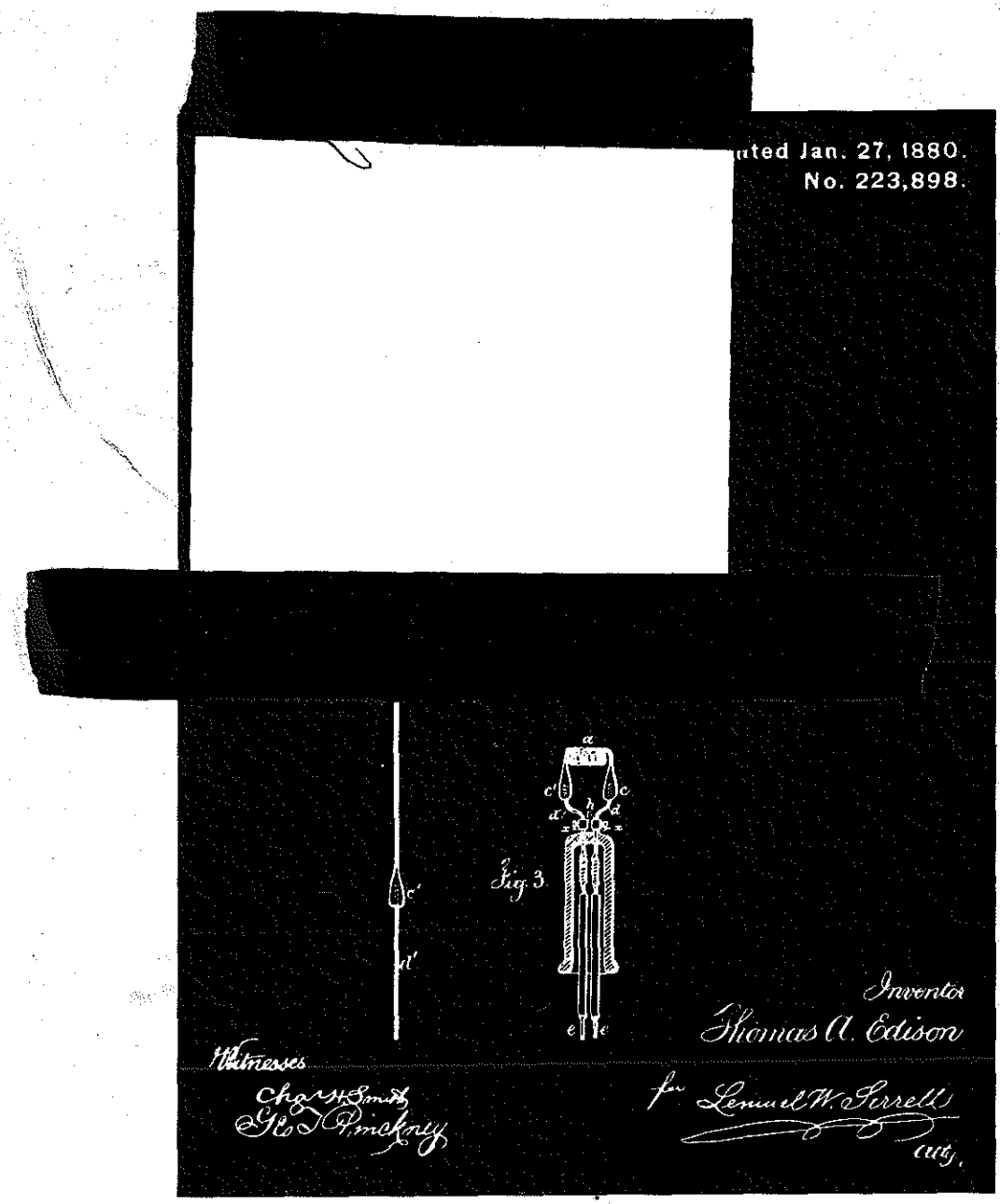
ERDA-76-16 APPENDICES C, D & E

The Patent Policies Affecting ERDA Energy Programs

January 1976

U.S. Energy Research and Development Administration



THE PATENT POLICIES AFFECTING ERDA ENERGY PROGRAMS

U. S. Energy Research and Development Administration

APPENDIX C: PUBLIC COMMENTS ON ERDA PATENT POLICY AND COMPULSORY LICENSING

APPENDIX D: IDENTIFIED PROBLEM AREAS

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APPENDIX C

APPENDIX C - PUBLIC COMMENTS ON ERDA PATENT POLICY AND COMPULSORY LICENSING

C.1 Synopsis of Views Expressed Through Public Hearings and Written Comments

C.2 Transcript of Public Hearings on ERDA Patent Policy Conducted at Germantown, Maryland on November 18 and 19, 1975

C.3 Written Comments Received on Patent Policy and Compulsory Licensing

Appendix C.1
Synopsis of Public Comments on ERDA Patent Policy

SYNOPSIS

PUBLIC COMMENTS ON ERDA PATENT POLICY

will continue to follow the patent policy of the Atomic Energy Act while nonnuclear programs will follow the patent policy of section 9. This arrangement is likely to result in some anomalies. Thus, the conferees believed it prudent to include a study of the Federal patent policies affecting ERDA's programs. The conferees believe that section 9 will establish a workable patent policy until the study or experience demonstrates a need for revision.

The study will also investigate the desirability of mandatory licensing. The report resulting from that study should contain empirical data, in addition to opinions and conclusions. It also would be useful for the report to analyze the effects on research and development activity of existing legislative and judicial mandatory licensing provisions.

The study is to be undertaken by the Administrator with participation of other Federal agencies. The purpose of listing the Attorney General and the Secretary of Commerce is to assure that the views of those departments are available to the Congress. If there are differences of opinion between the agencies, the report should reflect the different views with dissenting or individual views where appropriate. The Administrator should also make allowances for input from interested non-Federal parties. One approach might be to hold public hearings from which the Administrator can better assess the public's concerns.

In order to assess the public's concerns and make allowances for input from interested non-Federal parties in preparing this study, ERDA will hold public hearings on ERDA patent policy on November 18 and 19, 1975, at Germantown, Maryland.

The purpose of the hearings is to obtain comments from members of the public on such questions as:

(1) What patent policy should ERDA follow in order to carry out the purposes of the Atomic Energy Act and Federal Nonnuclear Energy Research and Development Act of 1974?

(2) What modifications to these statutory enactments should ERDA propose to Congress, and why are such modifications needed?

(3) Is legislation requiring mandatory licensing of energy-related patents needed to carry out the purpose of the Federal Nonnuclear Energy Research and Development Act of 1974? Mandatory licensing can be broadly defined as requiring a patent owner to forego the injunctive remedy provided by Title 35 of U.S. Code against the infringing acts of another. If legislation is required, what should be its essential provisions?

ERDA has published temporary implementing instructions on April 15, 1975 (ERDA-PR Temporary Reg. No. 9) (Appendix A- Modification in part of ERDA-PR Part 9-9, Patents and Copyrights) 40 Fed. Reg. 16848,

at the hearing are requested to notify Mr. Kenneth L. Cage, Room 92, 8th Floor, Office of the General Counsel, 20 Massachusetts Avenue, U.S. Energy Research and Development Administration, Washington, D.C. 20545, Telephone (202) 37-64254, before the close of business (5:00 p.m.) on November 12, 1975. Those participants wishing to make an oral presentation will be asked to address the interagency task force, and respond to questions which will be limited to those from members of the interagency task force.

Written presentations may be hand carried to Mr. Cage at the above address. Parties participating through written presentation at the hearing are requested to submit copies to Mr. Cage for duplication before the close of business on November 14, 1975.

Parties desiring copies of the patent provisions of the "Federal Nonnuclear Energy Research and Development Act of 1974," the "Atomic Energy Act of 1954," as amended, or ERDA regulations should contact Mr. Cage.

Dated at Washington, D.C. this 6th day of October, 1975. For the Energy Research and Development Administration.

U.S. ENERGY RESEARCH AND
DEVELOPMENT ADMINISTRATION

By /s/ Robert C. Seamans, Jr.
Robert C. Seamans, Jr.
Administrator

members of the inter-agency task force mentioned in Dr. Seamans' Federal Register Notice which was established to complete the Congressionally mandated task which the Notice described, namely to focus on how ERDA patent policy is performing the function of providing an incentive to stimulate commercial industrial development in energy fields as well as protect the public's interest, and the desirability of mandatory licensing.

The hearings were opened by R. Tenney Johnson, Esq., ERDA General Counsel, and variously thereafter either he or Leonard Rawicz, Esq., ERDA Deputy General Counsel, or James E. Denny, Esq., Assistant General Counsel for Patents, ERDA, presided.

Mr. Johnson presented a brief overview of ERDA's present patent policy. He explained that it is controlled by two statutes, the Atomic Energy Act of 1954 and the Federal Nonnuclear Energy Research and Development Act of 1974.

Both statutes, Mr. Johnson explained, direct the Administration to formulate policy so as to acquire title to inventions made under ERDA contracts. However, both give the Administrator discretionary authority to waive the title-taking rights when it is determined that to do so would be in the best interests of the United States and the general public.

When ERDA began operations in January 1975 its only implementing regulations of its legislative enactments were those it inherited

"1. The benefits of the energy research, development and demonstration programs will be made widely available to the public in the shortest practical time.

"2. The commercial utilization of such inventions will be promoted.

"3. The participation by private persons in the Administration's energy research, development and demonstration programs will be maintained."

"4. The fostering of competition and the prevention of undue market concentration or the creation or maintenance of other situations inconsistent with the antitrust laws will be maintained."

The question in each situation is whether the proposed waiver will meet those criteria. Johnson observed that the specific requirements for a waiver cannot be precisely categorized in advance, as the facts in each contract situation may vary in relation to the criteria just enumerated. However, waivers may be granted in advance of contracting in regard to individual inventions identified after award of the contract.

There is also a provision, explained Johnson, that when ERDA keeps title to an invention ERDA makes available a revocable license to the contractor which made the invention. This will permit the government at some later stage to license the government-owned invention

In concluding his opening remarks, Mr. Johnson observed that the question of background rights is not explicitly covered in the legislation, but that ERDA proposes to deal with it in the regulations.

Stating that the degree of rights which the government has or should have to a contractor's background patent position is a sensitive matter, Mr. Johnson stated it is one or real concern to both ERDA and industry. He recognized that in the usual situation the contractors which ERDA will seek will be ones that are well qualified to perform research and development work as a result of their having had considerable background expertise, much of which is likely to be technology covered by their own patents. If the contractor is to use his best efforts under the contract, it is most likely that he will be utilizing some of the technology covered by his background patents.

This may frequently cause a dilemma for ERDA and its contractors. ERDA must seek to avoid situations where the contractor will be the only firm that can utilize the results of the contract because of its background patent technology being essential to the achievement of those results. On the other hand, ERDA wishes to respect the contractor's legitimate rights to protect its own background patents. ERDA's approach to this delicate balancing problem, Johnson explained, was to develop a narrow background patent rights clause under which ERDA would acquire a carefully defined right to background patent technology where such technology is essential to practice the contract results.

"We read the Act as permitting us to make use of the patent incentive as one of many incentives that this country will need in its long fight to regain control over the sources of its energy."

As if to request those persons about to testify at the hearings to focus their remarks on points which were essential to ERDA's future operations, Johnson then explained that ERDA sought advice from all segements of the public as to what patent policies it should adopt in order to carry out the purposes of the Atomic Energy Act and the Federal Nonnuclear Energy Act.

He asked these specific questions:

"1. What modifications to these statutory enactments should ERDA propose to Congress? Why are such modifications, if any, needed?

"2. Is legislation requiring mandatory licensing of energy-related patents needed to carry out the purposes of the Federal Nonnuclear Research and Development Act of 1974?

"3. Mandatory licensing may be broadly defined as requiring a patent owner to forego the injunctive remedy provided by Title 35 of the United States Code against the infringing acts of another. Is legislation required to do this? And, if so, what should be its essential provisions?

identification and reference, the people and organizations that expressed their views (either by way of the public hearings or through written comments) have been classified into five groups, as follows:

Group I - Patent Law Associations

American Patent Law Association

Patent Law Association of San Francisco

Patent, Trademark and Copyright Law Section of the D.C. Bar Association

The Philadelphia Patent Law Association

Group II - Universities

American Council on Education

Case Western Reserve University

Iowa State University Research Foundation

Johns Hopkins University

Massachusetts Institute of Technology

North Carolina State University

Purdue University

Stanford University

University of California

University of Missouri

*University of Southern California

University of Tennessee Space Institute

University of Wisconsin

*Speaker represented Subcommittee on Patents, Copyrights, and Rights in Data, Committee on Governmental Relations, National Association of College and University Business Officers whose membership consists of 98 institutions.

General Atomic Company

General Electric Company

Hughes Aircraft Company

Monsanto Company

Olin Chemicals

Rockwell Industries

Standard Oil Co. of Indiana

Texaco Development Corporation

The Oil Shale Corporation

TRW

Union Carbide Corporation

U.S. Steel Corporation

Westinghouse Electric Company

Group V - Individual Spokesmen

Paul L. Gomory, Attorney

Professor Irving Kayton, George Washington University School of Law

Frank Lukasik, Patent Attorney

William A. Marshall, Attorney

John J. Pederson, Attorney

Jacob Rabinow, National Bureau of Standards

Admiral H. G. Rickover*

Philip Sperber, Cavitron Corporation

* Admiral Rickover expressed his views on ERDA patent policy in response to a request from R. Tenney Johnson, ERDA General Counsel. This request was made in view of the reliance placed on Admiral Rickover's previous comments on government patent policy by the spokesperson representing the Corporate Accountability Research Group.

The position of each of the five groups of witnesses will be reviewed, in brief, in terms of each of these four principal subject matters. If a participant does not appear under any one of these subjects, it can be concluded that no specific remarks were made by that participant on that specific subject.

Title vs. License Policy

Group I - Patent Law Associations

American Patent Law Association favors leaving title with the contractor subject to the customary government license. Contractor should have the right to obtain foreign patents and to grant licenses to others. Appropriate safeguards to non-use could be provided by march-in rights or a requirement to license others after a reasonable period of exclusivity or lack of interest of the contractor in exploiting the invention.

D. C. Bar Association deemed it too early to evaluate title-with-waiver policy from standpoint of (1) administrative burden on both government and contractor, and (2) impact upon incentive for competent firms to enter into R & D contracts with ERDA. Favors policy which would provide contractor, at the time of contracting, with exclusive commercial rights for a limited period of years.

Philadelphia Patent Law Association declared it essential that the government acquire at least licensing rights with right to sub-license under inventions first conceived or reduced to practice in its development contracts.

Iowa State University Research Foundation recommends that, with respect to non-profit educational institutions, title to patented inventions arising out of ERDA grants and contracts should be vested with the institution by advance waiver, subject to an approved technology transfer program. Iowa State urges that ERDA employ an Institutional Patent Agreement (hereinafter referred to as IPA) similar to that used by the Department of Health, Education and Welfare and the National Science Foundation. It provides for (1) a non-exclusive, royalty-free license to the United States for governmental purposes, (2) such other safeguards as may be consistent with the legislation necessary to protect the public interest, and (3) incentive awards to individual inventors employed by the university.

Massachusetts Institute of Technology alleges that the ERDA policy of vesting in the government title to inventions developed by university personnel in the performance of ERDA-sponsored programs, subject to a pre-award waiver of rights at the time of each individual action leading to a contract or grant, or application for a waiver at the time a particular invention is identified in the performance of the contract or grant, would be counterproductive to ERDA's avowed aims for its patent program. The significant additional administrative burdens this would cause universities (and ERDA) will discourage university participation. In lieu thereof, M.I.T. urges that ERDA provide for IPA's.

which would enable it to license companies to use its inventions. Patent rights should be vested in the inventors and their universities and not in the government, otherwise it is difficult to promote the commercial utilization of the inventions.

University of Southern California, whose representative spoke on behalf of the Committee on Governmental Relations of the National Association of College and Business Officers, urged that qualified universities be permitted to retain principal rights to inventions arising out of government sponsored contracts, preferably under IPA's.

University of Tennessee Space Institute sees no objection to the government taking title to patents and inventions arising out of wholly government-funded R and D programs. There are objections, however, when the contractor has developed the patented inventions at its own expense.

University of Wisconsin declares that the most efficient way of handling inventions made by universities in the performance of government contracts is by the use of IPA's. Case-by-case determination by the government is bad. IPA's, with HEW or NSF clause for protection against exclusive arrangements which would tend to concentrate market power with a small group of licensees, is much-to-be-preferred.

Group III - Trade Associations and Other Groups

Aerospace Industries Association of America, Inc. declared that the policy of taking title by the government (1) fails to utilize, and

out of government-sponsored research; the technology would be made available to the public through dedication, publication or the like, and the patents would be made available to the public through non-exclusive licensing on reasonable conditions or through exclusive licensing under highly restrictive limitations which allegedly contain more safeguards for the public than are contained in ERDA's proposed policies and procedures.

Electronic Industries Association recommended that ERDA seek to restructure its statutes so as to allow contractors to retain title to inventions, possibly following the suggestion of the Government Procurement Commission's alternate recommendation that title be placed in the contractor with certain stipulations to assure commercialization.

Dr. H. Guyford Stever, in his capacity as chairman of the Federal Council for Science and Technology, urged ERDA to consider devising its patent regulations so as to establish Institutional Patent Agreements for qualified non-profit educational institutions, at least as regards nonnuclear research. He pointed out that this had been the recommendation of the FCST Committee on Government Patent Policy concerning university inventions.

Licensing Executives Society (USA) Inc. urged that ERDA adopt the recommendations made in 1971 of Task Force No. 1 of Study Group No. 6 of the Commission on Government Procurement, with minor modifications.

Roane-Anderson Economic Council is concerned with a very special problem, namely ways of attracting business to move into or expand operations in the area of Oak Ridge, Tennessee. In particular, it is interested in having ERDA adopt patent policies applicable to privately sponsored work performed by ERDA but paid for by the sponsor. The Council wants a clearly enunciated policy that ERDA will not lay any claim to such work or inventions arising out of it. How this is to be accomplished is not stated, although the suggestion of full waivers of patent rights in such situations is mentioned as if to imply the government was asserting or taking title to such developments in the first place.

Group IV - Industrial Corporations

Aluminum Company of America recommends that the administrative regulations of ERDA, if not the legislation, be modified to provide for title in its corporate contractors. The contractors should then license others to use inventions which arose from research that was at least partially subsidized by government funds. However, the contractors should not be required to license others until after a period of three years during which the contractors can prove the workability of the invention.

Amoco Oil Company stated that it was fully in support of the intent of ERDA's patent policies, and hoped that its implementation would closely follow the intent. It made it clear that it favored the taking of title by the government only because of the opportunity to commercialize the inventions through the grant of waivers.

strongly urged that a liberal policy of granting irrevocable licenses be employed so as to give contractors confidence that they will not be deprived of a license based on which the contractor has proceeded to make considerable investments in money, personnel efforts, etc.

Dow Chemical sees the thrust of the ERDA regulations as being in the right direction. Of course, their success depends on ERDA having adequate flexibility and proper administration, but the company believes that ERDA's staff can accomplish these objectives and make the title-with-waiver policy work well.

Dresser Industries is generally disheartened by the ERDA proposed patent policies. It is concerned that the title-with-waiver policy will work equitably. All in all, it is concerned that ERDA's policies will discourage rather than encourage prime and sub-contractors from doing work for ERDA.

DuPont finds ERDA's statute and policies flexible enough to permit it to stimulate the flow of inventions and their commercialization by reasonable negotiation with ERDA's contractors.

Fairchild Industries objected to the policy that the Government normally takes title to the invention if it is first reduced to practice under an ERDA contract, even if substantial sums had previously been spent by the contractor on the invention. Fairchild presented the opinion that ERDA would not achieve active, meaningful industry participation with the title-taking type of patent policy set forth in the proposed regulations. It was recommended that ERDA allow full patent rights

General Electric Company sees no need for any statutory changes governing ERDA's patent policy provisions. It is of the view that ERDA's proposed regulations show that the statute does allow reasonable administrative flexibility within its mandated requirements.

Hughes Aircraft Company stated that it clearly would be an added incentive for companies to take ERDA contracts if they were always to receive patent rights to inventions made in the performance of those contracts. However, Hughes does not list this requiremant as one of its primary concerns. It appeared satisfied that the proposed ERDA patent policies would at least provide for the contractor to have the right to use technology developed in the course of the ERDA contracts, and that this would be of practical importance to Hughes.

Olin Corporation suggests that the contractor should normally take title (unless ERDA finds that the contractor does not have the capabilities to commercialize any discoveries), with a paid-up, non-exclusive license for the government. Olin also suggested that if the contractor failed to actively commecialize any such discoveries, all patent rights would revert to the government. Olin believes that the real reward derived from R&D is not the knowledge or patents gained, but a chance to commercialize a new product or process, or improvements of existing ones. In order to justify the necessary investment in market development, construction of manufacturing facilities and building of a customer service organization, judicious management practice dictates that patent protection be obtained before such expenditures are made.

participation in government programs which involve work in areas relating to that technology.

Union Carbide Corporation described the proposed policies as exceedingly complex and interrelated and urged that the policy and regulations be made as uncomplicated and as straight forward as possible on such basic issues as title to inventions, maximum rights to the contractor under foreground patents and maximum rights to be granted the government under background patents and data.

U.S. Steel Corporation indicated that it understood why ERDA has chosen a "title" patent policy, but strongly urged that there should be some provisions for permitting the contractor to retain irrevocable title to certain classes of invention, particularly those not directly aligned with ERDA's primary mission. It favored a multiple patent rights clause approach as used by the AEC.

Westinghouse Electric Corporation expressed the view that the ERDA Act creates a patent policy which provides a "middle of the road" approach between the "title" and the "license" positions advanced by many interested groups as the best form of government patent policy. It expressed the opinion the ERDA's waiver policy would protect the public's interest in obtaining new products and energy sources to solve the present energy crisis, yet would provide industry with assurances of a patent position to protect risk capital investment through the granting to it of necessary exclusive rights by means of the waiver process.

