry, universities, and others, had an opportunity to contribute?; Have they been heard?; Have you had hearings?; Has there been input from that sector?

Dr. ANCKER-JOHNSON. That is a very good question, Dr. Holmfeld. The committee's activities have been noted by the private sector. We have indeed received unsolicited comments from the private sector. This policy has been very widely approved in the private sector.

But we have not held hearings or had any direct interaction with the private sector. Frankly, I feel very close to the private sector, having come from a career there. And I feel very confident, absolutely confident I may say, that the policy which we espouse will be greeted positively by the private sector. They will find it very desirable not only because it cuts down their administrative burden but because it makes certain what heretofore has been uncertain.

I think the private sector will really be very pleased if this policy is instituted.

Dr. HOLMFELD. One final question. There has, of course, as you know, over the many years, and again very strongly in the Senate——

Dr. ANCKER-JOHNSON. Excuse me, I can't hear you.

Dr. HOLMFELD. There has, of course, over many years, especially in the Senate, been a strong feeling by some Members that the Government ought to take title to make inventions generally available.

Now, several witnesses earlier this week have suggested that perhaps what your committee is coming up with is a compromise between the two extreme positions. Yet, as you describe it, it is essentially a policy which gives industry title to their inventions, with the kind of qualifications you mentioned in your statement including march in rights.

How would one answer and how would you answer the people who feel very strongly—these are not the people in the industry, but

others—who feel very strongly that the Government should continue to make these inventions available and that a policy which does give title to industry with certain very clear safeguards and qualifications but still which is a policy that gives title to industry, how would you answer and respond to that kind of criticism?

Dr. ANCKER-JOHNSON. Dr. Holmfeld, I think the first thing that such an answer would have to do is to call attention to the track record of the current policy, the one where all inventions are freely available. I just don't see how any one can conclude anything other than that it is not successful. If something isn't successful, the thing to do it seems to me is to try something else. That is just a very pragmatic view to life and seems to me quite consistent with our American way of doing things.

So in the face of what I think has to be admitted as an unsuccessful policy, let's try another one; if it doesn't work, we always have the possibility of trying a third policy. We have tried the present policy for some years, and its track record is very poor. I think that nothing succeeds like success. Let's see if the proposed policy is successful. I think that is the very best answer, particularly when there is no risk involved. The Government is protected and the public interest is protected very definitely under this new proposed policy. Furthermore, Congress always has the authority to step in and mandate yet another policy, so I see zero risk and a large possibility for improvement.

Dr. HOLMFELD. Thank you.

Thank you, Mr. Chairman.

Mr. THORNTON. If I may just make a comment, the observation that there might be zero risk to a new policy worries me some.

I think that there is always the risk the policy won't work or it will fail or not do well. I think what you are really saying is that an effort has been made to preserve in the Government those rights which the Government should have, and to not continue to own or possess rights which the Government should not have in order to protect its interest.

Dr. ANCKER-JOHNSON. I mean, Mr. Chairman, as you are stating, zero risk for abuse, but whether it will succeed or not remains to be seen, and in that sense there is risk. It may fail or it may succeed. I don't see how it could be a more miserable failure than our current policy and, therefore, I don't hesitate to espouse the view that we ought to try something new.

Mr. THORNTON. Dr. Ancker-Johnson, you have been testifying a long time. I do want to recognize Mr. Gallagher for such questions as he may have.

Mr. GALLAGHER. I don't know whether you answered this question, posed by Ms. Bracken, while I was thumbing around in the committee's background study for information on another question.

On the subject of the 28,000 Government-owned patents, how far back do they go in time? What are we talking about here—patents that are 10, 15 years old?

Dr. ANCKER-JOHNSON. No, sir. Mr. Gallagher, we are referring now to the entire portfolio, that means any patent yet in force, hence some go back 17 years because that is the lifespan of a patent.

Mr. GALLAGHER. I was wondering how many of these are still economically feasible; has time passed them by; has the private sector come up with newer inventions, which have reduced those to being worthless, in effect. Could you give us any estimate or percentage of which ones might still be valid economically?

Dr. ANCKER-JOHNSON. Of course, let's remind ourselves that no one else can obtain a patent on an invention that is already patented. So the private sector hasn't——

Mr. GALLAGHER. Resolving a problem that the initial one was aimed at.

Dr. ANCKER-JOHNSON. Some of these patents were licensed as long ago as 17 years. Those that were deemed commercially attractive by someone in the private sector as long as 17 years ago were licensed at that time. But some of those that are not licensed and elderly: that is, approaching the time when they go into the public domain, are presumably not of interest. Of the full 28,000 in the portfolio, we are not looking at the oldest ones for the purpose of licensing, but rather the more recent ones.

Mr. GALLAGHER. Are you finished?

Dr. ANCKER-JOHNSON. I might also add, as I indicated before, the usefulness of these patents varies greatly. Some were written purely for defensive reasons to make sure the Government would never have to pay royalties on an invention which it wished to use, and no thought at all was given to commercialization. In any particular portfolio of patents there are going to be some that are commercially useless and as time progresses, that becomes obvious. But it wasn't obvious at the frontend of the activity. So our portfolio of 28,000 patents is a mixed bag: some good, some not so good. Our hope is to search out the good ones that are not being utilized, and try very hard to get them into use.