William A. Marshall, a patent attorney, pointing to a study made in 1959 about the government's investment in the manufacture of synthetic rubber, declared that the patent policy proposed by ERDA will have similar adverse results of deterring private incentive. The title policy, in other words, results in the government getting less and not more for its investment in research.

John J. Pederson expressed the view that the public interest is best served by vesting patent rights in foreground inventions with the contractor subject to nonexclusive licenses in the government for governmental purposes.

Jacob Rabinow strongly opposed the taking of title to patents by the government, and particularly the granting by the government of a royalty-free license to anyone under patents that it owns. He stressed that a free patent is not really a patent, and that the widespread granting of free rights to patents would have the effect of reducing our patent system to a state where it might not any longer be a patent system. According to Rabinow, most of the world's most important inventions have been made by highly trained people in universities, government laboratories and small companies, and these people need to be encouraged to continue their work and to work for government agencies such as ERDA. If ERDA takes title to their inventions they will lose interest in working for ERDA.

Admiral H. G. Rickover expressed the view that Congress has properly mandated, in the Atomic Energy Act and the Federal Nonnuclear Energy Research and Development Act, that patents developed at Government

evaluate ERDA's title-with-waiver policy. However, it did postulate that such a policy might impose a substantial administrative burden upon the government and its contractors, and have an adverse impact upon incentives for competent firms to enter into research and development contracts with ERDA. The Association expressed the view that there is a widespread fear that in practice there will be no waivers because of the excessive administrative costs and burdens within the government and elsewhere, and that field contracting officers and others will be most reluctant to grant waivers because it would be considered safer and less of a hassle to deny waiver applications.

The Patent Law Association of San Francisco considered the waiver provisions to be exceedingly complex, difficult to administer, and stacked against contractors. The Association felt that the time to prepare requests for waiver together with the time to process such a request, weighed against the time pressures which would almost always be present, were formidable to the point of rendering the waiver provisions essentially non-operative. The Association concluded that it would be far simpler for all concerned to dipsense with waivers and leave title with the inventing contractor with a license to the Government for its purposes.

Group II - Universities

American Council on Education recommends that in lieu of the title-with-waiver provisions now in ERDA's proposed policies, there be adopted the Institutional Patent Agreements program approved by the University Patent Ad Hoc Subcommittee of the Executive Subcommittee of the Committee on Government Patent Policy of the Federal Council for Science and Technology. This policy, if adopted, would leave title with the universities

North Carolina State University expressed a preference for the adoption of the Institutional Patent Agreement, such as is used by the National Science Foundation, over the waiver provisions in ERDA's proposed patent policies and procedures.

Purdue University endorsed the same proposal that ERDA adopt the Institutional Patent Agreement program.

Stanford University described the petition and waiver process as bureaucratically cumbersome, stating that it generally operates to delay or completely impede the development of research results to products and processes available to the public. It maintained that experience with other government agencies had demonstrated that the use of IPAs was far superior to an after-the-fact waiver procedure, or no waiver procedure, (i.e., rejection of waiver applications) in achieving such development.

University of California expressed a strong preference for the use by ERDA of the IPAs (presumably in lieu of ERDA's waiver provisions). When asked by ERDA's general counsel, R. Tenney Johnson, to explain how it was proposed that ERDA implement the provision on educational institutions in the ERDA Act, the university's representative stated it should be implemented as it has been done by the Department of Health, Education and Welfare. The HEW IPA was described as about 15 pages long. If ERDA adopted it, one agreement would be entered into by ERDA and the educational institution. The agreement would contain the various guidelines and criteria, etc. that the institution must follow in its licensing and technology developments. Such agreements,

Group III - Trade Associations and Other Groups

Corporate Accountability Research Group made no reference to ERDA's waiver provisions. Its representative expressed a personal preference for a policy in which title to inventions from federally funded research resides in the government, and the technology is made available to all qualified applicants on a nonexclusive and nondiscriminatory basis. The representative disclosed another proposal, however, which presumably was advocated by the Research Group she represented, and which was in the form of a Draft of a Patent Policy Bill. That bill stipulates that the government, as a general policy, shall acquire all rights throughout the world to any technology and title to any patent which should arise from research done in the performance of contracts with the government. The bill also provides for both nonexclusive to the public and exclusive licensing to the contractor under stated conditions. Thus, although no mention is made of waivers as such, in general, or to ERDA's waiver provisions, in particular, the bill does provide for a form of waiver of the government's acquisition of title in that the contractor can negotiate for and receive an exclusive license.

Electronic Industries Association noted that the proposed title-with-waiver policy made necessary complicated and burdensome considerations such as waivers, concept of revocability, exclusive licensing, etc., which the government has to deal with once it takes title. The association recommended against the government taking title, but if it does the association urges that the waiver policy be carefully structured so as to highlight the value of waivers to the overall ERDA program and not constitute further disincentive to prospective contractors.

participation of companies with substantial qualifications to perform energy research work. The Association stated that it would be burdensome and time consuming to the Administrator to determine "the likely effect of the waiver on competition and market concentration."

National Small Business Association (and National Patent Council) did not comment directly on waiver provisions of ERDA's regulations, nor of any other such waiver arrangements. However, it recommended that legislation be enacted to make entirely clear the authority of ERDA to give cognizance to a two-tier government patent policy. Such a policy would give ERDA authority to waive its rights to title, such waiver amounting to a grant to a contractor of a nonexclusive royalty free license up to an exclusive license for a reasonable royalty for a period less than the life of the patent with the right to sue. (The second "tier" would be the giving of preference to small business, which may or may not be the contractor, in granting an exclusive license.)

Roane-Anderson Economic Council is an organization of businessmen in the Oak Ridge, Tennessee area, which seeks to attract more private industrial development in that region. In this connection it seeks to obtain a relaxation of ERDA's patent policies with regard to privately sponsored work performed at ERDA's facilities in Oak Ridge. In such work the contractor funds all or part of the work, but of necessity uses facilities that only are available in government nuclear development establishments such as Oak Ridge. A related situation is where a private organization requests an ERDA facility operating contractor to do work for the "outside" organization, and pays for that work. In either

so formidable as to constitute a roadblock to carrying out the policy. The company pointed out that the past experience had indicated that in such cases the government ended up paying more for what was done, the job took longer, and the results were below expectations.

Combustion Engineering was delighted to see that ERDA patent policy included provisions for waivers, but indicated that the efficacy of those provisions in accomplishing ERDA's mission would depend on the manner in which those provisions are implemented. C-E suggested that there should be a provision for automatic waivers for jointly funded projects to eliminate the need for a complicatd waiver process.

Dow Chemical did not specifically comment upon the waiver provisions. It did praise the flexibility of the proposed patent regulations, and suggest that an expedited system be devised to provide exclusive licenses with appropriate safeguards to the contractors. It obviously endorsed the principle of the waiver provisions, but recommended that the contractor be enabled to know as early as possible that it was going to receive an exclusive license and that the license term be made as long as possible, say ten years.

Dresser Industries noted that the proposed rules to give ERDA contractors relief in the form of waivers, but declared that the effectiveness of the waiver route was still to be determined. The fact that the waiver guidelines are exceedingly complex causes them to fall far short of assuring the contractor of reasonable hope in retaining title to his inventions. The rules generally are seen as a "one way street," with

retains "march-in" rights including the right to terminate any waiver in whole or in part for various reasons leaves the contractor with a sword of Damocles hanging over his head. The company feels that no industry will invest substantial amounts in placing an invention in production if it is to be dependent on a right which the government can revoke at will. In lieu of such title-with-waiver provisions Ford advocates adoption of a patent policy such as that of the Federal Procurement Regulations (FPR). Under the FPRs there is greater flexibility than in the ERDA provisions. The government can also acquire title under the FPRs, but the contractor basically retains title in most situations. There is much less risk of losing rights, especially title, under the FPRs, according to Ford. It stated that the greater risk of such loss under ERDA's title-with-waiver provisions is a severe deterrent to accepting ERDA contracts.

General Atomic Company stated that ERDA's waiver policy, while reasonable in principle, is somewhat unworkable in practice because it provides a heavy, front-end burden on contracting and it will cause delay. The company expressed concern that there will be many situations where waivers will not be granted because of the difficulties involved. It suggested that if the waiver policy and procedures could be simplified in certain situations it would be extremely helpful.

General Electric Company stated that it found no objections to the patent policy provisions of ERDA's statute, nor to its latitude for allowance of reasonable administrative flexibility within its mandated requirements. In its formal statement and verbal comments it made no reference to ERDA's waiver provisions as such. However,

move away from an overpowering government title-holding position. However, it maintained that this move should be made to a more optimum point, and specifically suggested that the provisions set forth in a proposed Model Government Procurement Inventions Incentive Act, promulgated by the Aerospace Industries Association, should be adopted. This proposed statute would provide for title to remain with the contractor, with the government receiving a royalty-free nonexclusive license therein, and the government and the public would have "march-in" rights under which licenses would be granted in certain situations. The licenses would be either royalty-free or royalty-bearing, depending upon the circumstances of each case. With such a law and policy there would be no need for waivers as in the present proposed ERDA patent policies and procedures.

Standard Oil Company of Indiana raised no objections to ERDA's proposed patent policies and procedures, finding them quite satisfactory. It made no specific comment on the waiver provisions in its formal statement. However, in the question and answer session it indicated it could live with the waiver provisions and guidelines for waiver. Asked whether it regarded the administrative burden of seeking waivers as being disproportionate to the goal of trying to balance industry, government and public interests in this situation, the company stated that it was not so regarded, at least not yet.

The Oil Shale Corporation notes that the ERDA statute provides for waivers, especially when technology has been developed at private expense, and to consider the extent to which a waiver is necessary in order to secure participation by an interested party. However, in the

Westinghouse Electric Company stated that the waiver policy adopted by ERDA is the most reasonable policy available to assure public benefit through the availability of new products and new energy sources to solve the present energy crisis, and yet provide industry with assurances that a patent position to protect risk capital investment through exclusive rights waivers will be available to it.

Group V - Individual Spokesmen

Professor Irving Kayton made it quite clear that he is opposed to any policy which results in the government taking title to inventions made in the performance of government-sponsored research or development contracts. As for waiver provisions, his comment was that they and a government title-taking policy just mean that everybody has to pay a lot of money for no good reason at the front end. In other words, the title-with-waiver policy simply adds to the costs of the entire process which could be avoided if the law was changed so as to leave title with the contractor in the first place. Then there would be no need for waivers and the cumbersome, expensive procedures for obtaining waivers.

Frank Lukasik stated that the patent provisions promulgated by ERDA in compliance with its enabling statute will not serve their intended purpose of attracting the highly skilled, innovative research community to invest its risk capital in projects needed to serve the public needs. In lieu thereof he proposed a substitute for Section 9 of the ERDA statute. The substitute policy would have title to inventions and new technology made under government sponsored R&D remain in the government

Philip Sperber commented on the practical effects of the proposed waiver provisions in ERDA's patent policies. He observed that the larger contractors having in-house counsel, would know to request an advance waiver and seek to obtain an exclusive license. Small companies, probably without ready access to competent legal advice, will in all likelihood not apply for advance waivers. Moreover, both large and small companies may hesitate to seek advance waivers for fear that ERDA might tend to select a bidder which does not request waivers. Experience has shown that the chances are that such waivers which are granted generally will be of a nonexclusive character. This may not prevent large companies from proceeding to build on the knowledge obtained in dealing with ERDA, but it may interfere with the procurement of needed capital so that small companies may not be able to attempt commercialization of inventions made under their contracts with ERDA.

Background Rights

Group I - Patent Law Associations

American Patent Law Association stated that, in view of the importance in creating incentives for qualified companies and others to accept contracts with ERDA it was imperative to avoid discouraging would-be contractors by requiring them to divest their prior background rights in patents and proprietary data. Accordingly, it urged that ERDA's patent policy not require that contractors yield any of their background patent and data rights. In answer to a specific question the Association's representative stated that this recommendation should apply even in those situations where ERDA might wish to request the contractor to license its background rights for a reasonable royalty,

Group II - Universities

Stanford University stated that it would be useful to have data regarding actual situations experienced by the government where a contractor has relied upon its background patents to prevent utilization of foreground inventions (i.e., inventions made under a government-subsidized contract). This information, it maintained, would be useful in understanding the dimensions of the problem, for ERDA then could compare those results with the negative effect of not getting the best contractors to participate in ERDA research because of the possible danger of losing their patent rights.

University of Missouri stated that the idea of the government wanting background rights sounded like the Indians trying to recover Manhattan Island, or the Russians trying to take back Alaska. More pointedly, the observation was made that the background rights provision was troublesome because it would appear that the only ones who would accept government contracts calling for the yielding of background rights would be companies with nothing to lose.

University of Tennessee Space Institute stated that probably no one would object to the government receiving rights to patents that are generated under government funded R&D programs, even where there are large amounts of contributing participation by the contractor. But, it was further stated, it is difficult to accept the proposition that the government should receive rights to background data and patents that the government did not pay for, and which may be the basis of ongoing industrial profit-making enterprises. The problem becomes aggravated, the Institute pointed out, when the government's subcontractors push to try to

Group III - Trade Associations and Other Groups

Computer and Business Equipment Manufacturers Association stated that it saw no need for background patent licensing and, until such need is clearly demonstrated with supportable data, it would oppose adoption of any statutory or regulatory policy of such licensing.

Corporate Accountability Research Group stated that, so far as background patents are concerned, it would seem absolutely necessary that ERDA's Administrator should possess the authority to require the licensing of energy related background rights if medium-sized and smaller firms are to play any role in this field.

Electronic Industries Association stated that no ERDA policy should be extended by definition or practice to invade the contractor's proprietary rights in background data. As for background patents, to the extent that they are abolutely necessary to practice foreground inventions, the Association sees no objection to such licensing but suggests that rights thereto by the government or by third parties should be obtained by negotiating with the patent owners.

The Manufacturing Chemists Association predicted that the requirement that a contracting company license background inventions and know-how it has developed at its own expense will act as a deterrent rather than as an incentive for a company with substantial experience in the field to participate in a government-sponsored energy research project. Those companies with the greatest capability to contribute and participate in energy research are discouraged from doing so.

dissuaded from participating because their background patent rights would be made the subject of obligatory licensing provisions. Such provisions, observed Alcoa, may not permit a reasonable profit or royalty, when government funding of further development is appropriate but not rewarding beyond, perhaps, some profit on contract performance.

Combustion Engineering, Inc., sees in the background rights of the proposed patent policy another deterrent to the acceptance of contracts with ERDA by otherwise qualified contractors. The company does not object to the granting to the government of royalty-free licenses to its background patents for research, development and demonstration purposes. The problem it sees is the determination of terms for licensing its background patents which would be considered "reasonable under the circumstances." In the absence of the remedy afforded by injunctions a contractor would not be in a good negotiating position, and might suffer serious economic detriment if the party making the determination as to "reasonable terms" was making a recommendation which the contractor felt was wholly unacceptable.

Dow Chemical suggested amendments to the procedures which would tend to resolve before a contract is entered into whether certain of the contractor's inventions are to be considered background inventions or not. Further, amendments should be made to assure the contractor that he will have a reasonable time within which to supply the subject matter of a background patent or background data in sufficient quantity and at reasonable prices before any rights to third parties are to be granted.

General Atomic Company stated that it had no quarrel with the broad requirement in the ERDA regulations that the government may acquire the right to direct licensing of a contractor's background patents to insure reasonable public availability and accessibility. However, it further stated that such a policy would be counter-productive unless acquisitions of background rights are limited to situations where they are both justified and fairly necessary. Experience has shown, stated General Atomic, that once regulations are adopted or standard clauses drawn, the government's contracting officers attempt to acquire background rights in nearly every R&D transaction. Thoughtlessly pursued, the company pointed out, this practice can frustrate the government's wish to obtain the best qualified R&D contractors because those firms are the ones most likely to have relevant background which they feel they must protect.

General Electric Company divided its statement on background rights into two parts, one on proprietary data and one on patent rights. Regarding data, it stated that ERDA's proposed policies and procedures need to be amended because they do not provide adequate protection for the contractor. The basic provision is satisfactory in that it provides that contractors need not include proprietary data in documentation it may be required to furnish under the contract, with the government retaining the right to inspect the data in order to evaluate the work performed under the contract or to verify the true proprietary nature of the data. However, certain optional provisions call for the contractor being required to furnish the data to the government and to third parties, and the lack of clear instructions and guidance as to how this is to be done and how improper dissemination for the data is to be guarded against, is what General Electric found to be objectionable. As for patents, the company notes that many

the issue of mandatory licensing. It recognized the attempts by ERDA to balance the equities by placing restrictions and conditions on the mandatory licensing provisions, but still felt that companies with substantial know-how and capability in energy research and development would be discouraged from becoming involved in ERDA projects because of those provisions (including the background patent rights requirement).

Olin Corporation expressed reluctance to become involved with ERDA's programs because of the proposed policy on background patents. The areas in which Olin would have most interest are those closest to its area of expertise where it holds patents to support its existing business. Olin stated that forced licensing of background patents could prohibit its involvement in these areas.

Standard Oil Company of Indiana stated, in response to a question from ERDA's general counsel, R. Tenney Johnson, that it is not critical of ERDA's regulation regarding background rights licensing provisions because there have been built into them enough flexibility to permit Standard to live with them, "not extremely comfortably, but enough so." The company stated that the provisions seem to state that under most circumstances a rather considerable amount of the patent rights owned by a contractor may not be withheld, but should be made available in a very limited manner. In other words, they should be made available only when there is an absolute need to do so, only in extraordinary circumstances.

The Oil Shale Corporation expressed concern that Section 9 of the ERDA Act gives the Administrator authority to provide for reporting, public notice, and hearings requirements in each waiver request, and stated that

Westinghouse Electric Company stated that compulsory licensing of background patents by either statute or regulations is undesirable since risk capital must be protected if we are to have growth in the energy industry. Since the government has recognized the value of exclusive rights when discussing the licensing of government owned patents, it would be inconsistent not to consider this factor when dealing with a contractors background patents. In any event, ERDA's regulations define a background patent to include foreign as well as domestic patents. In this area ERDA regulations have exceeded the intent of its statute. As for background data, Westinghouse submits that there are two classes of such data, one being background proprietary data actually delivered to the government, while the other is background proprietary technical data which have been termed "excepted items." The latter fall into two categories: (1) proprietary analytical techniques of the contractor, and (2) proprietary manufacturing information, processes and techniques. If an excepted item is absolutely necessary, the contractor should license the government and responsible private parties on reasonable terms. The ERDA Act or regulations should be amended to permit use of terms and conditions representing proprietary information of the type discussed above.

Group V - Individual Spokesmen

John J. Pederson stated that it saw no need for mandatory licensing under background patents, and that it expected background licenses to be made available voluntarily if needed.

Philip Sperber stated that if contractors are to be left with uncertainty as to their chances of obtaining and keeping exclusive rights

District of Columbia Bar Association opposes mandatory licensing, stating that until empirical data are obtained and evaluated relative to the effect of mandatory licensing in existing law it would be premature for ERDA to make a recommendation to the President and the Congress with respect to mandatory licensing. If, however, the Government should deem it appropriate to have some form of compulsory licensing for ERDA, it urged that the related statutory and regulatory provisions contain procedural safeguards similar to those in the Clean Air Act. These comments are relative to the mandatory licensing of patents. The ERDA provisions also apply to compulsory licensing of certain proprietary data, and the Association declared that those provisions are the most devastating in the entire set of regulations.

Philadelphia Patent Law Association opposed mandatory licensing of energy-related patents and for purposes unrelated to the practice of the technology developed under the contract, stating it would deny contractors the injunctive remedy. Mandatory licensing would result in substantial discouragement of independent investigation in the energy field, and this is not in the public interest. Further, there is no real danger that the absence of the requirement for mandatory licensing would prevent inventions from independent investigations becoming available to the public.

Group II - Universities

American Council on Education stated that mandatory licensing is not needed to carry out the purposes of the Federal Nonnuclear Energy Research and Development Act of 1974. To the contrary, mandatory licensing is at odds with the Energy Reorganization Act of 1974 whose objective is to provide

amounts of money and time to transfer the basic university invention into a commercially acceptable product. Mandatory licensing will lessen entrepreneurial incentive rather than increase it, and may well delay rather than hasten technology transfer. It should not be incorporated into the ERDA patent policy.

Stanford University stated that the proposed mandatory licensing provisions would appear on its surface to be a dangerous precedent to the integrity of the U.S. patent system. It postulated that a small emerging energy company with a novel patented energy conversion method could not compete with the present energy oligopoly if it was required to license competitors by ERDA, even with "reasonable royalties". The university queried whether there are actual, documented situations where the absence of mandatory licensing provisions has prevented another government agency from carrying out its program.

University of Missouri expressed mixed feelings about mandatory licensing, stating that the Licensing Executives Society reported on a poll it took in which some said it was all right and others said it was not. The university representative stated that personally he had a little trouble with it. Calling attention to the Constitution and the fact that it says those rights shall be exclusive, he postulated that for the government to make them nonexclusive would be in effect to revoke the Constitution. He also expressed resentment for the presumption that appears to be present that patentees are not exploiting their inventions to the fullest. More to the point, he expressed concern as to the future effect on private R&D if the government is going to step in and claim title in such situations. He referred to the proposition that mandatory licensing may be

would then be willing to invest its capital funds in the commercial development of a nonexclusive license to an invention. Moreover, the public's interest would suffer, since many worthwhile inventions could not be commercialized. The university spokesman concluded by urging the exclusion of mandatory licensing of energy-related patents from ERDA's rules and procedures.