Mr. GALLAGHER. I noted, in response to another question of Ms. Bracken's on the value of patents to corporations, our subcommittee's background study indicated in a questionnaire,—which was part of the Holst report aimed at a number of corporations, small, medium, and large—asked in its first question:

Do you hold or depend on patent rights for your commercial position in one or more fields of operations?

The answers were—yes, 32 percent; no, 7 percent; other, 1.

And they point out that the degree of affirmative responses,—this is the follow-up editorial comment on the responses to the question—the degree of affirmative response came as a surprise to the authors because it was generally recognized that patents alone, without a high degree of competence and administration, would not assure commercial success. I just thought I would bring that up.

Dr. ANCKER-JOHNSON. That is very helpful information. It is very impressive.

Mr. GALLAGHER. The final question I have has to do with some hearings we held recently on International Cooperation in energy research and development. During the course of those hearings when Dr. Seamans, ERDA, Administrator was a witness, the chairman, Mr. Thornton, asked the following question. He said—

I wanted to ask you about how the determination was made on participating

This is in regard to the international cooperation.

in the programs which are joint—

I believe the fluidized bed concept is a straight one-third, one-third, one_third sharing cost.

third, one-third sharing cost.

By way of background there are, within the International Energy Agency, as of now, in Paris, 19 countries, 3 of which were working on this particular coal project, namely England, Germany, and the United States. Each put up one third of the funds and that is to what the chairman was referring. He continued—

If I understood your report correctly, with the benefits presumably to flow—though, not only to those three countries but perhaps to the other participating countries—

That would be the remaining 16 of the 19 countries?

Dr. Seamans replied—

The general information, yes. The details would only go, I believe, to the three countries that are providing the funding, Germany, France, and the United States.

United States,

Mr. THORNTON. And proprietary information, patentable innovations, I assume, would also flow to the three countries providing the funding?

Dr. SEAMANS. Correct.

The problem here, though, is whether the detailed information would just go to the three countries or would be disseminated, under the Freedom of Information Act, to IEA's other members. Dr. Skolnikoff of MIT, who testified at the same hearings, pointed out that—

The difficulty is that ERDA appears to have little to trade in order to reach agreements because American technology, when Government supported, must be made public and thus freely available abroad.

Another of our witnesses pointed out that in this game, as he called it, ERDA or the U. S. Government simply doesn't have the chips because of the vast amount of information that is spread on the public record.

Now, with this background, and under this proposed liberalized patent policy, would the disadvantages of the Freedom of Information Act still apply, that is, where now you might give the license to commercialize to private corporations, would information—propriatary information—still be opened up to the public or would it be closed so that ERDA would have some chips to bargain with, with other countries?

I know this is sort of a complicated question.

Dr. ANCKER-JOHNSON. It is a very complicated question, I certainly agree. And there are some very difficult problems involved.

I think I could say, generally, that with title being granted to the contractor, under the proposed policy, it would be possible for the contractor to obtain patent coverage, in spite of the Freedom of Information Act, but it would require the contractor to pay attention to the disclosure when it occurs and so on, in order not to lose rights both in this country and abroad. I, for one, am particularly concerned about premature disclosure. We frequently lose rights abroad and then find our competitors having free access to inventions made with U. S. taxpayer dollars. I find that an inequitable situation, and one we certainly ought to avoid.

As to how this all will work out in detail—that is still under consideration and I am sure ERDA in particular is trying very hard to come up with a policy that makes sense.

Mr. GALLAGHER. As you know, on the other side of the coin, as Dr. Skolnikoff pointed out—

> There was considerable, but not unanimous, sentiment for the establishment of a broader category of Government proprietary information in the FOIA to facilitate the willingness of American and foreign industry to participate in ERDA-sponsored programs.

His other point was that foreign countries were reluctant to participate too, in a cooperative way, because their own information might surface over here because of the Freedom of Information Act. Are we darned if we do and darned if we don't?

Dr. ANCKER-JOHNSON. It suggests that policy may be causing some real problems, right?

Mr. THORNTON. I think that is the suggestion. As a matter of fact, this considerably broadens the scope of the inquiry, and I think it is appropriate to ask questions which have that effect. I think that it is useful to consider whether there does need to be a redefinition of property rights which may be inadequately protected under present patent laws, such things as property rights in technical reports and computer software programing. I am sure that counsel here and you, Dr. Ancker-Johnson, could point to many examples where there may be inadequate provisions for intellectual rights in certain classes of property which were not even in existence at the time the patent laws were developed, and this is an area which certainly addresses itself to the attention not only of the scientific community but also to the broad question of patent laws for which the Judiciary Committee has primary legislative responsibility.

I don't mean to overstate, I guess I am hoping I will get some witness to agree with the statement that I have made or to respond to it.

Do either of you have a comment with regard to that general statement?