University of Tennessee Space Institute discusses the problem of background rights in patents and data, and what should be done about their possibly blocking technology needed in the solution of one of ERDA's problems, and this has been discussed above under that subject matter heading. Nothing was specifically stated in the formal comments about mandatory licensing as such. However, in the question and answer session the issue was raised by ERDA's general counsel, R. Tenney Johnson, who observed: "We have yet to find a case in which any of the compulsory licensing provisions in the government contracts, march-in rights, and so on, or even the Clean Air Act, which is the only current statutory mandatory licensing provision, have actually been applied. We have just not found concrete cases where there was a requirement to utilize this authority. While we are on this topic, I would like to go back to your own philosophical bit about the utility of patents and possible impediments they bring. Would you feel that there ought to be a statutory ability in some federal agency, let's say ERDA, to require the licensing of privately owned patents where under defined conditions--we will say in dog in the manger attitudes--do you think that would have a loosening effect and cut away this blocking effect that you find sometimes?" To this query the university representative replied that he did not think so. He added that

purpose of defining parameters within which a contractor should be required to license background patents. Such licensing would be required only to the extent absolutely necessary to reproduce the end item developed in the government contract under which the invention dominated by the contractor's background patent was made, and the licensing provision would provide that the contractor be equitably compensated. AIA maintained that any broader requirement to license a contractor's background patents or the mandatory licensing of privately owned patents would have a significant adverse impact on the participation of industry in the attainment of ERDA's goals. It therefore urged that Congress be advised that there is no demonstrated need for such incentive destroying statutory provisions as mandatory licensing.

Computer and Business Equipment Manufacturers Association stated that compulsory licensing of contractor's patent rights and proprietary data are extremely detrimental to the contractor's position and should not be used. As for patents, until such need is clearly demonstrated with supportable data, the Association opposes adoption of any such regulation or legislation. As for data, the Association is against its adoption under any circumstances, but suggests that the matter be made a negotiable clause to be used only in certain situations.

Corporate Accountability Research Group observed that a stated purpose of the hearing was to assess the desirability of mandatory licensing of energy related patents. So far as background patents are concerned, the representative stated it would seem to be absolutely necessary that the ERDA Administrator possess such mandatory licensing authority if medium-sized and smaller firms are to play any role in this field. Patents held

intended purpose of the constitutional provision for a patent system, deter private industry from investing capital in energy research, and be counter-productive to the basic objectives of energy research legislation.

National League of Cities enclosed a copy of a certified copy of a Resolution of the Common Council of the City of Milwaukee calling on ERDA to give strong consideration to the use of mandatory licensing of patent rights as one option for making energy conservation technology available to the general public, while at the same time preserving the economic incentives emanating from the patent system.

The City of Milwaukee has gone on record (by means of resolution file number 74-211) in support of mandatory licensing of patent rights as one option for making energy conservation technology available to the general public. It recognizes that patents are an important part of this country's economy in that patent rights provide an inventor with an incentive to engage in research and development. The City of Milwaukee stated that mandatory licensing was one means (in addition to the powers of eminent domain, refusing to grant an injunction, and granting a prohibitive injunction) that the Federal government has to prevent gross misuse of patent rights where the rights granted to a patent holder would do great harm to the public welfare.

National Small Business Association (and National Patent Council) stated its case against mandatory licensing by pointing out that without exclusivity many government sponsored inventions would lie dormant, thus benefiting no one. Small business depends on patents in order to be

No such requirements or needs exist in the field with which ERDA is involved. If mandatory licensing were to become law in this field it would have the effect of virtually destroying the patent incentive for the research and development of needed energy related technology in a manner inconsistent with the stated objectives of the 1974 Energy Act. Whether applied to all industries or selected technologies, such a statutory requirement would dilute the incentives provided by the United States Patent System, and lead to a decrease in the amount and quality of the technology being sought.

One reason given for having mandatory licensing is to overcome the suppression of patented technology. The Association denies the validity of this argument and says no proof of such a charge has ever been presented. Moreover, it suggests that compulsory licensing will tend to increase rather than decrease the likelihood of suppression as innovators would consider the desirability of relying on trade secrets rather than patents to protect their ideas.

Other "traditional" reasons often advanced for compulsory licensing were discussed and strongly rejected as invalid by the Association. One such reason is the need to avoid abuse or misuse of patents. To this the Association replies the judicial system has proven time after time that it can deal most effectively with such situations.

market an invention itself or, if this were not feasible, make the invention available by voluntary licensing. In effect, it holds, mandatory licensing seems to be an extreme solution to a problem that does not exist.

Dresser Industries sees in ERDA's proposed policies and procedures provisions which will discourage the taking of contracts with ERDA, not the least of which is any of the requirements for background rights licensing to third parties.

DuPont stated a strong belief that mandatory licensing of energy related patents would effectively deny the benefits of the patent system to inventors of such subject matter and eliminate much of the incentive of industry to participate in such work. It recommends against adoption of mandatory licensing as being counterproductive to achievement of ERDA's objectives.

Fairchild Industries was of the opinion that ERDA, through a proper utilization of 28 USC 1498, could authorize the utilization of patented technology if a contractor should impede development of energy related inventions through the use of its patents.

Ford Motor Company urged that ERDA's statute not be limited by regulatory policy with regard to patent provisions, otherwise it could destroy flexibility which is built into the statute to allow for negotiation of license rights, etc. It would further be regrettable, the company stated, if statutory provisions or procurement regulations were

licensing.

General Atomic Company opposed compulsory licensing, stating that there has never been identified a specific patent situation in which compulsory licensing has been needed, and without such evidence no meritorious claim of real need for such authority can be advanced. It is wrong to suggest, as some have, that there is no harm in having available a compulsory licensing provision, particularly if it is fenced off by safeguards such as a requirement to prove necessity, unavailability of the invention to potential licensees, no reasonable alternative means for achieving the results, reduction of competition, etc. The company believes this is not a reasonable position to take. Compulsory licensing will have a harmful effect on our patent system. Besides, it is not needed, for in genuine cases of government need it can exercise its right of eminent domain to take over the patent for a genuine public use and give the patent owner some just compensation. In view of this fact, to go in for compulsory licensing would merely have the effect of downgrading the patent system, tend to dilute the incentive for invention and investment, and divert some people away from a system to a policy of trade secrecy.

General Electric Company stated that as a general proposition it believes that mandatory licensing is not in the best interests of the country, for it encourages companies to be followers rather than leaders in doing research. The country needs a strong technical effort stimulated by competitive research, and mandatory licensing works in exactly the

energy-related research. Available research funds are bound to be channeled by industry into other areas where a proprietary position may be attainable. Another danger is that the competitive necessity will be diminished to keep pace with others in research and development since inventions will become available in many cases merely for the asking. No real need for mandatory licensing has been shown, and in the few instances where there are provisions for some they have rarely been sought. Yet, the mere presence of such provisions can have an adverse impact on the interest of needed would-be contractors to accept contracts with ERDA. The idea has been advanced that mandatory licensing is needed to protect the public interest, but this is also an unnecessary concern for in such cases where needed the courts have not hesitated to grant relief, e.g. in antitrust matters where necessary to reestablish competition.

Olin Corporation views the concept of mandatory licensing with alarm. The patents it holds were obtained at great expense and are the foundation for a large investment. Because it engages in an active licensing program and there are few, if any, ideas of commercial value that are not being developed because of patent interference, Olin concluded that there was no need for mandatory licensing legislation.

Standard Oil Company of Indiana did not comment on mandatory licensing as such. In response to a question from a member of the interagency task force panel for comments regarding ERDA's background licensing provisions that had been criticized by others who had testified earlier,

application is not unduly prejudicial to holders of valuable existing technology. The corporation listed several such safeguards, and further pointed out that the responsibility to offer licenses on reasonable and nondiscriminatory terms should be stated broadly, and the actual terms of license should be left to private negotiations, subject to prescribed criteria for determining reasonableness.

TRW expressed the view that mandatory licensing of energy-related patents is unnecessary and would represent a major obstacle to participation by private industry in the national energy program.

Westinghouse Electric Company stated that it is against compulsory licensing of background patents by either statute or regulations because such practices negate the protection needed by risk capital to have growth in the energy industry. The result will be that it will stifle invention. If, however, we are to have compulsory licensing, it urges that it be confined to U.S. patents and not include foreign patents as set forth in the proposed ERDA regulations. The proposed regulations define background patents as including foreign patents, and in this respect the company believes ERDA's regulations have exceeded the intent of its statute and have gone too far.

system of licensing so as to compel outsiders to license Israeli companies which would manufacture the items in Israel. Germany, said Rabinow, has a mandatory licensing system but in not one case has it been invoked.

Philip Sperber presented a personally authored small treatise on the subject of energy independence and compulsory licensing. He covered such subjects as "The Quickest Way to Energy Independence;" "Why Compulsory Licensing?"; "How will Enactment of Compulsory Licensing Affect Energy R & D"; "Will Compulsory Licensing Retard or Promote Suppression?"; "Will Compulsory Licensing Reduce or Increase the Cost of Energy Solutions?"; and "Is Compulsory Licensing Sanctioned by Our Constitution?" His conclusions are that our energy survival needs all the help we can give to our energy efforts, and we must avoid anything which will discourage anyone from getting in or staying in the energy-related fields. In the compulsory licensing of patents he sees a subtle negative incentive that may act to discourage tomorrow's entrepreneur from discovering new forms of energy. Rather than concerning ourselves with the remote possibility that America's inventors will suppress their patented solutions of our energy problems, our first and most important concern should be to discover those solutions as soon as possible.

Appendix C.2
Transcript of Public Hearings
Tuesday, 18 November 1975

UNITED STATES OF AMERICA

ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION

PUBLIC HEARING ON

ERDA PATENT POLICY

Germantown Auditorium
Germantown, Maryland

Tuesday, 18 November 1975

Hearing in the above-entitled matter was convened, pursuant to notice, at 10 a.m., R. Tenney Johnson, ERDA General Counsel, presiding.

Present:

Dr. Betsy Ancker-Johnson
Mr. Ralph Bayer
Dr. Donald Beattie
Mr. Wade A. Blackman
Mr. Frank Cacciapaglia
Mr. James E. Denny
Mr. David Eden
Dr. George Fumich
Mr. Charles Goodwin
Mr. Jefferson Hill
Mr. George Kimball
Mr. Joseph E. Machurek
Mr. Leonard Rawicz
Mr. Robert W. Ritzmann
General Edmund O'Connor
Dr. Philip C. White
Mr. Hugh E. Witt

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Next to him is George Kimball, who is representing the Assistant Administrator for Nuclear Energy.

Further down is Mr. Robert Ritzmann, who is representing the Assistant Administrator, Office of Industry, State and Local Government Relations.

I must say, Robert, it was your kindness that enabled us to get out the 300 letters that we were able to do for this meeting.

I am glad we have wide attendance.

I would like to begin by asking Dr. Betsy Ancker-Johnson for a few words.

Her time is quite limited, and I am awfully glad she was here to speak with you.

DR. ANCKER-JOHNSON: Thank you very much, Tenney.

I am very pleased that I can be here this morning. It is my privilege to represent the Secretary of Commerce and to convey to you both his and my warm appreciation at your patricipation in this meeting this morning. It is an important hearing.

A year ago the Department of Commerce was deeply involved with negotiations with the Senate respecting the substance of the ERDA patent policy.

We entered these negotiations not by choice -- lest you misunderstand anything Mr. Johnson had to say at the beginning -- but, rather, by necessity.

We preferred then, as we prefer now, that the content of this legislation be drawn from the forge of practical experience rather than from the fountain of political expediency.

We perceived, however, that expediency was in the ascendency.

Given a short period of time which remained before the expiration of the 93rd Congress, and given the knowledge that the 94th Congress would be more heavily Democratic, the Administration determined to enter the fray with a compromise on one hand.

I assure you that your suggestions will be fully and carefully considered and evaluated, not only in the context of possible changes in the ERDA legislation, but also in the formulation of an Administration proposal looking towards the establishment of a uniform patent policy for all federal agencies.

I should very much enjoy being able to remain with you this morning and, in fact, throughout the entire hearing. I would like to hear your comments personally.

Unfortunately, my schedule rarely permits my having that much fun. I am scheduled to meet with the Secretary in just about the time it is going to take me to get back to the main Commerce Building in Washington.

But members of my staff will be here throughout the entire proceeding and will be delivering their reports to me, along with the transcript of the hearings.

It is my hope and my expectation that a year from now we will be able to look back on today's hearings as the true beginning of a major advance in the history of U. S. government patent policy.

Thank you very much.

CHAIRMAN JOHNSON: Thank you very much, Dr. Ancker-Johnson.

We are glad Mr. Eden will be representing you during these sessions.

Ladies and gentlemen, I welcome you on behalf of the Administrator of ERDA, Dr. Robert C. Seamans, Jr., to these public hearings on ERDA Patent Policy.

We are genuinely pleased with your response and interest as demonstrated by your attendance today.

As you are aware, the subject of these hearings has brought controversy for almost three decades.

Government patent policy is a complex economic, social, political, and legal issue which provides for the allocation of patent rights between the government and its contractors.

The basic objectives in making such a determination in each case are as follows:

One: The benefits of the Energy Research Development and Demonstration Program will be made widely available to the public in the shortest practical time.

Two: The commercial utilization of such inventions will be promoted.

Three: The participation by private persons in the Administration's Energy Research Development and Demonstration Program will be encouraged.

Four: The fostering of competition and the prevention of undue market concentration or the creation or maintenance of other situations inconsistent with the antitrust laws.

The specific requirements for a waiver cannot be precisely categorized in advance inasmuch as their appropriateness will depend upon the facts surrounding each contract and situation as they relate to these objectives I have just read.

For example, typical waiver situations are to be expected in cost-sharing contracting activity, in supporting ongoing private R and D efforts where ERDA facilities are used by others at reimbursable costs, and where the equities of the contractor are so substantial that waiver is appropriate to obtain contractor participation.

Waivers, under ERDA's authority, may be granted in advance of contracting and may be granted in regard to individual inventions identified after award of the contract.

There is also a provision that when ERDA keeps title to an invention ERDA makes available to the contractor which made the invention a revocable license.

The purpose of this is to permit the government at some later stage to license the government-owned invention to someone else on an exclusive basis when that is necessary to meet the objectives of early utilization.

We will not revoke or have the power to revoke the contractor's right or license to use his own invention in any field of use in which the contractor is commercializing

ERDA's approach to this delicate issue is to develop a narrow background patent rights clause under which ERDA would acquire a carefully defined right to background patented technology where such technology is essential to practice the contract results.

That right is not ownership, but the power to provide for the licensing of third parties at ERDA's request on reasonable commercial terms, but only in the field of the contract effort, only when it is absolutely necessary to practice the ERDA-developed technology, and only when the contractor and his licensees are not meeting the commercial needs.

These are the main outlines of our law and regulations.

We have issued the regulations for public comment and immediate permissive use, and we are hoping to get public comment in detailed written form as we set forth in the Federal Register.

The purpose of the hearings this morning is to talk about more general questions rather than detailed comments on the regulations.

The statement that I made of the objectives, power, and authority of the Administrator granted by the Congress presents one central question: How does ERDA intend to administer this authority?

We fully realize that the administration of this policy will ultimately determine its success or failure.

We recognize our policies will become hollow words without substance unless an enlightened Administration undertakes to implement the spirit of the two legislative enactments.

I can state emphatically that it is the intention of the Administrator of ERDA to make prudent use of the authority which has been granted to him, consistent, of course, with the underlying thrust of the Act.

We read the Act as permitting us to make use of the patent incentive as one of the many incentives that this country will need in its long fight to regain control over the sources of its energy.

association made up of over 4,000 lawyers admitted to practice in the District of Columbia, a large number of whom represent clients both large and small, located in all parts of this country.

Many of these clients have had extensive dealings directly and indirectly with the government. The ownership or acquisition of title to inventions made and proprietary data used in the course of performing R and D services for the government affects a large number of our clients.

The Association sincerely appreciates the opportunity to comment on the ERDA patent policy. In summary, our position is as follows:

1. The Association believes that a uniform patent policy, which would provide the contractor at the time of contracting with exclusive commercial rights for a limited period of years, will enable the government to obtain the maximum benefit for its R and D dollar and provide the necessary incentives to contractors to seek government R and D contracts.

2. We do not believe the ERDA title-waiver-policy will provide the necessary incentive because of its uncertainty and its administrative burdens.

3. The Association continues to oppose the concept of mandatory licensing because of the disincentives thereby imposed on independent research and development.

4. We oppose amendment of the nonnuclear R and D statute to require background patent and proprietary data licensing, and we oppose accomplishing the same objective by regulation.

In the report of the Commission on Government Procurement, a policy was urged generally allowing contractors to obtain exclusive commercial rights for a period of years, at the time of contracting, in patents covering inventions developed under government contract.

The government, of course, would have the right to use any subject invention for governmental purposes.

There is every reason to believe and expect that such an approach should minimize administrative burdens and costs for both the government and the contractor and, therefore, would mean lower costs to the taxpayer. Furthermore,

information, and after all of this, the uncertainty of being granted a waiver.

However, if ERDA decides to recommend continuation of the present title-with-waiver policy, we have, in the more detailed statement already submitted to you, proposed some amendments which we believe will improve the statute. These appear on pages 4 to 8 of our statement, and I will not treat them in detail.

One recommendation is that the Administrator in his determination on the waiver application should consider the extent to which the contractor, as well as the government, intends to develop the results of the contract effort to the point of commercial utilization.

Another proposal we make is that the contractor who has developed the invention should be entitled to a non-exclusive license revocable only under specific circumstances.

In addressing the problem of mandatory licensing, we understand that term to mean the licensing of patents which do not result from a government R and D contract. Such a law would seriously diminish the incentives provided by the patent system to invent, innovate, and commercialize technology. Mandatory licensing of privately owned patents would make investors even less willing to invest private funds in high-risk R and D.

If, however, Congress deems it necessary to enact mandatory licensing, we recommend that the legislation contain procedural safeguards similar to those in the Clean Air Act. And we further recommend that such licensing not be required if the needs of the public are being satisfied by the patent owner or his licensees.

Until empirical data can be obtained on the effect of mandatory licensing provisions now enacted, we believe it would be premature for you to recommend to the President and Congress that a mandatory license law is desirable or necessary.

We appreciate that this hearing is not directed to discussion of the proposed patent, data, and copyright regulations. Nevertheless, we must comment on the regulations which require background patent licensing and proprietary data licensing because of the policy inherent in those provisions.

practice the contract results.

What methods are available to us to prevent this result?

Or should this result be prevented?

MS. NIES: I am going to answer the question obliquely.

Undoubtedly, one can think up very hard situations. But the objective of the regulations should be to insure overall incentive. If I may suggest, we need to look at the broad spectrum and handle the most unusual situation specifically, rather than design the regulations for the unusual situation, thereby building in the disincentives which we think will result.

CHAIRMAN JOHNSON: Thank you.

Are there other questions from other members of the panel?

Mr. Witt?

MR. WITT: You made a reference to the need for empirical data.

How long a time do you think we need to collect empirical data and how much do we need? Is there a quantification you can supply there?

MS. NIES: I know the difficulty in trying to put together the empirical data. You are referring to mandatory licensing?

MR. WITT: Yes.

MS. NIES: One of the matters that our group discussed was that at one time we were asked to put together such empirical data and we just didn't have any way to do it.

There have been studies in the past. I know there was a study made by an independent organization a number of years ago. It might be that is the only way you can come up with the empirical data.

As to how long a time, I think definitely one year has not been enough time here. I really cannot give a specific

MS. NIES: That is what I recall from our discussions.

CHAIRMAN JOHNSON: Mrs. Nies, we thank you very much on behalf of the Task Force.

Since you indicated you would take back something to your members, I would ask that they look over very carefully the provisions on background rights because they have been extremely carefully drawn to attack only the problem that we think needs to be attacked. We will pay careful attention to the detailed criticisms that you have given us.

We thank you for your appearance.

MS. NIES: Thank you.

CHAIRMAN JOHNSON: Our next participant is Mr. Mark Owens, Jr., Chairman, Board of Patents, University of California Systemwide Administration.

Mr. Owens, it is a pleasure to hear your presentation at this time.

MR. OWENS: Thank you, Mr. Johnson, members of the panel.

I have already, as you know, filed a paper with this group and will not repeat that material. However, I would like to make a few very general comments, if I may, in behalf of the University of California. While we are not a unique institution insofar as patent programs are concerned, our record demonstrates we have more than average ability, capacity, and experience in transferring new technology to the private sector for its consequent use and benefit to the general public.

As the paper indicates, we have in excess of 100 commerical licenses in effect with private industry. Licensed Technology covers, for example, plant patents, electronics, pharmaceuticals, agricultural hardware, etc. -- just about every field of technology within the University. A great many licenses are with foreign firms, which bring money back into this country and back to the University of California.

In view of the University's extensive patent activity, we are vitally interested in the legislation which is the subject of the discussion today. It is important to the University of California as well as to other educational

In the circumstances, we should be permitted to use whatever language would convey the broad, general criteria of the Government and not be required to use any particular words.

I think this pretty much covers what I intended to say.

I will be happy to answer any questions, if there are any from the panel.

CHAIRMAN JOHNSON: Mr. Owens, I have not had the opportunity to read your statement.

Would you care to discuss how you would propose that ERDA implement the provision on educational institutions in the Act?

MR. OWENS: In my paper it is suggested that it be implemented as the Department of Health, Education, and Welfare implements its authority to issue institutional patent agreements.

The DHEW institutional patent agreement is some, as I recall, 15 pages long. It is entered into once between DHEW and the institution, and it sets forth the various guidelines and criteria and so forth that the institution must follow in its licensing of technology developed under the DHEW contracts and grants.

It would be our proposal that a similar type agreement be entered into between, in my case, the University of California and ERDA.

CHAIRMAN JOHNSON: Is there something particular about universities that qualifies them for a special agreement of this kind?

MR. OWENS: Of course, I am prejudiced in this area.

I think there are two things, at least. One, in the legislation under consideration there is a particular provision which makes reference to educational institutions or nonprofit institutions with approved patent licensing activity.

Two, and perhaps more broadly and generally, the reason why I feel we are qualified for special consideration

MR. EDEN: What percentage of the patents owned by your University are actually licensed?

MR. OWENS: Here again, I am not as close to it as I used to be. I would say it is about 50 percent of the inventions. I may be wrong. It is about 50 percent. We try to be careful not to seek patent protection on those which do not appear licenseable.

CHAIRMAN JOHNSON: Mr. Fumich, who has just joined us.

MR. FUMICH: You say if you could keep title to the invention, you could add to your incentive of transferring the technology.

How would you propose to do that? Let's take one of our problems in dealing with universities. How would you bridge that into the private sector?

MR. OWENS: I think again, the incentive for us is the royalty income which we hope to generate from the licensing of the invention. We actually have a department within the University of California which spends all its time in licensing new technology and also in handling the various administrative requirements under government contracts. But if I understand your question correctly, I think the incentive again is, one, the monetary incentive, and second, we do have an existing entity to handle this.

CHAIRMAN JOHNSON: Mr. Hill.

MR. HILL: This question may not require an immediate answer, but it concerns basically the hundred commercial licenses you referred to in your statement.

The immediate questions that came to mind were what kind of money are we talking about? Who does the work? Who pays their salaries? Where does it come from? Who receives the money that comes from the license? Does it go back to the individual; does it go to the University for laboratory work?

It might perhaps be better or easier for you to respond later.

MR. OWENS: I can do that, though I think I can answer your question very generally. The royalty income to the University last fiscal year, if I recall the figures

MR. OWENS: I think I would argue with you on that, Mr. Johnson, because the conference report, as you know, indicates that there is no intention for other -- and they are speaking of those without the approved programs -- other nonprofit or research institutions to meet any lesser standard than required of other applicants. I would submit that means that, if we have an approved program, we do not have to meet the other guidelines or criteria. As a matter of fact, we really can't. We don't have, for example, a commercial position.

CHAIRMAN JOHNSON: Mr. Owens, thank you very much. We appreciate your comments.

MR. OWENS: Thank you.

CHAIRMAN JOHNSON: Mr. Smith, are you present?

We were slightly behind our schedule before; now we are slightly ahead of it.

Is Mr. Smith present?

Mr. Ohlson, can you jump into the breach here?

MR. OHLSON: Sure.

CHAIRMAN JOHNSON: Our next participant will be Mr. Franz Ohlson of the Association of Aerospace Industries.

If you will introduce your colleague, we will be delighted to have your statement.

MR. OHLSON: I am Franz Ohlson, Vice President of the Aerospace Industries Associaion of America, Inc. By way of background, I have been involved in patent matters for about 30 years, all of which have involved interfacing with federal agencies on matters of federal patent policy.

On my left, I have with me Mr. Daniel T. Anderson, who is Chief Patent Counsel with TRW, Systems and Energy. Mr. Anderson brings to the table the experience of direct relationship with ERDA and the operation of ERDA's patent and data policies.

Our statement is relatively brief; and as the Chairman has indicated, we will be very happy to answer any questions you may have at the conclusion of it.

strengthen the benefits derived by the public from that System. Accordingly, from time to time we have expressed views to the Congress and Executive Agencies on existing and proposed federal patent policies and procedures. These views have consistently stated that a "title" policy under which the government acquires title to inventions made under government contracts, e.g., those set forth in the Atomic Energy Act of 1954, the National Aeronautics and Space Act of 1958, (1) fails to utilize, and in fact negates, the incentives of the Patent System founded by the Constitution; (2) inhibits the investment of private risk capital and skilled manpower in research and development in areas of special or unique concern to the government; and (3) reduces competition by highly qualified firms for government contracts to which such policy is applicable.

These conclusions, as well as recommendations pertinent to the issues here being examined, are set forth in a study "Inventions and Patents on Government Contracting" conducted by AIA and provided to the Commission on Procurement. A copy of that study is attached with a request that it be considered and included in the record of these proceedings.

As to the aforenoted issues of this hearing, the first two, namely the policy ERDA should follow and any required revisions, are really one and are treated accordingly. AIA has studied these issues in depth with respect to ERDA as well as other Executive Agencies.

From the combined experiences of our member companies, AIA has concluded that a "title" policy such as now imposed upon ERDA by statute negates patent incentives and inhibits the investment of private funds in research and development as well as competition for government contracts by the firms most apt to make inventions.

AIA has also concluded that to make optimum use of the incentives inherent in our Patent System and recognize the equities of the government, its contractors, and the public, thereby encouraging private R and D efforts and full competition for government contracts, a Federal Patent Policy should provide for the contractor to retain title to inventions with rights in the government to practice such inventions for government purposes; and in the public to obtain licenses thereunder in certain situations, including where the contractor is not satisfying public needs; such licenses being royalty-free or royalty-bearing, depending upon the equities of the situation.

Let's assume for the sake of discussion that the patent incentive is an appropriate and required vehicle to bring the inventions to commercial use. The contractor-owner does not want to make it available to others.

ERDA feels it has to be made available to others in order that it be practiced commercially. But if ERDA would make it available to all comers, would that not destroy any incentive to seek licenses in the first place? In other words, if ERDA is going to require licenses to be given to third parties, where does that cut off in order to preserve some incentive for the patent in the first place, and does your proposed legislation deal with that rather esoteric problem?

MR. OHLSON: I really don't know, Mr. Johnson. What we tried to do within our Section 7 was, as far as background patents are concerned, to write in the current state of the law.

Patent lawyers generally deal in equity. When they seek to enforce a patent, they are on the equity side of the court and are subject to all the equitable defenses and equitable doctrines. Accordingly, the state of the case law, as we understand it now, is that where a contractor produces an end item and also controls a dominating patent, it would be difficult for him to seek enforcement of that patent by an injunction in any court of law.

Therefore, what we are seeking is to put appropriate parameters around the extent the courts can go in mandatory licensing.

I don't know whether that answers your question directly. As to the question of exclusive licensing of Government patents.

Our difficulty, number one, with the government acquiring title is the doctrine of merger. When the government does acquire title, does it in fact get title; or are the patent rights extinguished by merging in the superior right of the grantor?

Secondly, we look at exclusive licensing as putting the government in a very queer position. Public funds are used to bring an invention into being; additional public funds are used to create an exclusive right in the government to preclude use of the invention by the very public whose funds were used to bring it into being. Then

in jeopardy their background data rights and background patent rights.

It is negative in the sense that I can advise what I have learned from talking to industry people and, personally, when I was in industry, I have advised my management against bidding a particular contract with a particular agency because of the title policy. I had developed a proprietary position which I didn't want to put in danger by taking an R and D contract from a federal agency with a title policy.

MR. WITT: You don't have results of a survey or anything of that type. Nothing substantive can be placed in the record?

MR. OHLSON: The only substantive proof I can offer you is the Harbridge House Study, which was conducted at the request of the Office of Science and Technology in about 1965 or '66, which came up the conclusion, which you will find in our report here, that a title policy inhibits the investment of private risk capital in areas of concern to the government. In short, there is a study conducted for the federal government which indicates our conclusion on this point.

MR. WITT: Thank you.

CHAIRMAN JOHNSON: Mr. Denny.

MR. DENNY: Mr. Ohlson, the government is going to wind up owning the patents. We own patents under a license policy when the contractor decides not to file; we own patents from our own government employees.

Are you suggesting, let's take for example, in the employee patents, that these be dedicated to the public, or should we give exclusive rights to the government employee, or do you believe such inventions have no need for exclusivity?

MR. OHLSON: That is a question beyond our purview, we believe, to appropriately answer. You are talking now of the relationship of the government with its employees, and that relationship should be determined between such parties. To the extent the government acquires titles to a patent, yes, we believe there it should be dedicated. But as to the personal relationships between the government and the employee-inventor, we believe that is an internal matter for the government to handle within its wisdom.

By way of background, I believe it is necessary to consider for a moment the unique nature of the university as it functions within the fields of technological development. The university has always been one of the primary sources of creative thought in our society. This is understandable because gathered within the university one finds the many and varied educational disciplines, which in turn are the natural and traditional breeding grounds for invention. Emphasis on fundamentals and on creativity is at the core of a university's educational philosophy. This relationship between the search for fundamental causes and the resulting incentive thought that necessarily follows therefrom is particularly true where the university is technologically oriented and where research and development are significant and varied.

The university by its nature, however, is oriented to basic and fundamental research. It is not, and does not purport to be, a business or commercial entity. It does not sell goods or commodities. It is not and should not be production-oriented. The so-called "end product" of a university is the graduating student, the thesis, the journal article, the computer program, or, in the case of research, what we hope to be significant, novel, and intellectually stimulating ideas.

Inventions arising out of university research are usually incidental to the end objective of the research being sponsored. Sponsors, including the government, do not fund a university specifically to invent, but rather to extend man's knowledge in given areas that are of primary importance to the community, such as in the development of sources of and uses for energy. The sponsor does not fund a university to bring end items to the marketplace, but rather to explore the many ramifications of a problem in a way that will suggest fruitful solutions. Universities solve, or at least try to solve, basic problems. They do not market commodities.

Consequently, to transfer what has been developed at the university into something from which the public can directly benefit calls for a considerable amount of further development, testing, de-bugging, marketing, and the like.

It is a fact, and at first blush a startling one, that it costs orders of magnitude more to transfer a basic invention to the marketplace than it did initially to invent it. This is because the report or the program or the breadboard model developed at the university, however interesting

The magnetic core memory developed at M.I.T. through government funding (and for which the government received a royalty-free license) is another significant example of the need for government, industry, and the university working together within a program of patent licensing that encourages commercialization of useful ideas. (It is interesting to note in passing that the core memory which revolutionized computer technology was not the prime objective or goal of the research contract as funded.)

The ERDA policy proposes that title to inventions developed in the course of ERDA-sponsored programs be vested in the government and that the university desiring to acquire title to such inventions either apply for a pre-award waiver at the time of contracting for each individual contract or grant, or apply for a waiver of rights at such time as a particular invention is identified within the course of the sponsored program. We believe that such a policy insofar as it relates to the universities will prove to be counterproductive to the avowed aims of the ERDA patent program.

The policy, as proposed, we believe, will impose significant additional administrative burdens on the existing patent structures of universities and of government. It may well tend to discourage university invention and will, it is feared, interpose an unnecessary and possibly fatal obstruction between the ultimate licensee who is expected to commercialize an invention and the university and its inventors from whence the idea originally came. In many cases the direct interaction between the inventor and his university on the one hand and the commerical licensee on the other hand, allowing as it does for the free flow of know-how and data to strengthen and support the licensed patent or invention, is an absolutely essential ingredient to technology transfer. The uncertainty created by the government's policy of retaining title and requiring waiver applications will in many cases significantly affect potential interest from licensees. It may well work a depressing effect on the possibility of university/industry/government cooperative research projects since industry will be unable to obtain a quick, clear, and certain definition of potential rights at the initial contractual stages of such an undertaking. This policy will also add a significant element of delay and uncertainty in the technology transfer process while the university seeks to convince governments of its capability to manage an identified invention. It may dampen, if not

Under an approved IPA, universities would be allowed to license inventions at reasonable royalty rates. The royalty income earned on the invention would be returned to the university. Some of this income would be given to the individual inventor in recognition of his contribution and as an incentive for future inventions. Most of the income would be returned directly to meet the university's twin commitments of teaching and advancing research. The government would, of course, retain a royalty-free license to use the invention for governmental purposes. But of equal importance, the government would have acted as the catalyst for technology transfer, thus ensuring that the requirements of the Presidential Statement of Patent Policy have been met. By proper and effective use of IPAs, the government will best meet, in our opinion, its obligations to the public by becoming the primary means for ensuring the effective interaction of university and industry.

M.I.T. recognizes that there may on occasion be particular research projects that must be exempted from an IPA due to their peculiar nature. It also recognizes and accepts the need for certain restrictions and limitations on IPAs in order to ensure that government funding in this area is not wasted.

Institutional Patent Agreements under a properly administrated and controlled program meet the government's need for ensuring that its funding is most effectively utilized for the development of technology; the university's need for title and for flexibility in licensing the technology; and industry's need for incentives in developing technology, access to the source of invention, and certainty as to its rights and obligations from the outset.

I would like just for a moment to turn to the regulations as presently proposed and as appearing in the Federal Register dated October 15, 1975. We note in there the requirements which the Administrator must specifically include as considerations in granting waivers to a contractor. It seems that if these considerations are taken at face value and interpreted literally the university is placed at a greater disadvantage and has a higher burden of proof than an industrial contractor in applying for waiver. I specifically refer to Section 9-9.109-6(b), which sets forth thirteen considerations to be included by the Administrator in determining whether to grant a waiver at time of contracting. Apparently, a university must meet all thirteen considerations, which include an approved technology transfer capability, but an industrial contractor must meet only twelve

universities, and the exclusion of mandatory licensing provisions.

Thank you for your attention.

CHAIRMAN JOHNSON: Thank you very much, Mr. Smith.

I would like to ask you a general question. In addressing the university's need for special provisions, you put tremendous weight on the need to provide exclusive licensing to firms in order to given them incentives to commercializing inventions. Is there anything special about the university's position in this that distinguishes it from private firms in the same category?

Private firms make inventions that also require funds and capital. Is there anything particular about a university that distinguishes it from a private firm?

MR. SMITH: Yes, I think there is something. I think the nature of the invention itself is very much different.

I think you would find that at any university, and certainly I know at M.I.T., that an invention is in such a rudimentary stage relative to commercialization that it is going to take an enormous amount of time, effort, and money to transfer that prototype in a laboratory, at the professor's workbench, into something that is in fact available to the public.

I think that is why we believe that exclusive licensing is sometimes, although not always, necessary. I don't want to leave the impression that we are in favor of exclusive licensing under all conditions. We are only saying that on some occasions and sometimes some form of exclusivity is necessary in order to give a company the incentive to invest the money that will be needed for commercialization.

The exclusivity we think in terms of, by the way, is a limited exclusivity, not a 17-year term.

CHAIRMAN JOHNSON: Do you have a time period that you wish in use, or are there criteria used to determine that?

MR. SMITH: We try to follow generally the guidelines set forth by HEW, 3- to 5-years, somewhere in that area.

So of the number that we have licensed, I would say we license more than half of them on some form of limited term exclusivity, trying to follow, as I said, the HEW guidelines.

I can provide you, by the way, if you like, with an exact set of numbers for the last five years or whatever. I will be glad to send that by way of Mr. Denny.

CHAIRMAN JOHNSON: Mr. Blackman.

MR. BLACKMAN: It strikes me that at M.I.T. you must have a vast reservoir of experience in working with different agencies which do in fact have IPAs and those who don't. I wonder if you could quote case histories where the IPAs have, in effect, enhanced the transfer of technology or not. Do you have data on that?

MR. SMITH: Yes, sir.

We have IPAs now with HEW and NSF. We have just acquired the IPA with NSF, I think, a year and a half ago. The number of invention disclosures in those areas has increased. The number, therefore, of patent applications filed has definitely increased. Of course, we have to comply with the contract in disclosing inventions whether there is a title clause or IPA.

But there is a difference between inducing an inventor to give us a disclosure when he knows there is no incentive to go beyond that versus the incentive generated when he knows he has at least a chance of trying to license it as soon as possible. This makes a difference in the extra time he puts in, his outlook on it, his effort, and that sort of thing.

As far as NSF, it is too early to say anything on licensing because we have only had an IPA about a year and a half. We are in the process of attempting to license those patents which have come out under the IPA.

MR. BLACKMAN: You indicated the effect was to enhance invention disclosures. I was wondering, did this simply stimulate the number of applications that came in, or did it in fact stimulate the number of applications that resulted in a successful filing?

Did you just screen out a lot of ideas that weren't any good?

is that you do have that march in right reserved by the government if you can't show you have taken effective steps to transfer the technology. The government does have the right to march in and take the invention back.

There is a limitation in the NIH-HEW one as to the amount of royalty income that can be given to the inventor. That is not true on the NSF IPA.

MR. KIMBALL: Has the government ever exercised the right to march in?

MR. SMITH: No.

CHAIRMAN JOHNSON: Mr. Ritzmann.

MR. RITZMANN: In your statement you commented on the need for universities to license. Do you believe the universities are in a unique position to do a better job of licensing than the government?

MR. SMITH: To do a better job than the government? I think the university is in a better position to license those inventions made at the university, in a better position than the government, yes.

MR. RITZMANN: Can you elaborate on that a bit?

MR. SMITH: Yes.

Right away, you start with the fact that the inventor is there at the university. The group from which the invention came is at the university. Therefore, the transfer of know-how between the licensor and the licensee is a one-on-one relationship. There isn't any middle broker involved.

Secondly, I believe that the licensor has a very clear understanding, or clearer understanding, of the nature of the invention and what it will require on the part of industry than the government does, only because the invention, again, was worked and invented in his laboratory by Professor X and his colleagues.

And, further, we are talking now, obviously, about universities that have some sort of a licensing capability. In order to receive an IPA, you must qualify, and you must show that you at least have an in-house capability

starts at 35 percent for the first $50 thousand of gross royalties, 25 percent for the next $50 thousand, and 15 percent for gross royalties in excess of $100 thousand.

The reason for this is that we are trying to encourage small and medium type inventions because, unfortunately, you cannot rely on million dollar inventions coming along every year. So we are trying to create more incentive at the $50 thousand or even up to $100 thousand gross royalty.

MR. HILL: Thank you very much.

CHAIRMAN JOHNSON: Mr. Smith, can you think of any instances where an invention was made at M.I.T. which did not require licensing, exclusive licensing, in order to become developed to the point where it reached the commercial marketplace?

MR. SMITH: Oh, yes, very definitely. In fact, one of the ones I mentioned, core memory. Core memory was not exclusively licensed. I used it as an example to show an invention that was not the direct end item of a contract. Core memory was also a little different from other inventions, however. It was in a more finished stage of development at the university than many of the others were.

CHAIRMAN JOHNSON: That particular invention was able to be transferred relatively easily?

MR. SMITH: I am not sure it was relatively easy.

CHAIRMAN JOHNSON: Without the need for exclusive licensing?

MR. SMITH: Yes, it was not a candidate for exclusive licensing.

I don't want to leave the impression that we are indicating that we expect all our inventions must be exclusively licensed. We don't. It does depend upon the nature of the invention.

CHAIRMAN JOHNSON: How do you choose these inventions in terms of whether they need exclusive licensing or not?

MR. SMITH: We have a number of procedures for contacting licensees. We do not automatically insist that they be exclusively licensed.

there are a number of cases where new products develop in fields with absolutely no patent protection.

Have you given any thought as to this tradeoff, as to what the relative effects might in fact be?

MR. SMITH: Again, I want to make one point before I answer the question. I think I used the word "exclusivity" once. I said sometimes. You are absolutely right. There are some times when that invention, I suppose, is just so undeniably of value that everybody wants it and they are willing to go on that basis.

We have done no study that way. The only thing we have realized from our experience is that if we have an invention that is really rudimentary; that is, not, I suppose, what you would call one of the top "million dollar" winners, but, rather is an invention that will require considerable work and may or may not have a large market, and we are really not sure of that, in order to induce somebody to come in and do something with it, we find we have to offer them some exclusivity.

CHAIRMAN JOHNSON: Thank you very much, Mr. Smith. We appreciate your presentation very much.

Our next participant will be Miss Irene Till, economist with the Corporate Accountability Research Group here in Washington.

We will be delighted to have your testimony.

MS. TILL: As you may know, Mr. Chairman and members of the Committee, the Ralph Nader organization has been involved in the whole issue of the disposition of rights to government-financed research since 1971. In the energy area, we strongly supported the Senate bill passed on December 7, 1973, providing that the patents and know-how resulting from the expenditure of public funds should be made available by the government to all qualified applicants on a non-exclusive and nondiscriminatory basis.

We supported H.R. 11856 which contained a similar proposal. We opposed H.R. 11857 which authorized the grants of exclusive rights to private corporations, thus enabling them to secure monopoly positions on inventions developed at public expense.

contracts both for the Atomic Energy Commission and the Defense Department at the same time.

As early as April, 1960, he was testifying before the Congress that "patents should generally belong to the government where government money is used to develop them."

As he put it:

> "The American people are spending their money for the research and development; therefore, the patents should belong to them."

These statements are contained in Conference on Federal Patent Policies with Senator Russell Long, and I should like to include the entire exchange in the published record.

Vice Admiral Rickover pointed out that almost every area in industry is currently subsidized by the government and said that corporations "naturally desire patent rights also because this further helps to subsidize them."

He added:

> "Now, the companies apparently take a different stand toward the government than they do to their own employees. Their own employees must sign an agreement providing that the company takes title to the patents they develop. Apparently, the companies desire better treatment from the U. S. Government than they accord their own employees."

But, he stated, government research contracts in themselves, without reference to patent rights, are very attractive to private corporations. To use his words, when they get R and D contracts:

> "...they thereby get large additional sums to do such work. In this way they enhance their competitive position without having to use their own money. You will find many large corporations where the level of government research and development they do is considerably more than they spend on their own research and development. In essence, government-financed research and development subsidizes and augments their competitive position."

title to inventions to R and D contractors. At that time, he stated:

> "The firms who receive grants are a relatively few huge corporate entities already possessing great concentrated economic power. They are not ailing segments of the economy in need of public aid or subsidy. Nor is there any real need to offer patent give-aways in order to induce them to accept Defense Department research grants or contracts. I think it needs no special proof to say that government contracts are and always have been highly lucrative and much sought after. To claim that agencies cannot get firms to sign such contracts unless patent rights are given away strikes me as fanciful nonsense."

As you know, the statute setting up the Atomic Energy Commission placed restrictions upon that agency with respect to its assigments of title to patents to private contractors. Yet Admiral Rickover testified as follows:

> "I have never had a single case where the patent provision of the Atomic Energy Act influenced a company not to undertake government R and D work. In fact, many of the very same companies who operate under the Department of Defense provisions, which are far more liberal to them than the AEC rules, not only accept research and development work under the Atomic Energy Commission patent rules, but even urge us to give them more such work."