Dr. ANCKER-JOHNSON. I might just say that the international aspects are quite neglected, I think. The role of science and technology in obtaining our foreign policy objectives is becoming larger and larger. It is quite apparent to all of us. But just how our science and technology should be used to obtain these objectives is not clear, I think, to any one. We are not in a position of such dominance in the fields of technology as we once were, that we can afford to be cavalier about the giving away of our technology. I think that we clearly want, as a country, to help lesser developed countries improve their standards of living, I think that is a given. How we go about doing this is very hard to decide. And in the case that Mr. Gallagher has raised of doing advanced research with foreign partners, we open a whole new vista of problems regarding propriedary rights. I think we want to guard against having the same kind of bankrupt policy apply in the international area as we have had in our domestic area. It hasn't worked domestically, and it is not going to work internationally either, in my opinion.

We should be very careful to embark on international agreements with clear-cut attention to the proprietary rights issues.

Mr. THORNTON. Well, I want to thank you, Dr. Ancker-Johnson, for a very stimulating presentation and response to our questions. You have closed the hearings in this session of Congress on a very high plain and we are appreciative of your efforts.

We look forward to working with you in the months ahead in trying to develop some answers to some of the problems which have been indicated.

I am sure as we move in that direction, we will also find many new questions to ask and I hope we will have opportunities of sharing other occasions during the next year.

You have been on the stand for 2 hours. That is a long time and I do appreciate your presentation.

Dr. ANCKER-JOHNSON. I was very glad to be here, Mr. Chairman, and appreciate very much your interest in this very important subject.

[Supplemental material submitted for the record follows:]

UNITED STATES DEPARTMENT OF COMMERCE,
THE ASSISTANT SECRETARY FOR SCIENCE AND TECHNOLOGY,
Washington, D.C., December 29, 1976.

HON. RAY THORNTON,
Chairman, Subcommittee on Domestic and International Scientific Planning and Analysis, Committee on Science and Technology, U.S. House of Representatives, Washington, D.C.

DEAR MR. CHAIRMAN: In the course of my October 1st apperance before your Subcommittee, I submitted for the record certain statistical data on the number of U.S. patents issued to the Federal Government (as assignee) during *fiscal years* 1970–1975. These data were complied from Federal agency reports to the Committee on Government Patent Policy (COGPP) of the Federal Council on Science and Technology (now replaced by the Committee on Intellectual Property and Information of the Federal Coordinating Council for Science, Engineering, and Technology).

On October 13, 1976, my Deputy Assistant Secretary for Product Standards, Dr. Howard I. Forman, submitted a letter to your Subcommittee with which he enclosed additional statistical data on the number of U.S. patents issued to the Federal Government (as assigned) during *calendar years* 1931–1975. These data were derived from *Historical Statistics of the United States* as published by the Bureau of the Census, Department of Commerce. The original source of these data was the Patent and Trademark Office.

A comparison of the data arising from these disparate sources (as shown below) reveals discrepancies which cannot be fully accounted for by variances between fiscal year and calendar year accounting.

PATENTS ISSUED TO U.S. GOVERNMENT

	COGPP data (fiscal year)	PTO data (calendar year)
Year:		
1970	1,814	1,726
1971	2,055	1,947
1972	2,192	1,644
1973	1,911	1,813
1974	2,102	1,579
1975	1,675	1,596

For purposes of resolving the discrepancies noted above, I arranged for an audit of all patents added to the Government's portfolio since January 1, 1974. This audit indicates that the figures compiled by my committee are essentially correct, and that the figures supplied to the Census Bureau by the Patent and Trademark Office are incorrect.

This matter has now been brought to the attention of the Patent Commissioner, and I am confident that appropriate steps will be taken to insure greater accuracy in the data supplied to Census in the future.

There exists one further point in respect to my testimony which I wish to clarify for the record. This concerns the question which you posed regarding the desirability of assigning all Government-owned patents to universities on some equitable basis. Upon reviewing the transcript of my response, I realize that I neglected to answer the request fully. Let me do so now.

There are, it seems to me, three factors whose confluence explains why universities and other non-profits have outperformed the Federal Government by so wide a margin in bringing the fruits of their discoveries to the marketplace. The first factor is the ability and willingness of universities to license on an exclusive basis. The second factor is the existence within the university community of aggressive technology transfer organizations.

The third factor is the extensive communication which occurs between university inventors on the one hand, and licensees of university-generated technology on the other. In many cases this interaction takes the form of a consulting arrangement which, inter alia, leads to improvement or modifications that enhance the commercial potential of the transferred technology.

Individual examples of successful technology transfer are known to have occurred despite the absence of one (and in rare cases even two) of the factors mentioned above. Nevertheless, all three of these factors appear to play an important role in the overwhelming majority of successful transfers.

In the hypothetical case that you present (i.e., the assignment of all Government-owned patents to universities), the inventor of the patented technology would not be available to the university, and could not, therefore, participate actively. In the absence of this third factor (i.e., inventor participation), I find it difficult to believe that the assignment of Government-owned patents to universities would, of itself, significantly improve the rate at which these inventions are commercialized.

Sincerely,

BETSY ANCIER-JOHNSON, *Ph. D.*