Later, in the same statement, he remarked that:

> "Our problems in the atomic energy field is we have too many contractors who want to do work under our patent conditions, and not the other way around."

Another argument, particularly popular in recent years, is that exclusive rights are warranted in order to induce contractors to make the necessary investment to bring the inventions to practical application for civilian use. Yet, when specific cases are called for to illustrate this point, no one up to the present has been able to produce a single example.

would enable them to have the patents struck down and permit them to enter the field.

Under these circumstances, it is obvious that the Administrator, in the interest of expediting his statutory functions, should have full authority for mandatory licensing of proprietarily held patents.

Under the present statute, ERDA must submit a study to the President and the Congress by the end of December, "...concerning the applicability of existing patent policies affecting the programs under the Act," and to make "recommendations for amendments or additions to the statutory patent policy."

As Vice Admiral Rickover has trenchantly pointed out in the past, the issue of a government policy for the handling of rights on research funded by the public is of the utmost importance. As he put it:

> "The real issue is whether patents, the development of which is paid for by the government, belong to the people or belong to industry."

He went on to say:

> "Furthermore, there is here involved a matter of broad national policy. At present, instead of Congress examining the patent situation, we are permitting each agency to decide for itself.
>
> "I do not believe Congress should abdicate its constitutional rights and duties and permit any individual agency in the executive branch to set up its own rules which by perpetuation over a period of many years finally assume the force of law and then are used as precedents."
>
> "The tendency of government agencies is to let things continue as they are. It is easier for them this way; they don't have to think or hurt anyone's feelings. It is also easier to have a simple rule such as the Department of Defense has, rather than to judge items on a case-by-case basis.
>
> "I believe the application of our patent law should be considered as a general policy matter

and are included with the submissions in the report to be submitted to the President and the Congress on December 31, 1975.

(Complete documents follow.)

(i) "Disclosure" means a written statement describing Foreground Technology in sufficiently complete form as to technical detail to convey to one skilled in the art or arts to which the given Technological Advance pertains a clear understanding of the nature, purpose, operation, practice, utilization, and characteristics of such Technological Advance.

(j) "To work" a Technological Advance means to utilize, sell, offer to sell, or otherwise make it (or the results of the process, or any products produced thereby) available commercially to the public in the regular course of business, at terms reasonable in the circumstances.

(k) "To the point of practical application" means to manufacture (in the case of a composition or product), to practice (in the case of a process), or to operate (in the case of a machine), under such conditions as to establish that the Technological Advance is being worked.

(l) "State" means the States of the United States, the District of Columbia, the Commonwealth of Puerto Rico, the Virgin Islands, American Samoa, Guam, and the Trust Territory of the Pacific Islands.

§ 3. Nonexclusive Licensing

(a) A Government Agency shall license all Foreground Patents to all qualified applicants therefore, on nonexclusive and non-discriminatory terms and under reasonable conditions, subject to the terms enumerated in this section, and except as provided in sections 4,5 and 7 of this Act.

(b) Terms of Grant of Nonexclusive License Made Pursuant to this Section.

(1) The duration of the license shall be for a period as specified therein, provided that the license complies with all the terms of the license.

(2) The license shall require the licensee to bring the patented Technological Advance to the point of practical application within the period specified in the license (hereinafter referred to in the Act as the "Reasonable Period for Practice"), or such extended period as may be agreed upon, and to continue itself to work it.

(3) After termination of such Reasonable Period for practice, or such extended period as may be agreed upon, the Government Agency may restrict the license to the fields of use and/or geographic areas in which the licensee has brought the patented Technological Advance to the point of practical application and continues itself to work it.

(4) The license may extend to subsidiaries and affilates of the licensee but shall not be subject to further license of assignment without approval of the Government Agency, except to the successor of that part of the licensee's business to which the patented invention pertains. Any approved sublicense or assignment shall be granted subject to the rights retained by the Government Agency as provided in the original license, and a copy thereof shall be furnished to the Government Agency.

(5) The license shall be granted to United States citizens and United States corporations on a royalty-free basis; however, the Government Agency may require other consideration therefor.

(F) The services of the Contractor are not for the operation of a government-owned research or production facility, or for coordinating and directing the work of others;

(G) The contract is not in a field of science or technology in which there has been little significant experience outside of work funded by any Government Agency, or in which any Government Agency has been the principal developer in the field; and

(H) A principal purpose of the Contract is not for exploration into fields which directly concern the public health, public safety, public welfare, or public environment.

(2) The Government Agency may thereafter grant such request for a Prospective Exclusive License, if it determines on the record after opportunity for an adversary, public hearing in which any interested person shall be permitted to participate, that:

(A) Participation of that particular Contractor is essential to the Government Agency's program (in the light of the Contractor's experience, expertise, and capabilities);

(B) Participation of the Contractor may only be secured through the grant of a Prospective Exclusive License;

(C) A reasonable effort was made to secure a proposal of equivalent merit from other potential Contractors;

(D) No other potential Contractor is reasonaly qualified for such Contract (in the light of such other potential Contractor's experience, expertise, and capabilities); and

(E) The Contractor has made the showings required by paragraph (1) of this subsection

(c)(1) At the time a Foreground Patent issues that falls within the scope of a Prospective Exclusive License, the Government Agency shall, upon request of the Contractor, license such patent to the Contractor on a limited exclusive or partially exclusive basis, subject to the terms enumerated in this subsection, and except as provided in section 7 of this Act.

(2) Terms of Grant of Limited Exclusive Grant Made Pursuant to this Subsection.

(A) The duration of the license shall be for a period as specified therein, provided that the licensee complies with all the terms of the license..

(B) The license shall state the licensee's intentions and

5. Exclusive Licensing -- after Foreground Patent Exists

(a) A Government Agency may license Foreground Patents to any qualified applicant therefore on a limited exclusive or partially exclusive basis, subject to the provisions of this section, and except as provided in section 7 of this Act.

(b)(1) The Government Agency may grant such a license, if it determines, on the record after opportunity for an adversary, public hearing in which any interested person shall be permitted to participate, that:

(A) The patented Technological Advance has not been, or is not being, brought in fact to the point of practical application;

(B) The patented Technological Advance has been available for nonexclusive licensing pursuant to section 3 of this Act after adequate public notice thereof for at least six months, and no application therefore has been received.

(C) Nonexclusive licensing will not provide sufficient incentive to call forth necessary risk capital and expenditures necessary to bring the patented Technological Advance to the point of practical application;

(D) The public interest will be served by bringing the patented Technological Advance to the point of practical application, in view of the applicant's intentions, plans, and ability itself to bring it to the point of practical application; and

(E) The proposed terms and scope of exclusivity are not substantially greater than necessary to permit the applicant to recoup its costs (and a reasonable profit therefor) for bringing the patented Technological Advance to the point of practical application,

(2) For the purposees of paragraph (1) of this subsection, adequate public notice of the availablility of a Foreground Patent for non-exclusive licensing shall be deemed to be satisfied by the publication in the Federal Register, the Official Gazette of the United States Patent Office, and at least one other publication that the Government Agency determines would best serve the public interest, of a list of the Foreground Patents available for licensing. The list shall be revised periodically to include directly, or by reference to a previou published list, all inventions currently available for licensing. Other publications on Foreground Patents available for licensing are encouraged, and may include abstracts, when appropriate, as well as

(c) Terms of Grant of Limited Exclusive License made pursuant to this Subsection.

(1) The duration of the license shall be for a period less than the terminal portion of the patent, the period remaining being sufficient to make the patented Technological Advance reasonably available for the grant of a nonexclusive license; and such period of exclusivity shall not be substantially greater than necessary to permit the applicant to recoup its costs (and a reasonable profit therefor) for bringing the patented Technological Advance to the point of practical application; provided, however, that the licensee complies with the terms of the license.

(2) The license shall state the licensee's intentions and plans itself to bring the patented Technological Advance to the point of practical application.

(3) The license shall require the licensee to bring the patented Technological Advance to the point of practical application within a Reasonable Period of Practice, and to continue itself to work it.

(4) After termination of such Reasonable Period for Practice, the Government Agency involved may restrict the license to the fields of use and/or geographic areas in which the licensee has brought the patented Technological Advance to the point of practical application and continues itself to work it.

(5) The license shall require the licensee to expend a specified minimum sum of money, and to take other specified actions, if necessary, within indicated periods after the effective date of the license, in an effort itself to accomplish the intentions and plans stated therein, or otherwise to achieve practical application of the patented Technological Advance.

(6) The license shall be taken subject to an implied right to practice the patented Technological Advance in any person who had brought it to the point of practical application, and was continuing to work it, six months prior to the effective date of the license.

(7) The license may extend to subsidiaries and affiliates of the licensee but shall not be subject to further license or assignment without approval of the Government Agency, except to the successor of that part of the licensee's business in which the patented Technological Advance pertains. Any approved sublicense or assignment shall be granted

§6. Contracts where Participation of the Government Agency is Limited to Cosponsorship, Cost-Sharing, Loan, Loan Guarantee, or Other Form of Joint Venture.

(a) If a Contractor has made a 25 per cent or greater contribution in money or other value toward the costs of a Contract, the Government Agency shall agree to license to the Contractor any or all Foreground Patents to be issued as a result of such Contract (hereinafter referred to in this Act as "Shared Foreground Patents") on nondiscriminatory, unrestricted, royalty-free, and at least nonexclusive terms and under reasonable conditions, subject to the terms enumerated in this section.

(b)(1) As a condition of licensing a Shared Foreground Patent, the Contractor shall agree to grant a nonexclusive, nondiscriminatory, unrestricted license to any qualified applicant for such Shared Foreground Patent at a royalty rate to be determined in paragraph (2) of this subsection.

(2) The royalty to be charged for such Shared Foreground Patent shall be determined by the formula $R = \frac{A}{A + B} \times Q$, wherein --

R = the royalty to be charged for such Shared Foreground Patent;

A = the contributions by the Contractor to the total cost of the Contract (and any related Contracts in the same field of technology, as determined by the Government Agency involved) as of the time the license is to be granted to such Shared Foreground Patent;

B = the contributions by the Government Agency to the total cost or value of the Contract (and any related Contracts in the same field of technology, as determined by the Government Agency) as of the time the license is to be granted to such Shared Foreground Patent; and

Q = a royalty, reasonable in the circumstances, as determined by the Government Agency.

(c)(1) Provided the Government Agency charges the royalty determined pursuant to subsection (b) of this section and reimburses the Contractor therefor, such Government Agency may grant a nonexclusive license to any Shared Foreground Patent pursuant to section 3 of the Act.

(3) such other terms and conditions as the Government Agency, in its discretion, determine are necessary or appropriate to effectuate the purposes of the program of the Government Agency, or otherwise as may be in the public interest.

(b) Any limited exclusive or partially exclusive license granted pursuant to sections 4 and 5 of this Act shall provide for --

(1) the reservation of an irrevocable, nonexclusive, royalty-free, nontransferable, unrestricted right throughout the world to make, have made, use, and sell the patented Technological Advance, by or on behalf of the United States (including any Government Agency) and State or subdivision or instrumentality thereof, and any foreign government pursuant to any existing or future treaty or agreement of the United States;

(2) automatic termination of the limited exclusive or partially exclusive (and, if necessary or appropriate to comply with subsection (a)(3) of this section, the nonexclusive) rights of the licensee three years after the grant of the license (or the Reasonable Period for Practice specified therein, whichever is sooner), and at any three year interval thereafter, unless the Government Agency has previously determined, on the record after opportunity for an adversary, public hearing (upon thirty days notice to the Attorney General to enable him to participate in such hearing) preceding the expiration of such three year (or other) period --

(A) that the licensee took effective steps to implement the intentions and plans stated in such license;

(B) that such plans have in fact resulted, or within a reasonable time thereafter will result, in bringing the patented Technological Advance to the point of practical application and in having it continue to be worked; and

(C) that the grant of such exclusivity to the licensee (or any further licensee or assignee thereunder), upon the terms and condition specified in the license, has not tended to create a monopoly, or unreasonably to restrain trade and commerce, or substantially to lessen competition, or to maintain or increase concentration in any section of the country in any line of commerce affected by the grant of such license (or any further licensee or assignment thereunder);

§8. Exception to Licensing Policy

Subject to any outstanding licenses, nothing in this Act shall preclude a Government Agency from granting additional non-exclusive licenses to Foreground Patents when the Government Agency determines that to do so would provide:

(a) consideration for the settlement of an interference;

(b) consideration for a release of a claim of infringement; or

(c) exchange for or as part of the consideration for a license under adversely held patents.

§ 10. Litigation

A limited exclusive licensee of an entire right in a patented Technological Advance shall be granted the right to sue at his own expense any person who infringes the rights set forth in his license and covered by the licensed patent. The licensee may join the United States upon consent of the Attorney General as a party complainant in such suit but without expense to the United States, and in such event the licensee shall pay costs and any final judgement or decree that may be rendered against the United States in such suit. The Government shall have an absolute right to intervene in any such suit at its own expense, and file a statutory disclaimer pursuant to 35 U.S.C. § 253 of one or more claims of the licensed patent, where appropriate. The licensee shall be obligated to furnish promptly to the United States, upon request, copies of all pleadings and other papers filed in any such suit and of evidence adduced in proceedings relating to the licensed patent including, but not limited to, negotiations or settlements and agreements settling claims by a licensee based on the licensed patent, and all other books, documents, papers, things, and records pertaining to such suit. If as a result of any such litigation the patent shall be declared invalid, the licensee shall have the right to surrender its license and be relieved from any further obligation thereunder.

Department of Justice

Testimony of

THOMAS E. KAUPER
Assistant Attorney General
Antitrust Division

before the
Subcommittee on the Environment
Committee on Interior and Insular Affairs
House of Representatives

February 1, 1974

I. DISPOSITION OF GOVERNMENT-FINANCED INVENTIONS

For approximately 20 years, controversy has existed over the proper disposition of rights to inventions and patents resulting from federally-financed research and development work. On the one hand, advocates of what has been called the "title" policy have proposed that title to government-financed inventions should normally be retained in the United States, with subsequent dissemination of these rights on a nonexclusive basis to all qualified applicants. On the other hand, advocates of what has been called the "license" policy propose that the private contractor should be given title to government-financed inventions, while the government is to be given a royalty-free license to practice the invention for its use; under this arrangement, there would be no obligation on the contractor to let other qualified applicants have access to the products of the government-financed research. Advocates of an extreme "license" policy propose to have the government agree to give the contractor rights to government-financed inventions even before the government has any reliable information as to what

follows neither a uniform title policy nor a uniform license policy. A Presidential Statement of Government Patent Policy was issued in 1963. It set forth general guidelines applicable to all federal agencies, including in general terms the conditions where federal agencies would normally take title to government-financed inventions, and those conditions where contractors would normally acquire rights to exclude competitors from government-financed research. Because this policy statement reflected a compromise among the positions of many different federal agencies, and was designed to deal with a wide variety of different patent programs, it necessarily spoke in generalities and left a good deal of leeway concerning its interpretation to the various agencies that were to operate under it.

At that time the Department of Justice acquiesced "in an experimental use of the policy as outlined" -- recognizing that the experience gained in operating under that policy statement would be most useful in making sound policy judgments in the future. 3/ With some changes, this Presidential Statement of Government Patent Policy was reissued in 1971. The Department of Justice, for reasons to be discussed below, then

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3/ Department of Justice Statement on Government Patent Policy To the Senate Subcommittee on Patents, Trade-marks, and Copyrights, July 16, 1965, p. 2.

Senate Committees. 7/ Also -- again in the context of commenting on legislation -- this Department has asserted that waiver of this right should generally occur only after identification of the invention, after evaluation of its public and commercial significance, and after review of the circumstances then existing.

As you can see from my previous remarks, both the Congress and the Department of Justice -- in cases where specific legislation has been proposed that deals with the issue of ownership of inventions arising out of government-financed research -- have normally accepted a title-oriented approach. Analysis of the actual operating experience under the two government-wide policy statements is insufficient, we believe, to justify deviating from that approach, particularly in the context of a research effort as critical as the one proposed in these bills. The reasons for this are simple. First, if public monies are used to purchase something, then the public as a whole should benefit from it -- not one contractor to the exclusion of his competitors. Having bought technology at taxpayers expense, the government should disseminate it as widely as possible to maximize its use and implementation. Suppose, for example, that the government energy contractor is a large oil company. If that contractor is working on a wide enough range of projects, it may be able to accumulate crucial future patents involving nuclear energy, coal utilization, or

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7/ E.g., Testimony before Senate Subcommittee on Patents, Trademarks, and Copyrights, April 21, 1961; Testimony before House of Representatives Special Subcommittee on Patents and Scientific Inventions, February 1, 1962; Testimony before Monopoly Subcommittee of Senate Small Business Committee, March 26, 1962; Testimony before Senate Subcommittee on Patents, Trademarks, and Copyrights, July 16, 1965.

from the fruits of the research. But do we need to offer this incentive where the government has assumed the risk? We think not. If a contractor is given patent rights in a government-financed invention, the public pays him twice -- the first time through the governmental research support, and the second time through the monopoly surcharge in the marketplace, which is reflected in the price the public pays for goods subject to that surcharge.

Third, we do not believe -- as a general matter -- that contractors need to be granted exclusive rights in government-financed inventions to induce them to accept government R & D contracts. Participation in government-financed research confers many benefits upon contractors. They can train key personnel, expand research facilities, develop know-how -- all with government aid -- and apply these assets to further their own commercial objectives. Also these contractors may receive government data and know-how inaccessible to their competitors. As a result, contractors participating in government-funded research programs can acquire a long and significant lead over their actual or potential competitors. As the role of government-financed research expands -- as it generally has since World War II, the competitive significance

First, large sums of public money are involved, and the potential commercial value of the new technology that we all hope will be produced is vast. The new energy technology will also serve to help the Nation realize the goal of self-sufficiency in energy. We believe it important that Congress make clear from the outset that this critical energy technology not be blocked off from general utilization in any way. Consolidating control of government-financed energy technology in private hands may encourage concentrations of economic power that will be difficult later to undo. The experience of the Antitrust Division has been the litigation to break up existing unlawful aggregations of patents and know-how is frequently difficult. Moreover, such relief is ineffective in the sense that it comes only after considerable injury to the economy has already occurred.

Second, as I indicated above, the government-wide policy statement necessarily deals in broad, general terms with all types of government patents. It does not focus upon the specific concerns that are peculiar to the new energy technology we need to meet the present emergency. Experience shows, as I also mentioned earlier, that the very generality of the

The study identifies, for example, categories of firms to whom patent rights are not a significant factor, either in inducing participation in government work, or fostering commercial utilization of such patents. Many government contractors, it appears, make marketing decisions without serious regard to patents. Under the existing government-wide patent policy, however, such companies are nonetheless unproductively granted exclusive rights to substantial numbers of government-financed inventions. For example, the Harbridge House study describes as "low utilizers" of government-financed inventions two firms in the field of electronic and communications equipment, each of which had over $1 billion in annual sales. Yet, in the two sample years surveyed, these two companies received exclusive rights to some 250 government-financed inventions, 202 by grants at the time of contracting, which of course preceded the time when the inventions were made. Of these 250 inventions, only 10 were utilized at all, and only one substantially. The grant of exclusive rights to companies like these, therefore, served to block others from competing effectively with these contractors, making their preferred status in important technological fields even more

It is possible, however, that in a few exceptional situations a case may be made that the government should waive title in government-financed inventions to encourage participation or commercialization. But in the context of these energy proposals, it is wholly unexplained why it will be difficult to find contractors or to provide for the commercialization of the results of their energy research. In this field, I believe that such a result is unlikely. Billions of dollars of government research money will attract many firms. A profitable market for new technology related to energy conservation or production is nationwide and assured. Both bills indicate the government will be directly sponsoring -- by demonstration projects, or full-size commercial enterprises -- complete developments in this area, through to the final consumer product. Because of the critical subject matter of the envisioned research, there is simply no justification of which we are aware to give the private contractors the right to exclude other businesses and competitors from the fruits of this government-sponsored energy research. Only by controlling the title to these new inventions can the government assure the broadest possible dissemination of this technology throughout the economy. As an editorial in the February, 1974 issue of

matter to an appropriate federal district court. The subsections provide, 13/ as a precondition for such certification, that this official make four determinations: (1) that such utilization of the patent right is reasonably necessary to develop or demonstrate an energy system; (2) that this technology is not otherwise reasonably available; (3) that there is no reasonably equivalent or alternative method that will serve; and (4) that the unavailability of this right may tend to lessen competition. If the district court upholds this determination, presumably on the basis of ordinary administrative law standards, then the patent becomes subject to mandatory licensing on reasonable and nondiscriminatory terms and conditions.

These provisions are substantially equivalent to section 308 of the Clean Air Act (42 U.S.C. § 1857h-6), on which they appear to be patterned. The Department of Justice and the Environmental Protection Agency supported section 308 over two years ago, 14/ and the Department of Justice has already

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13/ There are differences in specific language between H.R. 11,856 and H.R. 11,857. Subsections (c) in these two bills are, however, essentially similar in structure and effect.

14/ Letter of June 4, 1971, to Senator John Mc Clellan, Chairman, Senate Subcommittee on Patents, Trademarks, and Copyrights.

essential energy technology will not be required to license others if they are making this technology "otherwise reasonably available." In light of our energy problems, we believe that developers of energy-related technology should be prepared to license any qualified applicant on reasonable and mutually profitable terms. Moreover, a finding of a refusal to license, for example, as well as of the three other conditions required to trigger subsection (c), would be subject to review both by appropriate energy officials, and the Attorney General, 17/ a procedure that likely will have the effect of limiting the use of this subsection to cases of critical importance.

Nevertheless, absent a mandatory licensing provision like subsection (c), a private patent holder could interfere with the purposes and objectives of these proposed energy bills -- which are the maximization of output and utilization of energy-related technology. Speaking in economic terms, rational monopolist holding a critical patent on energy technology, would, in deciding how much to manufacture, maximize his profits by restricting utilization and output to gain a maximum monopoly surcharge (or "economic rent").

17/ See footnote 12.

applicable to use by the government (or its contractors) for any legitimate governmental purpose. For example, the Post Office once copied the patented design of an ornamental stair railing, and was held subject to royalties under section 1498. 19/

As a result of section 1498, we assume that any joint Federal-industry corporation to be created by these energy bills would automatically benefit from the mandatory licensing provisions of existing law. Indeed, this would be true as well for any government contractor working on energy problems or for government-run energy projects. Consequently, in this context, subsection (c) of these two patent licensing provisions is in fact very narrow in scope. It only deals with possible competitors of the joint Federal-industry projects or other government contractors. It simply permits these possible competitors to have equal access to American technology, so that they may compete on equal terms with these government-sponsored and financed projects.

It has been suggested that specific legislation is unnecessary because in any critical situation involving an energy patent, a federal court may refuse to grant an injunction against continued patent infringement when, in accordance with

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19/ Blumcraft of Pittsburgh v. United States, 372 F.2d 1014 (Ct. Cl. 1966).

The procedures of subsection (c) do not go beyond this body of case law -- they simply permit the responsible energy officials to suggest, on a uniform and generally applicable basis (subject to further intragovernmental review, as well as that of the Federal Courts), when such a patent is so critical to the federal energy program that injunctive relief should not be made available. The administering agencies, for example, will have an informed perspective as to what energy technology is or is not reasonable available, and what the reasonably equivalent or alternative methods of achieving the same end might be. These agencies can be expected to seek to formulate a consistent general policy in the area. Given the structure of these energy bills, the conclusion seems inescapable that subsection (c) provides a procedure that is more orderly and reasonable for mandatory licensing, than sole reliance on the existing general statutes and the present case law.

III. OTHER MATTERS

Let me now touch briefly on a few other matters. We discussed the specific language of section 113 of H.R. 11,856 in our December 10, 1973, letter to Senator Jackson. We would like, however, to make the following additional comments

hand, any contract requiring the licensing of background technology should provide for a fair return to the developer of that background technology. This is the way we would expect the background technology provision to be administered.

Third, we note that section 113 was originally proposed by Senators Hart, Long and Nelson as Amendment No. 776 to S. 1283. Part of that amendment, section 114 of H.R. 11,856, is not found in H.R. 11,857. Section 114 provides that no individual, corporation, or other business organization is granted immunity from the applicability of the antitrust laws.

An effort to suppress antipollution technology which threatened existing firms' market positions resulted in a case by the Antitrust Division. That case resulted in a consent decree on October 29, 1969, 22/ prohibiting such efforts to suppress important technology. As a result, we are concerned that these bills not be construed as granting any antitrust immunity. We do not believe that immunity for such conduct is intended by these bills. In the interest of clarity, and in order to forestall the possibility of arguments that the bill constitutes an exemption from antitrust liability, we recommend incorporation of section 114 into any energy bill this Subcommittee adopts.

22/ United States v. Automobile Mfrs. Assn., Inc., 1969 Trade Cas. ¶ 72,907 (C.D. Cal).

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PATENT POLICIES OF GOVERNMENT DEPARTMENTS AND AGENCIES, 1960

Subject: Conference of Senator Russell B. Long, chairman, Subcommittee on Monopoly, Senate Small Business Committee, with Vice Adm. H. G. Rickover, U.S. Navy.
Place: Office of Senator Long.
Time: Friday, April 8, 1960, 9 a.m.
Present: Senator Russell B. Long; Vice Adm. H. G. Rickover; Benjamin Gordon, economist, Senate Small Business Committee; Robert Hunter, administrative assistant to Senator Long; Richard Daschbach, research assistant to Senator Long.

Senator LONG. Admiral Rickover, I want to know your views in general on the issue of whether you believe that when the Government buys research and development, the Government should take the patent rights or should permit the rights for commercial usage to go to the contractor.

Admiral RICKOVER. First, Senator Long, may I thank you for giving me the opportunity to discuss this matter with you. I appreciate testifying in your office where there are beautiful southern girls and the coffee is flavored with chicory. It is very unusual.

Second, I have no prepared statement.

Third, I am not a patent lawyer or any other kind of lawyer. I can only give you my views as they have developed over a period of about 20 years in the conduct of research and development for the Department of Defense and the Atomic Energy Commission.

The patent situation today is quite different from what it was in 1789 when our Constitution was adopted. At that time, a patent was a matter that primarily concerned the individual; individuals were developing single items in a preindustrial age. Today, the development of patents generally involves large corporations and organizations. The U.S. Government alone is currently spending, in fiscal year 1960, nearly $8 billion for research and development. To grasp the significance of this sum bear in mind that the total expenditures of the U.S. Government for the 11-year period, 1789 to 1800, was less than $6 million. And in modern times the level of U.S. Government expenditures did not reach $8 billion until 1936.

Over the years I have frequently wondered whether in this modern industrial age patents are as important for industrial organizations as would appear from the statements made by patent lawyers. It may be that the patent lawyers are overemphasizing the present-day value of patents. It is quite possible our industry would not be hurt very much if we restricted the items that are patentable. I believe the important factor for an industrial organization is the know-how developed by it—the trade secrets and the techniques; these are not patentable qualities. They are something that are inherent in a company, in its methods, in its management; the kind of machine

venerable jurist bitterly opposed this on the grounds that, since torture had been used for more than a thousand years, it must be good. Apparently, this man believed that anything that has existed for a long time must be good.

However, we are not discussing the patent law per se. No one is arguing that we do away with our patent law. We are merely discussing application of that law when the Government spends most of the money for doing the work. This is the real issue.

Senator LONG. Do you believe that the billions of dollars the Government is paying for research and development of new items are adequate incentive on the part of Government contractors to develop those items to the best of their ability?

Admiral RICKOVER. Yes, sir, I believe a most important factor motivating a company to seek out and undertake research and development for the Government is the realization that, instead of spending its own money, it now obtains these funds from the Government. One frequently hears it said the Government doesn't pay enough profit to companies performing research and development; that whereas the Government allows, say, only 5 percent profit on research and development contracts, the companies can make 10 percent or more on ordinary commercial or Government business. But that is not a valid argument. A company may spend, say, 1 to 2 percent of its gross income on its own research and development work; but when they do Government research and development they thereby get large additional sums of money to do such work. In this way they enhance their competitive position without having to use their own money. You will find many large corporations where the level of Government research and development they do is considerably more than they spend on their own research and development. In essence Government-financed research and development subsidizes and augments their own research and development effort, and so enhances their competitive position. These companies realize that in order to stay in business, to be healthy, to prosper, they must do research and development work.

The very fact they constantly keep on urging the Government to give them more research and development contracts despite the supposedly low profit rate is ample proof of the great value they attach to obtaining such contracts. Our large corporations are more aware of the desirability of doing Government research and development than the small companies.

We have had no difficulty in the Atomic Energy Commission getting contractors, large and small, to do research and development work. In fact, many of them are constantly urging us to give them such work. Further, a number of companies have built their own facilities, with their own money. Many businesses want Government research and development work in order to develop a strong position. They now wish to extend this to the atomic energy and the space fields.

Senator LONG. Contracts themselves are profitable, but those contracts, even if they do not have private patent rights, also lead to additional products if these companies are forward-looking, competitive companies developing products of their own outside these Government activities. Would you agree with this statement?

Admiral RICKOVER. Yes, sir. They develop many ideas and skills from this Government-financed work; also, their people are being

information faster than we. They probably lead the world in the thorough and rapid dissemination of scientific and engineering information. I believe this is pretty good evidence there is little to the argument that unless we give industry full rights to patents where the Government has paid for the work, our economic system would be hurt. I doubt that very much. Perhaps there are too many patent lawyers in the United States.

Senator LONG. Here is another problem that concerns me, Admiral Rickover. It seems to me that if I had a company working on something that could conceivably be of immense value—for example, suppose I was trying to develop a new fuel that might be the fuel of the future; perhaps the fuel that could put a satellite into outer space or do things present fuels will not do. If I were able to achieve it first and to obtain a patent on it, that patent would be of enormous value in future years. Now, on the other hand, if my competitors were working on something similar to that, it seems to me that there would be an incentive on my part, looking after my pocketbook and stockholders, to tell my engineers: "Fellows, don't tell anyone about this thing. Hold onto it until we are able to get a patent on it." Does it occur to you that that logic might from time to time operate on work under Government R. & D. contracts?

Admiral RICKOVER. Yes, it could, except in the case of AEC and NASA work. In these fields the law places ownership of patents initially in the U.S. Government. This gives the Government the opportunity to make them available to everyone. In my opinion, this is a good system because it makes new information available quickly. Otherwise, there is the possibility of withholding information. All of our industry benefits greatly from free use of Government patents. As you have stated, it is essential in the race with the Russians that we do not handicap ourselves by delaying the emergence of new developments. The Russians have no such handicap.

The object of the patent system was to further human welfare and happiness. Take the medical profession, for example. As far as I know the medical profession rarely patents anything. New procedures, techniques, and instruments developed by doctors and medical researchers are free to be used by anyone. This is a noble attitude by a noble profession, and I have never heard it said that our doctors are loath to increase human health and happiness because they would not receive exclusive right to their inventions. And to illustrate the human misery that can result from undue secrecy there is the famous case of the first practical obstetric forceps. It was invented about 1600 by Peter Chamberlen, an English obstetrician. It was kept by the Chamberlens as a family secret for nearly a century. They wouldn't let anyone else know about it. So here we have a case where countless mothers were subjected to needless pain—pain that could have been avoided had that knowledge been made public. But the Chamberlen family kept it to themselves in order to retain a monopoly; they enriched themselves at the expense of human misery. This illustrates in a homely sort of way, a way a man can't understand but a woman surely can, the importance of not withholding information. Today I believe it would be considered unethical for a man in the medical profession to try to patent something of that sort.

Senator LONG. As a matter of fact, isn't it true that when most doctors develop a new procedure for operations, they are anxious to

Senator LONG. Now, isn't it also true that a great amount of basic research and development is not patentable at all until it has been developed into a practical application?

Admiral RICKOVER. Yes, sir. And that is why we have so many companies come to the Government, urging they be given Government funds to do research and development work; this will give them a better competitive posture in industry.

Almost every area in industry is now subsidized by the Government and since they have become accustomed to subsidization, they naturally desire patent rights also because this further helps to subsidize them.

I believe that patents should generally belong to the Government where Government money is used to develop them. In special cases where a great deal of prior work has been done by a company, an exception could be made. An exception could also be made in the case of small business if this is considered necessary by Congress to preserve our free enterprise system. But, aside from these exceptions, when the Government pays for the work the patent should belong to the Government.

Senator LONG. Now, Admiral Rickover, where you have several contractors working on similar problems for the Government, each one of whom has more than a hundred scientists and engineers working in their employ, isn't it to the advantage of the Government that every time one group or one team of scientists and engineers discovers something new that is useful, it should be immediately made available to all the others so that they can start working forward?

Admiral RICKOVER. Yes, sir; I definitely believe it should. This, of course, is the intent of Congress in appropriating Government funds—that they be spent efficiently and effectively. Such interchange of information will add to the efficient and effective way of spending Government money. Isn't this exactly what our industrial corporations do? Do they not immediately make available to all of their divisions what each division invents or learns?

Senator LONG. Well, would there not be an incentive if a contractor could see the possibility of large profits for himself by holding back on this information until he can patent it? If hundreds of millions or billions of dollars are involved, wouldn't there be some incentive to hoard and to conceal what he knows, until he is in a position to protect himself with patent rights?

Admiral RICKOVER. Yes, it might be, and I believe there have been cases—these are a matter of record—where organizations have held inventions back in order to protect their future competitive position.

Senator LONG. I believe one of the witnesses of the Defense Department, one in charge of patent matters, who had been with industry as a patent lawyer, mentioned that some concerns find it advantageous when they have something very good, not to patent it, but to hold on to it, feeling that when they patent it, it becomes available and other people then start finding out how to achieve the same thing by a method which would get around that patent.

Admiral RICKOVER. I believe we should reevaluate our patent policies in the light of the present situation—where we are faced with an implacable foe who uses every means to achieve decisive military strength as fast as possible. It is important in this critical stage in our history to reconsider the patent policies and procedures from the

Admiral RICKOVER. The scientists and engineers? Why, I don't believe they have ever given this matter serious thought. It makes no difference to them anyway. As citizens, they probably would prefer that the patents belong to the Government.

Senator LONG. Well, as far as they are concerned, they are smart enough to realize whether they are working for a contractor or for a Government agency directly that they are working for the Government.

Admiral RICKOVER. Yes, sir. This is similar to the question I am asked about our nuclear submarines—whether we have a morale problem with the sailors because they are submerged for such long periods. I answer that we don't; since there are no psychiatrists aboard these submarines, the sailors haven't found out that there is a problem, so there isn't any. Possibly, if there weren't so many patent lawyers, we wouldn't have so much of a patent problem, either.

Senator LONG. Admiral Rickover, have you given any thought to the problem involved in some of these contracts where it is provided that the Government, in letting a contract to develop some item, will accord the Government a royalty-free license to use this item for the Government, but that in no event will the Government be permitted to use this development to provide services to the general public?

Admiral RICKOVER. That, of course, is the system used by the Department of Defense, but not by the Atomic Energy Commission. Now, industry, for example, gets a great deal of benefit from the Government-owned AEC patents because they are rapidly made available to everyone. Many new developments in the atomic energy field are expedited because industry is able quickly to learn everything that has been developed and to build on that. This is a good way to get things done fast. It could even be that in this revolutionary and rapidly spiraling scientific and industrial age this is a faster way to develop our country industrially than is possible under the present patent system with its restrictions. Perhaps our patent laws should be investigated to see if they serve the intended purpose well.

Senator LONG. It has come to my attention that in a certain contract—I do not believe this was the usual case, but an exception—concerning the development of weather control systems, an attempt to develop weather control, one contractor was able to obtain a contract with a provision that anything developed under this contract could not be used to provide general services to the public. If we are ever able to develop some system to control weather, can you see much use that the Government would have for weather control, except to provide general services to the public?

Admiral RICKOVER. I definitely believe we should not turn over any element of weather control to a contractor.

Senator LONG. Well, the Government is working on weather control methods, Admiral Rickover. Assume that we eventually find a system whereby seeding the clouds might make the rain fall in the area where we want it and to prevent it from falling somewhere else. Would it not be rather extreme for us to have a provision in those contracts that the device which the taxpayers have paid to develop could not be used for their benefit?

Admiral RICKOVER. Such a provision I consider wrong, sir, because it is tantamount to the taxpayer underwriting somebody to get a

Senator LONG. Do you have knowledge of any companies who take the attitude that they are not interested in doing work for the Government unless they can keep private patent rights?

Admiral RICKOVER. I personally have never heard of any, sir. There may be some, but I have never encountered one. If a company attempted to do business with me that way I'd go elsewhere without a moment's delay. If we have to depend on any one company in the United States to do Government work we are in a pretty bad way. We had better see to it without delay there is another. This issue we are discussing also touches on the problem of national interest versus group interest. I believe too much of group interest obtains in the United States. At this critical time in our national life we should not permit any group interest to predominate over the national interest. Because if our country is not strong, neither will any of the groups in our country be strong. They all derive their strength from our Nation.

Senator LONG. Thank you very much, Admiral Rickover. You are always frank, and you give us your best advice.

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their immediate actions. This is evidenced in many ways, but it is vividly demonstrated in their treatment of patent rights.

When the Defense Department awards a contract for research, it turns over to the contractor the patents to any inventions which are conceived or first reduced to practice in the course of the contract's performance, despite the fact that the American taxpayer has usually footed all or nearly all of the underlying costs and has thrown in a fixed fee to boot. (This is the so-called license policy and is to be contrasted with the title policy, employed by the AEC, among other agencies, in which the Government takes title to such inventions, and licenses the contractors to use them on a royalty-free basis.) True, DOD does take back a license to use the pertinent invention for Government (but not for commercial) purposes. However, as a practical matter the developer usually continues to monopolize sales of the product to the Government because of existing procurement policy. And in civilian markets the contracting company has sole rights under the patent. The result is that the contractor is enabled in effect to levy a toll on the public for the use of inventions which they have already paid for. Let me draw an analogy to the construction of a bridge across a river in which the Government pays the full costs, plus a profit, for the project. Wouldn't it be absurd if the Government were then to give the bridge back to the contractor and permit him to set up toll booths to charge motorists a fee for crossing the bridge? Would it be any less objectionable if the Government's own vehicles were exempted as long as all other motorists could still be taxed by the contractor? I think not. Yet that is essentially what now happens where the Defense Department finances research and development.

And now we learn that NASA, the second biggest research spender in the Federal Government (in fiscal 1964 it will pay out $4.2 billion for this purpose), which since 1958 has followed a modified title policy, is going to change to the Defense Department policy. Why? On the declared ground that by giving the contractor a patent on the invention he made at Treasury expense development is likely to take place more quickly. As subsequent discussion will indicate, that claim is supported neither in logic nor in the history of economic development. The real, though unexpressed, reason is probably that NASA feels at a disadvantage in competing for the attention of contractors who also may transact research for the Defense Department. In both cases costs are covered and a comparable fixed fee is paid—so why not deal with the agency that adds a fat bonus in the form of patent rights on any inventions that are discovered. If this, as I suspect, is the actual reason for NASA's radical shift in policy, then the proper corrective step is to alter the Defense Department's policy, not the other way around. After all, if we found that one department was giving away public property it wouldn't make sense for another department also to start giving away property just so it wouldn't be at a competitive disadvantage—and yet this seems to be exactly what NASA now plans to do.

Actually NASA's new patent policy is at odds with the spirit of the President's own recent declarations on the subject. In his economic message to the Congress on January 21, 1963, he acknowledged that in meeting the challenges of defense and space—

we have paid a price by sharply limiting the scarce scientific and engineering resources available to the civilian sectors of the American economy.

I. The Character of Contemporary R. & D.

Before undertaking a more careful examination of the Government's patent policies and their implications for the economy and the society generally, we should first sketch out some of the main contemporary characteristics of R. & D. in the United States. What emerges is a picture of considerable imbalance: Most of our research money is going for very limited purposes and is being awarded to a comparatively small number of large private corporations whose facilities are located in two principal geographic areas, the west coast (especially California) and the Northeast (Massachusetts and New York most notably). A pattern of intense concentration in the expenditure of Federal research funds thus already exists. Unless this characteristic is deliberately offset we can expect, over the years to come, still further maladjustments. In my estimation, it is imperative that the fruits of taxpayer-supported research be diffused throughout the economy, promptly and with the least possible additional cost, so that all businesses and our entire citizenry will share in the benefits rather than the few firms that actually do the research.

Outlays for R. & D. in the United States constitute one of the most dynamic forces in the entire economy, capable of substantial good or much evil, depending on the care with which they are administered. Between 1953 and 1961, for example, while the GNP was rising only 43 percent, outlays for R. & D. from all sources, public and private, rose by about 200 percent. In the more recent years, R. & D. has been expanding at a faster rate than virtually any other sector of the economy: From 1957 to 1961, the GNP advanced 17 percent, R. & D. by about 50 percent. In the year 1961-62, approximately $15 billion was spent on research in this country, a figure which compares with a little over $14 billion in the previous year and with only $10 billion as late as 1957. Since the Federal Government provides about two-thirds of all funds for the performance of R. & D. (private firms do about 75 percent of the actual work) and since currently the Government is spending for research purposes at an annual rate in excess of $12 billion, it is reasonable to suggest that research may now run to as much as $20 billion a year (not far from the $24 billion being invested in residential housing). Table 1 shows the relative importance in R. & D. of the various sources and performers.

TABLE 1.—*Intersectoral transfers of funds used for performance of research and development, by source and performer, 1961–62 (preliminary)*

[Dollar amounts in millions]

Sector funds for performance of R. & D.	Federal Government	Industry	Colleges and universities	Other nonprofit institutions	Total	Percent distribution, R. & D. sources
Funds provided by:						
Federal Government	$2,090	[1] $6,310	[1] $1,050	[1] $200	$9,650	65
Industry	----------	4,560	55	90	4,705	32
Colleges and universities [2]	----------	----------	230	----------	230	2
Other nonprofit institutions [2]	----------	----------	65	90	155	1
Total	2,090	[1] 10,870	[1] 1,400	[1] 380	14,740	100
Percent distribution, R. & D. performance	14	74	9.5	2.5	100	----------

[1] This amount includes funds from the Federal Government for research centers administered by organizations under contract with Federal Agencies.

[2] Data include State and local government funds spent for research and development. All data are based on reports by the performers.

Source: National Science Foundation, Data Sheet on Research and Development, February 1963.

Third, most of our research attention is concentrated on national security and the conquest of space, as is reflected in our allocation of Government R. & D. expenditures by industry. Obviously we are merely responding to the international challenge rather than unilaterally seeking out new scientific frontiers. In 1960, as a consequence, two industries, electrical equipment and communications, and aircraft and parts, accounted for more than three-fourths of Federal research expenditures (see table 3). Meanwhile, other industries of great civilian interest are starved. In the years to come this may increase our problems in world markets; Germany and Japan, for instance, devote about 85 percent of their research to civilian problems.

TABLE 3.—*Federally financed research and development performance, by industry and size of company, 1959–60*

Industry and size of company	*Millions of dollars, 1959*	*Millions of dollars, 1960*
Total	$5,638	$6,117
Distribution by industry:		
Food and kindred products	5	9
Textiles and apparel	6	8
Lumber, wood products, and furniture	2	3
Paper and allied products	(1)	(1)
Chemicals and allied products	151	182
Industrial chemicals	114	128
Drugs and medicines	3	4
Other chemicals	34	49
Petroleum refining and extraction	25	26
Rubber products	39	37
Primary metals	14	16
Primary ferrous products	1	2
Nonferrous and other metal products	12	14
Fabricated metal products	43	38
Machinery	413	372
Electrical equipment and communication	1,597	1,617
Communication equipment and electronic components	810	892
Other electrical equipment	787	725
Motor vehicles and other transportation equipment	222	211
Aircraft and missiles	2,769	3,187
Professional and scientific instruments	166	202
Scientific and mechanical measuring instruments	116	138
Optical, surgical, photographic, and other instruments	50	64
Other manufacturing industries	94	103
Nonmanufacturing industries	89	104
Distribution by size of company (based on number of employees):		
Less than 1,000 (5 percent of total funds)	284	296
1,000 to 4,999 (5 percent of total funds)	263	310
5,000 or more (90 percent of total funds)	5,091	5,511

[1] Not separately available but included in total.

Source: National Science Foundation (NSF 63–7), "Funds for Research and Development in Industry, 1960," tables IV, A–5, and A–6.

Fourth, not only is the main thrust of our research effort largely confined to defense and space, but as between the various fields of scientific endeavor we are concentrating primarily on engineering and the physical sciences and doing very little especially for the social sciences. It is paradoxical that we are willing to spend $20 billion to reach the moon, but practically nothing to increase our limited knowledge of how the economy functions or how earthbound transportation might be made more efficient or how education might be improved or how the problems of juvenile delinquency could be

expenditures. That report showed that one State, California, received 41 percent of the total, New York another 12 percent, and Massachusetts 6 percent. The rest of the Nation got what was left over. This has had a particularly severe effect in the Middle West with its magnificent universities exporting the bulk of their scientists to the west coast (of the 250 Ph. D.'s produced in the Middle West in 1961 that went into industrial work, all but 2 went into research work in other parts of the country). Texas, too, has felt the pinch; in fiscal 1961 it was awarded barely over 1 percent of the Defense Department's research funds. It is worth emphasizing that the geographic distribution of R. & D. awards by the Defense Department is even more unbalanced than it is in the case of hardware procurement, though even here a marked unevenness is evident. In fiscal 1962, for example, California concerns received about 25 percent of all defense prime awards (a figure which is not reduced when subcontracting is taken into account). NASA doesn't help to alleviate this situation; in fiscal 1962, 47 percent of its procurement was in California.

Recognizing the marked degree to which Federal research awards are now concentrated in a very few geographic areas it is of the utmost importance that the advances made in the process of this research be spread widely throughout the country. We must take measures to insure that companies situated throughout the United States, not just in a few favored locations, are free and able, as a practical as well as a legal matter, to use this knowledge and the relevant inventions in both military and civilian applications.

Unquestionably the preceding characteristics of Federal research expenditures can have serious longrun consequences for the economy and for the entire society. They can accentuate the impacts of old problems and create new ones, or with wise and enlightened administration, research outlays can be harbingers of progress. If properly distributed, research awards can, as an instance, moderate the powerful existing trend to concentration by deliberately favoring qualified smaller businesses (between 1947 and 1958 the 100 largest corporations increased their share of value added by manufacture from 23 percent to 30 percent). In any event, it is incontrovertible that our present research effort will lead to the discovery of many new products and processes that will increase efficiency and make human life safer and more rewarding. NASA-sponsored work has already led to more than 600 inventions. Accordingly, in light of the scale and nature of our governmental research activities we must make every effort to insure that they work to the good of the public generally rather than to the advantage of the few. Many improvements should be made, but here let me urge particularly that steps be taken promptly to guarantee that the technical information we are amassing in the course of our huge Federal research effort be exploited to the maximum extent. This is now not the case. As I see it, it can only be done if the Government retains title to inventions which it generates and if a special agency is established and charged pointedly with the mission of patent development.

II. Concentration in the Award of Government R. & D. Contracts

As the earlier discussion has indicated, there is now a pronounced imbalance in the distribution of Government funds for R. & D. As

Moreover, these same corporations play a major role in civilian markets, with their positions likely to be improved through their Government-supported research programs.

If the mammoth corporations that currently receive most of the Government's research outlays are also permitted to seize and control the inventions which they make with taxpayer support, their leadership in both Government and commercial fields will be strengthened and, indeed, actually promoted. Today's research provides an "inside track" on tomorrow's manufacture. This is precisely why most corporations eagerly seek out Government research contracts, for they recognize that this is little more than a prelude to production possibilities and to civilian applications. The "risk" of actual loss is virtually nonexistent since the Government typically covers all the costs incurred and adds a fixed fee to boot. The probabilities are very great, however, that a given research effort will produce some useful discovery, one that may very well lead to Government follow-on sales and subsequent civilian uses. Boeing's experience with the 707 jet transport is illustrative, as is also North American's new Sabreliner. In both instances Government research contracts led to the development of planes that now are being widely sold in the civilian market. Boeing gained a valuable lead in the commercial jet passenger market, and now North American is striving for a similar position in the sale of jet passenger planes for private use. Indeed, a North American ad in the February 1963, issue of Fortune (p. 187) proudly declares that:

> More than 90 Sabreliners have already proved themselves in military service. Now this remarkable twin-jet aircraft is available for purchase. The Sabreliner has over 25,000 hours flying time to its credit. It has a cruising speed of 500 m.p.h. and flies at 40,000 feet, above weather. A six-passenger, all-weather, IFR Sabreliner has a range of 1,835 statute miles.

These two cases are by no means unique, for military and space research inevitably leads to the birth of new products and techniques that have substantial civilian value. The development during World War II of nuclear power, blood plasma substitutes, various drugs, new high temperature alloys, and a number of plastics suggest the range of possibilities and show the close relationship between the military and civilian sectors. On February 11, 1963, NASA let a contract to the Marion Co. for the development of a huge piece of earth-moving equipment designed to transport the Saturn rocket; obviously this piece of machinery can have civilian applications in the moving, say, of oil drilling rigs or in the mining and construction industries. A pressure suit designed for use by men in space and financed by NASA has already been found to be of immense, and unexpected, benefit to those suffering from heart disorders and other afflictions that might otherwise require their remaining immobile.

Research projects directed to the development of new types of light, warm, all-weather clothing can surely lead to civilian benefits. The work on new fuels and engines may have profound effects in the automobile, petroleum, and related industries. Military experiments with radiation in the processing of food have broad potential, as have the VTOL projects. Many of the new paints and epoxy glues now being commercially sold in the civilian market are the result of basic research done on the coating for nose cones of space vehicles. It is actually hard to think of an area of endeavor not affected by

available on terms that may be inimicable to the public interest, will nevertheless advance the general welfare by stimulating risk-taking and accomplishing disclosure of new discoveries.

However, in the case of most Government-financed research, the argument breaks down, for here the crucial element of risk—that is, the possibility that the expenditure of time and money involved will lead to an actual financial loss—is absent. Virtually all Government research contracts are on a cost-plus-fixed-fee basis and normally there is no substantial chance of economic harm. The only "risk" involved is that a given research undertaking will be a total failure and produce no useful results (a rare event, though the product may not take the form originally contemplated). Even in the latter case, it is important to note, the fixed fee may represent a sizable profit since the contractor makes little, if any, investment, the Government covering the variable costs and also frequently providing much of the necessary equipment. Corporate spokesmen are prone to point out that the fee may represent only a modest ratio of the costs incurred; but in measuring the rate of profit the only proper base is invested capital. So judged, much of Government-supported research appears highly profitable. In 1961 several major defense contractors earned excellent profits, after taxes, on their net worth—as with Lockheed (19.8 percent), North American (12.1 percent), General Tire-Aerojet (14.6 percent), Boeing (13.8 percent), and Martin-Marietta (13.6 percent). That year the median return for the country's 500 largest industrial corporations was 8.3 percent.

With the element of risk of financial loss removed, the case for patents and for the acquisition of patent title collapses, for there is then simply no reason to confer a monopoly grant. Moreover, contractors have additional reasons to undertake Government research that in themselves provide a strong creative impetus without regard to the locus of patent title. A stream of research programs emanating from and paid for in full by the Federal Government leads to the development of products in whose manufacture for military and civilian markets the developer gains a marked advantage. Typically, the Government returns to the inventor for follow-on production contracts, awarded on a noncompetitive basis, on the ground that the developer possesses know-how in respect to the relevant product or process that means lower costs and faster delivery. Any informed contractor is well aware of this, and realizes that these benefits go hand in hand with research. What is involved, therefore, is a sort of snowball process in which research leads to the accumulation of experience that, in turn, generates production awards which provide still more experience and put the firm in a position to obtain further research work, and so forth. In addition, a great deal of the experience which is so amassed can be effectively kept secret so that other firms, even though conceivably they might be licensed to manufacture the pertinent item for Government purposes, cannot compete on an equal footing with the original developer.

Research projects afford still other benefits, quite apart from the vital experience they provide in relationship to possible production opportunities. For one thing, they permit the assembly (at large salaries) and retention of a trained technical staff and by covering variable costs and also offering a fixed fee they make a valuable contribution to the reduction of overhead expenses.

of all the patents issued in the United States, they, of course, do not invent—humans do that (including many individuals who are not associated with the big corporate laboratories and who continue to make numerous important discoveries). And it is these very individuals who must, if they make an invention, turn over the applicable patent rights to their employer. Private firms hence require of their inventors precisely the sort of arrangement which they so vehemently insist will be technologically inefficient and unfair if asserted by the Government. They can't have it both ways.

Perhaps the growth of large institutional laboratories that demand of their scientific employees the assignment of any inventions they make suggests the need for some sort of novel means by which the Government would seek to encourage inventiveness by offering rewards directly to inventors. This is done now in West Germany, and bills have been introduced in the Congress that would set up a similar system on a limited basis in the United States. Other approaches might also be considered. For example, legislation might require that all companies demanding assignment of patent rights from their workers establish a meaningful rewards program. Many companies already have such programs in operation, but frequently these offer the employee little more than a pittance; and a good many concerns have no special form of compensation whatsoever. This entire problem warrants close attention, though I will not pursue it any further on this occasion.

WILL INVOCATION OF THE TITLE THEORY HAMPER DEVELOPMENT?

The grant of a patent confers a monopoly, a legal and, perhaps, an economically limited one—but a monopoly nonetheless. Both in theory and in historic fact this circumstance strongly urges that development will be retarded rather than stimulated.

A noted economist, J. R. Hicks, once said that monopolists—

> are likely to exploit their advantage much more by not bothering to get very near the position of maximum profit, than by straining themselves to get very close to it. The best of all monopoly profits is a quiet life.

In the case of patents, a monopolist, of course, may aggressively develop the applicable invention, but the crucial fact is that he is not compelled to do so since he is sheltered from the hostile winds of competition. Moreover, the monopolist is likely to undertake development of a new invention, or other technique which lies within his range of control, only when he foresees a profit return that is at least equal to that which he is already receiving on existing investment (a return that, because of his monopoly, generally will be well above the going recovery on investment being earned in the economy). Take an example. In the late 1950's the largest steel companies elected not to invest in certain types of new steelmaking equipment on the ground that the estimated profit was beneath the (high) rate of return which they were then earning on their invested capital. Other steel producers, however, many in foreign countries and some smaller ones in the United States, viewed the problem differently and undertook the pertinent investment. Competition thus led to the inauguration of new, more efficient techniques that would not have been made until much later by the bigger firms in the industry.

This is why in the case of cellophane, Du Pont was able to realize an extremely high average return on investment, after taxes, of over 24 percent between 1924 and 1950. Henry Ford once put it this way in speaking of patents: "They don't stimulate invention—that is an exploded theory. But they do exploit the consumer, and place a heavy burden on productive industry."

By conferring a patent on its contractors, existing DOD (and the proposed NASA) policy promises greatly to hinder the development of new products discovered at taxpayer expense and to allow the firms involved to impose a surcharge for making commercially available that for which they have usually already been compensated. If these new scientific discoveries are to be diffused rapidly throughout the economy, the Government must put itself in a position where it can achieve competition in respect to both the pertinent Government and civilian markets. That means taking title.

WOULD A TITLE POLICY MEAN HIGHER PROCUREMENT COSTS AND LEAD TO OTHER DIFFICULTIES?

Probably the most honest answer to this question is that no one knows for sure. Those who favor the license policy contend that costs would soar fantastically if a title policy were inaugurated. Admiral Rickover, among others, argues to the opposite effect. All factors considered, I am inclined to believe that any increase which might result would be minor, certainly much less than supporters of the license policy allege. My reasons for drawing this inference stem largely from the fact that most corporations engage in research for the surrounding advantages it promises—subsequent production opportunities and the chance of securing a leading position in related commercial markets, not basically to obtain patents. These motives still would remain even if a title policy were invoked. Most firms that perform the research which leads to inventions obtain invaluable experience (at taxpayer expense) which gives them a long lead in production and civilian applications whether or not they obtain a title to the applicable patent. A writer for Fortune concluded that—

> given the size of the Government budget for R. & D. it should be obvious that a lot of corporations are able, and willing, to live within (the limits imposed by the license policy) on their patent rights. No matter who gets the patents, it is still possible to use R. & D. funds so that young scientists can be trained, research departments upgraded, and the production techniques of nuclear energy and space science learned at Government expense.

It is relevant to note that in January of 1963 more than 2,000 contractors came to Washington in the hope of obtaining contracts from NASA, even though most of this agency's awards are for research and even though it had not yet effected a change in its regulations that would give the contractors a patent on inventions which they might make during the performance of its contract research work.

It is also essential to squelch the impression, advanced by many corporate spokesmen, that Government representatives must, hat in hand, beg private business firms to take on research projects. This is just so much hokum. Every alert firm has agents in Washington and at other contracting centers whose mission is to search eagerly for any research projects that it might undertake. Again, the reasons

ernment retention of patent rights. The House bill that was passed contained provisions adapted from the title-retention clauses of the Atomic Energy Acts, modified by the Administrator's right to waive the agency's claim in what, it would appear, were intended to be exceptional circumstances. Comparable language was written into the Senate bill, although upon passage these portions were deleted so as to give the committee of conference greater discretion. From this committee came the present section 305, which, though it varies from the pertinent House and Senate bills, still reflects the original congressional spirit since it presumes that the patent to an invention made in the performance of the NASA contract belongs to the agency.

In its original set of regulations NASA itself seemed to have accepted the argument that Congress in setting up the agency intended that it possess the title at least to "those inventions which pertain essentially to advancing the technology of space flight." (I quote here from the testimony of John A. Johnson, NASA's General Counsel, who appeared before this subcommittee in December 1959.)

Now NASA has changed its mind. Section 1245.103 of its proposed regulations expresses a bias in favor of "private retention of exclusive rights." While certain classes of inventions still will be kept under NASA's title, the dominant theme favors patent giveaway. Large, entrenched firms that have already gained a strong position in the relevant industries are especially favored since one category of patents to which title will be relinquished includes inventions—

> in a field of technology in which the contractor has an established commercial interest and in which, prior to such contract, it had acquired technical competence demonstrated by factors such as know-how and patent position.

This means that title will generally pass to the well-established companies, bolstering their position and insulating them more securely from the forces of actual and prospective competition.

The reasons for NASA's abrupt shift in policy are not at all clear. One claim made by the agency, namely, that by giving exclusive—that is, monopoly—rights for development to the contractor exploitation will take place more quickly, is so unconvincing that the search must continue for more valid arguments. Perhaps, as I have suggested earlier, the real explanation lies in NASA's belief that it is at a competitive disadvantage vis-a-vis DOD (because of the latter's patent giveaway) which may make its operations more difficult. I see no concrete evidence to support such a thesis, but if it is true, then, the proper solution is to alter DOD's patent policy, not to conform NASA's to it. Here, as elsewhere, two wrongs don't make a right.

IV. Putting Government-Financed Inventions to Use: The Need for an Inventions Development Authority

By taking title to inventions conceived or first reduced to practice in the performance of tax-supported research, the Government will be in a position where it can exploit the relevant scientific discoveries—if basic changes are made in our institutional arrangements for the utilization of latent inventions. As things stand now neither the agencies of Government nor the various private developers are making any broad-based effort to apply the new knowledge we are accumulating. Admittedly, some of the products and processes are being put to use by their monopolistic titleholders. But the simple fact is that most of

significant portion of their attention to the broad social use of the inventions which they inspire, aside, that is, from such immediate relationship as they may have to defense and space. To compensate for their lack of interest in this problem, it is imperative that there be established a new agency charged pointedly with the development of inventions.

To date only very limited efforts have been made to collect and distribute the information originating in Government research projects. A few Government units—most notably the Armed Services Technical Information Agency and the Commerce Department's Office of Technical Services—are now provided with comparatively small sums of money to prepare and publish abstracts of research. But the reporting standards are low (employees of the Defense Department and NASA who monitor these documents are not concerned with their adequacy or style); many reports are never submitted at all, in spite of contractual requirements; and most are written in a fashion suggesting that the researcher wished to keep his findings secret (which, no doubt, is a common objective). Not unexpectedly, therefore, the abstracts based on these reports are of limited utility—of more help in any case to engineers than to businessmen (and it is the latter who must sense a possible use for a new discovery before it can be placed at the disposal of the society). In short, no carefully considered, systematic effort is being made to process and exploit the ever-expanding flow of technical information.

New technical discoveries do not automatically come into use, as if guided by some benevolent, unseen hand. This is particularly true where the information originates in the course of Government research programs which are not primarily intended to generate products for civilian markets. Nevertheless, from this process come inventions which have definite commercial applications; a great deal of the knowledge so acquired has some sort of potential value in the civilian sector. However, neither the Government nor the respective private companies will, as things now stand, engage in the kind of large-scale program needed to employ this scientific knowledge productively.

Accordingly, some sort of new agency—an Inventions Development Authority—must be created to take on the responsibility. As I see it, the Authority would be charged by statute with the task of exploiting, to the fullest possible extent and with the least delay, all Government-owned patents and the associated scientific knowledge. In some cases this would require additional development work—for example, the construction and demonstration of prototypes. Further research of other sorts might frequently be essential. No doubt some experimental work would be required simply to devise better techniques for the collection, processing, and dissemination of information concerning products and processes available for commercial application. (In this regard the President's proposal of a Business Extension Service, analogous to the Department of Agriculture's highly successful Extension Service, is a step in the right direction.) In some instances the Authority would perhaps have to engage in a deliberate sales campaign to generate interest in a new discovery among private concerns. Actual application would, of course, be

CHAIRMAN JOHNSON: Thank you very much, Ms. Till.

I am sure we have a number of questions.

Mr. Blackman.

MR. BLACKMAN: I guess I have a little trouble with the analogy of the bridge across the river that you quote from Professor Barber. It seems to me that the more appropriate analogy would be a case in which the government actually spends for the R and D portion of a bridge maybe 10, 15, 20 percent.

Then the rest of this total is to induce the private sector to put up the rest of the span.

I wonder if you would comment on that, please.

MS. TILL: Yes, of course.

It seems to me that in that kind of situation, a quarter of the bridge is put up by the government, and three-quarters of it is left to private industry -- Is that your point?

MR. BLACKMAN: Yes, that is roughly the breakdown of R and D costs versus the total commercialization cost.

MS. TILL: At the outset one has to recognize that only very large corporations are going to be in a position to put up the money for the remainder.

So, in effect, the federal government itself becomes the instrument for the strengthening and intensification of corporate size and monopoly.

It seems to me that is a pretty lousy kind of public policy.

CHAIRMAN JOHNSON: Mr. Fumich.

MR. FUMICH: Getting away from that, but strictly in the area of research, what if a company puts in 50 percent of the research money itself along with the government? How would you treat that example? Would you still put all rights in the government sector?

MS. TILL: It is very difficult to answer a question like that. Does the contractor have an established

MR. DENNY: Following up on that, if we had compulsory provisions, I assume it would be applicable to large as well as small corporations.

I was wondering about your opinion on the effect it might have in giving advantages to large corporations over small.

MS. TILL: Well, as a matter of fact, until quite recently the Department of Agriculture engaged in the practice of granting licenses on its developments to all comers. And both large and small firms participated, and the small firms seemed to have done quite well.

It was not until just before President Nixon's patent policy memoranda was issued permitting exclusive licenses of government-owned patents that the Department of Agriculture changed its policy.

And in hearing after hearing before the Congress, Agriculture officials stated that, where there was a useful invention, there was absolutely no problem in finding licensees.

In fact, many firms, knowing the Department of Agriculture's policy, would go right ahead and start making the product, feeling that there was no need to secure a formal license.

Both large and small seem to have survived.

CHAIRMAN JOHNSON: Mr. Eden.

MR. EDEN: I certainly share your hope that Admiral Rickover will be here this afternoon so he can, himself, respond --

MS. TILL: I beg your pardon?

MR. EDEN: You expressed the hope that Admiral Rickover would be here to give us his views. I share that hope. I have difficulty in that if he is not here to respond to questions on the remarks you have lifted from his prior testimony --

(Admiral Rickover has presented his views on ERDA patent policy in response to a request from R. Tenney Johnson. The letter containing Admiral Rickover's views is included at the end of Ms. Till's testimony.)

Of course, there is that question of how useful and valuable are these inventions.

I recall a statement of Admiral Rickover's to the effect that really only a very small portion of the inventions that he had been familiar with under the AEC and DOD were commercially usable.

MR. EDEN: We have a situation where approximately 26,000 government-owned patents are available for licensing, but only about 5 percent are licensed.

Let me agree with you that the remaining 95 percent are probably useless and have no value.

Would you have any objection, then, to allowing us to offer exclusive licenses on those useless patents, i.e., the 95 percent which have not been licensed in the past two years?

MS. TILL: Well, that seems to me clear that every patent should first be offered on a nonexclusive, nondiscriminatory basis. The problem to me is that once the Administrator of an agency has the authority to grant exclusive licenses, the thing gets out of hand.

Take for example what happened in HEW back in about 1970.

A firm, under a Federal research grant, developed a method of handling the solution in kidney machines so that the solution could be reused. The company which did the research applied for an exclusive license to exploit this invention.

Another company moved in when they heard about it, and asked for a nonexclusive license. The request was denied by HEW. The first company received the exclusive license.

I think that situation can become rather frequent.

MR. EDEN: Is it your feeling that indeed the firm which applied for the nonexclusive license should have received a nonexclusive license?

MS. TILL: It seems to me that the agency should certainly first offer it on a nonexclusive basis.

MS. TILL: I am suggesting that it would be a far better policy for the government to carry through the research to completion. If there is nothing useful there, drop it. If there is something valuable, proceed.

Now, after that, it seems to me that if there is still someone who wants it, why, possibly, with safeguards for the protection of the public, exclusive grants would be warranted if no one is interested in taking a nonexclusive license.

We keep hearing about these things, but it is always in the abstract.

MR. EDEN: I think I can supply you with a list which identifies the 95 percent of those 26,000 patents that aren't being used.

I think we would find that indeed the agencies which were responsible for their development had no intention of bringing them to the marketplace themselves on account of funding difficulties, or because it was no longer within their mission and so on.

Would you have any objection if any of these were offered for licensing on an exclusive basis, having first been offered on a nonexclusive basis for a period of two or three years in the hope that they would be commercialized and brought to the marketplace?

Would you allow any of them to be licensed exclusively?

MS. TILL: I think the result has very unfortunate implications and should be avoided and can be avoided by a more intelligent government policy.

CHAIRMAN JOHNSON: Is it your position, Ms. Till, that the government should develop every idea and every invention to its ultimate commercial realization, because many inventions are made as by-products of government work and are not developed by the government, but they are made nevertheless.

If they are going to be brought to public use, somebody has to develop them. In many cases, the only way to do that is expend private funds or expend public funds.

allocated to smaller firms in a distinctly competitive mode.

We are trying to develop a number of new approaches to the solar heating and cooling problems at the same time and then, after we get initial results, we try to feed them back and stimulate more ideas.

We want to get as many firms as possible involved in this. We are certainly not neglecting any of the larger firms, but we are funding a substantial number of the smaller ones.

What should we do with regard to the patents that may be developed or may be made under such research? Should we require the smaller firms to give them up as much as you would want us to require the larger firms to give them up?

MS. TILL: That is, by the smaller firms giving them up, the larger ones will seize the opportunity and steal the market away; is that your feeling?

CHAIRMAN JOHNSON: That is possible. That is a conceivable result.

MS. TILL: In general, it seems to me that if one is going to have a competitive economy, it should be a free-for-all.

On the other hand, I concede that there may be some protections that should be afforded for small, struggling firms that need to get on their feet. If exclusive rights are to be granted, I have a proposal here containing provisions designed to protect the interests of the public.

CHAIRMAN JOHNSON: Mr. Denny.

MR. DENNY: Mr. Eden made a suggestion I would like to second, Mr. Johnson. The example that Ms. Till has utilized on HEW or NIH invention in the artificial kidney machine area, I believe we have testified to before.

I am not totally familiar with all the facts, but I think if we do ask for that to be clarified for the record, we will find out that the firm which was asking for the nonexclusive was the predominant firm, if not the only one which sold such equipment in the market.

UNITED STATES
ENERGY RESEARCH AND DEVELOPMENT ADMINISTRATION
WASHINGTON, D.C. 20545

January 20, 1976

R. Tenney Johnson
General Counsel

ERDA PATENT POLICY

Your memorandum dated December 30, 1975, invited my comments on ERDA's new patent policy. Attached is a copy of my 1961 testimony before the Senate Judiciary Committee on this subject. Nothing I have observed in the past 15 years has changed my view that patents developed at Government expense should belong to the Government.

In the field of nuclear energy, the Atomic Energy Act requires that the Government take title to inventions made or conceived in the course of or under any contract, subcontract, or arrangement entered into with or for the benefit of the Commission (now ERDA). Although the Act provides authority to waive these rights when deemed appropriate, the Atomic Energy Commission granted few waivers.

In the non-nuclear field, the Federal Non-Nuclear Energy Research and Development Act of 1974 similarly directs the Government to take title to inventions made or conceived in the course of or under any ERDA contract. The Federal Non-Nuclear Energy Act also provides waiver authority and specifies certain considerations that should be taken into account in determining whether a waiver should be granted. However, the Joint Conference Report on the Federal Non-Nuclear Energy Act indicates that a relaxation of waiver rules is not contemplated.

Specifically, the Conference Report states:

> "Government patent policy carried out under the NASA and AEC Acts and regulations, and the Presidential Patent Policy Statement with respect to energy technology, has resulted in relatively few waivers or exclusive licenses in comparison with the number of inventions involved. The conference committee expects that similar results will obtain under section 9."

sufficient inducement in nearly all cases to obtain industry participation in ERDA programs. Industry lobbyists, in opposing unwanted regulations, frequently threaten that their clients will refuse to accept Government contracts. They used the same argument in opposing the establishment of the Cost Accounting Standards Board, the continuation of the Renegotiation Board, and other forms of regulation. Yet many of these very same contractors continue to lobby extensively to get new contracts.

b. To make the technology developed at Government expense available for public use, tends to enhance competition, not restrict it. In this way, any firm can use and expand upon Government financed technology.

The transfer or application of new technologies is furthered when the Government makes publicly financed technology available for general use. Some contractors have complained that the Atomic Energy Commission policy of retaining title to inventions developed at Government expense is too restrictive. In the Shippingport reactor project the Government published the technology, and any firm so desiring could use it. That project was the forerunner of the pressurized water reactors now being used extensively in the civilian nuclear industry. Contractors were willing to accept contracts without the promise of getting exclusive rights to the technology. Public disclosure of the technology did not impede the development or the commercialization of nuclear energy. To the contrary, had the contractors involved in the Shippingport project or other AEC projects been given exclusive rights to the technology, it would not have been as rapidly or as widely disseminated. Nor would there be as many firms as there are today participating in the nuclear industry.

For the above reasons, I recommend that the new ERDA patent regulations be revised so as not to encourage contractors to request waiver of Government patent rights, and that ERDA personnel be not encouraged to grant such waivers. Waiver authority should be reserved for those rare cases where essential work could not otherwise be obtained or where the Government elects to participate in an on-going, contractor-funded program in which the contractor bears a substantial portion of the cost. In such case the Government's rights to patents should be commensurate with the amount of the Government investment. The former AEC policy with regard to rights in inventions developed under allowable Independent Research and Development projects would be a reasonable approach.

UNITED STATES DEPARTMENT OF COMMERCE
The Assistant Secretary for Science and Technology
Washington, D.C. 20230

December 31, 1975

R. Tenney Johnson
General Counsel
U.S. Energy Research and Development
Administration
20 Massachusetts Avenue, N.W.
Washington, D.C. 20545

Dear Mr. Johnson:

In the course of the appearance of Ms. Irene Till before the ERDA Patent Policy Hearing on Tuesday, November 18, 1975, a question arose regarding the percentage of challenged patents ultimately held invalid by the courts.

I solicit your acceptance of the attached Patent Office study, dated April 3, 1974, for inclusion in the official record of the referenced hearing. I believe that the addition of this material will serve to dispel the erroneous notion that 72 percent of challenged patents are declared invalid by the courts.

Very truly yours,

David J. Eden

David J. Eden
Special Assistant to the
Assistant Secretary for
Science and Technology

Attachment

AMERICAN REVOLUTION BICENTENNIAL 1776-1976

In *Graham v. John Deere*, 383 U.S. 1, 18 (1966), the Supreme Court stated:

> "While we have focused attention on the appropriate standard to be applied by the courts, it must be remembered that the primary responsibility for sifting out unpatentable material lies in the Patent Office. To await litigation is -- for all practical purposes -- to debilitate the patent system. *We have observed a notorious difference between the standards applied by the Patent Office and by the courts.* While many reasons can be adduced to explain the discrepancy, one may well be the free rein often exercised by examiners in their use of the concept of 'invention. * * * [There is] a compelling reason for the Commissioner to strictly adhere to the 1952 Act as interpreted here. This would we believe, not only expedite disposition but bring about a closer concurrence between administrative and judicial precedent." [Emphasis added.]

1 (Cont.)

> litigated patents are upheld as valid and infringed.[1] This represents an increase from a rate of 57 per cent invalidity for the period of 1953-63. Such a high rate of invalidity means that many more patents issue than are warranted. Simply put, this means that the Patent Office has not been doing its job of weeding out bad and unjustified patents.
>
> "This high rate of invalidity arises, because the standards applied by and techniques available to the Patent Office are inadequate. The Supreme Court itself has pointed out there exists 'a notorious difference between the standards applied by the Patent Office and by the courts'."

Footnote 1, supra, to Congressman Owens' remarks reads:

> "On May 2, 1969, the Honorable John L. McClellan, Chairman of Patents, Trademarks, and Copyrights Subcommittee, stated during the Nomination Hearings for William E. Schuyler, Jr., to be Commissioner of Patents, that: 'The staff has informed me that on a national basis, 72 percent of the patents litigated in the courts of appeals have been found invalid.' Professor Irving Kayton, in *The Crisis of Law in Patents*, (1970), reported that for a recent time period, 19.9% of the patents litigated in the courts of appeals had been upheld as valid and infringed."

Support of Proposed Amendment to Section 103, Title 35, Patents, U.S. Code," a copy of which is published in 51 JPOS 290 (May 1969). This study covered 179 patent validity adjudications by the Circuit Courts of Appeal decided after February 21, 1966 (*Graham v. John Deere*) and reported in the U.S. Patent Quarterly before December 1, 1968, a time frame of less than three years. We have no reason to doubt the essential accuracy of that statistic of 72% invalidity *considered over that time frame.*

Nor can it be said, in final analysis, that Gausewitz' 72% invalidity figure is not fairly or reasonably representative of Courts of Appeal adjudications considered over a longer period of time. Figure I, attached, is a graphical display of the results of eight patent invalidity studies, based on Courts of Appeal decisions, which were made at varying times and cover varying periods between 1925 and 1972. The source of the invalidity statistics between 1925 and 1954 is Federico, "Adjudicated Patents 1948-54," 38 JPOS 233, 244.[2] As can be seen, Federico ((1))

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[2] Reprinted from "American Patent System, Hearings before the Subcommittee on Patents, Trademarks, and Copyrights of the Committee on the Judiciary, United States Senate, 84th Congress, first session, pursuant to S. Res. 92, October 10, 11, and 12, 1955," pages 176 to 185. This report was prepared at the request of the Subcommittee by P. J. Federico.

shows an increase in invalidity, based on five-year averages, from 33% (1925-29) to 61% (1950-54) with an interim high average of 64.5% (1945-49). See Federico's Table 11, appendix 1, for numbers of patents litigated over the years 1925-54 and other relevant information.

Seven other studies[3] are plotted on Figure I in the form of line and bar graphs which cover various portions of the

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[3] ② Koenig, dissertation submitted in partial fulfillment of requirements for S. J. D. degree, New York University Law School, December 1971. She studied adjudications of 854 patents from 1953-1967.

③ Moxon, Patent Invalidity Study, unpublished, January 17, 1973, examined 284 adjudicated patents in the period 1967-1971.

④ Gausewitz, *supra*, studied 179 adjudicated patents from February 1966 to December 1968.

⑤ Senate Report No. 167, 90th Congress, 1st Session examined validity of 46 patents before *Graham* and 38 patents subsequent to *Graham*.

⑥ Dearborn et al., Encyclopedia of Patent Practice and Invention Management (Calvert), page 22, et seq., examined 734 adjudicated patents in the circuit courts from 1953 to 1963.

⑦ Tegtmeyer, "For Greater Patent Validity," American University Law Review, Vol. 19, No. 1 (December 1969) studied 869 adjudicated patents from 1953 to 1968.

⑧ Horn, et al., "The Federal Courts' View of Patents -- A Different View," 55 JPOS 134 (March 1973) studied 597 adjudicated patents from January 1961 through December 1970.

than they were 30 or more years ago. The rate of invalidity appears to have stabilized within the 60-70% range.

(2) The commonly cited 72% invalidity figure of Gausewitz is biased upward of the results reported by the other authors, no doubt due to the short time period covered by his analysis and the smallness of his sample. In all candor, however, it must be recognized that there is not much difference between 72% invalidity on the one hand, and 64% or 66% or 68% on the other -- to say otherwise would be a mere quibble over quillets.

Finally, it should be noted that the Senate Subcommittee had earlier voiced concern when it received information in 1956 that more than 60% of patents litigated in the circuit courts had been held invalid since 1947.[5] From that, it can be seen that the patent system is not now facing any essentially new criticism, but rather is confronted again with old ones, particularly with respect to the percentage of patents held invalid in the Courts of Appeal.

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[5] Senate Report No. 1464, 84th Congress, 2nd Session, 1956, reprinted at 38 JPOS 75, 80. Many of the ideas expressed therein have been echoed in the recent comments of Senator Hart and Congressman Owens.

	Design			Reissue			Plant			Utility			Total		
	CA	DCt	CtCl	CA	DCt	CtCl	CA	DCt	CtCl	CA	DCt	CtCl	CA	DCt	CtCl
umber of Patents Including n Indication of Validity, nvalidity, or Infringement	8	50	0	14	22	1	0	1	0	260	607	25	282	681	26
OTAL		58			38			1			892			989	
atents Held Valid	0	17	0	3	6	0	0	0	0	78	247	17	81	270	17
OTAL		17			9			0			342			368	
atents Held Invalid	8	9	0	9	14	1	0	0	0	173	135	8	190	158	9
OTAL		17			24			0			316			357	
ate Invalidity/Valid + Invalid	100%	34.6%	0	75%	70%	100%	0	0	0	69%	35.3%	32%	70%	37%	34.6%
otal % Invalid / Valid + Invalid		50%			73%			0			48%			49.2%	
nfringed	0	45	0	3	6	0	0	1	0	64	503	17	67	555	17
TOTAL		45			9			1			584			639	
raud	0	0	0	1	2	0	0	0	0	6	13	0	7	15	0
TOTAL		0			3			0			19			22	
isuse	0	0	0	1	0	0	0	0	0	6	7	0	7	7	0
TOTAL		0			1			0			13			14	

CIRCUIT COURTS OF APPEAL

Circuit	Totals	No. Valid	% Valid	No. Invalid	% Invalid	No. Rev. Prev. Held Valid	% of Total Rev. As To Val.	No. Rev. Prev. Held Invalid	% of Total Rev. As To Inval.
1	12	4	33.33	8	66.67	2	16.65	1	8.34
2	35	6	17.15	29	82.85	6	17.15	3	8.58
3	20	5	25.00	15	75.00	3	15.00	4	20.00
4	22	4	18.20	18	81.80	4	18.20	1	4.55
5	40	20	50.00	20	50.00	3	7.50	4	10.00
6	23	10	43.50	13	56.50	1	4.35	3	13.30
7	56	21	37.50	35	62.50	6	10.70	5	8.93
8	11	1	9.10	10	90.90	1	9.10	1	9.10
9	38	5	13.20	33	86.80	4	10.05	0	0
10	12	5	41.70	7	58.30	0	0	2	16.70
D.C.	2	0	0	2	100.00	0	0	0	0
Totals	**271**	**81**	**30.00**	**190**	**70.00**	**30**	**11.10**	**24**	**8.85**

III. Are the Statistics of 60-70% Patent Invalidity in the Courts of Appeal Representative of the Patent Universe as a Whole?

For consideration of this question, some background information is needed. Between 1953-1971, the Patent Office issued slightly over one million utility and reissue patents. During the same period, approximately 1,080 patents were adjudicated as to validity by the Courts of Appeal. Whereas the patents adjudicated represent about 0.1% of the utility and reissue patents actually issued during this period, the actual number or universe of patents available for adjudication was much larger, inasmuch as many of the adjudicated patentes were issued before 1953. The patents issued up to 17 years before 1953, in other words, enlarge the patent base or universe from which the adjudications were drawn.

Similarly, for the period 1948-1954, Federico[6] reported that the proportion of patents adjudicated in the Courts of Appeal to those issued was 1 in 677, or 0.15%. It

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[6] Footnote 2, *supra*.

> many patents certainly exist which are not litigated because the owner considers them too weak to stand a reasonable chance of being upheld in court. *It does not seem possible to establish that the percentage of validity is much different for all patents than for the adjudicated patents, yet any conclusion that the percentages are the same must rest on a 700-fold extrapolation from the data."* [Emphasis added]

Dearborn et al., footnote 3 supra, reached a similar conclusion:

> *"Statistics of the type presented here are of limited quantitative value only. In the first place, during the entire period from 1953 to 1963 only 734 patents were adjudicated by the United States Circuit Courts of Appeals. During that same period, hundreds of thousands of patents were in effect.* Secondly, there is probably some truth in the proposition that it is mostly patents of doubtful validity that are litigated. A patentee who has a weak patent is unlikely to risk the costs of litigation. The patentee with a strong patent, on the other hand, may not have to go into litigation since the industry is likely to respect his patent without recourse to litigation. *Therefore, any attempt to extrapolate from the statistics presented here to all issued patents is to a large extent unwarranted."* [Emphasis added.]

Cooch,[8] in commenting on similar statistics offered in a paper presented by Reynolds,[9] stated (p. 48):

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[8] Cooch, "The Standard of Invention in the Courts," printed in *Dynamics of the Patent System,* Central Book Co., N. Y. (1960), pp. 34-73.

[9] Reynolds, Edwin L., "The Standard of Invention in the Patent Office," op. cit., supra, f.n. 7, pp. 1-34.

> and, naturally, he avoided litigating doubtful patents; while now the accused infringer rushes to court to challenge them."

It is to be noted that each of the above commentators have for all intents and purposes discarded the statistics of 60-70% invalidity in the Courts of Appeal as representative of the validity of all patents issued by the Patent Office for the principal reason that the adjudications are "too meager to justify such an inference" (Dann), or are "of limited quantitative value only" (Dearborn), or simply "the sample is too small" (Cooch).

While we agree in general with their reasons and ultimate conclusions, we would add the following qualifications and additions. The smallness of the sample size may or may not be considered a valid reason for discarding the statistics. The sample size may or may not be adequate, depending on the homogeneity or heterogeneity, the similiarities and differences (in technical terms, the "variance") among members of the total population. A sample size of 1080 adjudicated patents in the Courts of Appeal over the period 1953-1971, or a sample size of 2149 adjudicated patents in

study of which we are presently aware asserts that the adjudicated patents reach the courts in a random, unbiased manner. A proven unbiased, perferably random, sample is a necessary condition for any inference to be drawn that, because 60-70% of the patents adjudicated in the Courts of Appeal are invalid or because 50% of adjudicated patents in the court system are found invalid, a similar percentage of all patents issuing from the Patent Office are invalid.[13]

We think the above reasons effectively dispose of any misleading statistical inference or conclusion that 60-70%, or even 50%, of all patents issued by the Patent Office are invalid. Three statisticians[14] were consulted independently on this matter, and each has confirmed the conclusion that the adjudicated patents can not represent an unbiased, random sample of the patent universe.

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[13] Extrapolation of data from one population to a seemingly similar population can easily bring about deceiving results. As a hypothetical example, one unfamiliar with statistics as well as with the characteristics of a certain total population might well erroneously conclude that, because 60-70% of all persons tried in courts are males, 60-70% of the entire population are males.

[14] They are: (1) Donald W. King, presently Technical Director of Informatics, Inc., Rockville, Md., (2) Professor J. C. Whitwell, Department of Chemical Engineering, Princeton University, Princeton, N. J., and (3) Harold W. Sager, a mathematical statistician on the Management Staff of the Patent Office.

It would surprise no one if 50 percent of the land titles which are tried in court in contested proceedings were found to be invalid, or if 50 percent of marriage annulment proceedings would end in a decree that the marriage was void ab initio. This would not mean that half the land titles and half the marriages in this country are defective. Nor would anyone get upset if it were determined that only half the indictments resulted in convictions.

Patent causes are no different from other legal causes. There are good cases which are settled. There are bad cases which are never tried. And there are the doubtful ones, the marginal ones, the ones the outcome of which is very difficult to predict; these are the cases that are litigated. *It is a tribute to the judges, the Patent Office and the patent lawyers that the actual results of litigation come so close to a 50-50 split.* [Emphasis added.]

The first set contained each petitioner's recommended development program, while the second set contained each petitioner's comments on the other petitioner's development program.

The Department's final decision can be synopized as follows:

1) Marquardt, the ultimate recipient of the exclusive license, promised to bring the invention to the marketplace within six months of the grant of the exclusive license while Travenol, the petitioner for the nonexclusive license, scheduled delivery of the invention for four years and nine months after the grant of the nonexclusive license. (Travenol's indication of delivery was not in the form of a guarantee or best effort, but only a indication that if their preliminary evaluation justified continued development, the invention would be delivered to the public at the earliest in four years and nine months from the grant of the nonexclusive license.)

2) It was clear that if the five-year exclusive license contemplated was given to Marquardt, Travenol could still start developing immediately after the grant of the exclusive license without fear of infringing, and still enter into competition at the end of the approximately four years and nine months they indicated was needed for development.

3) Marquardt had already made a large investment of private risk capital towards the development of the invention while Travenol had made no commitment of capital and might never if they deemed preliminary evaluations were negative.

4) It appeared to the Department that the evasiveness of the Travenol offer could well have been based on the fact that Travenol already had a dominent market position in the area of artificial kidney devices and that the request for the nonexclusive license was an attempt to undermine Marquardt's initial involvement in this market. The Department believed that the grant of the exclusive license would bring competition into the artifical kidney device area as opposed to creating a monopoly position. Conversely, the Department felt that the grant of the nonexclusive license to Travenol would probably enhance their already dominent market position especially if Marquardt withdrew.

DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
OFFICE OF THE SECRETARY
WASHINGTON, D.C. 20201

OFFICE OF THE
GENERAL COUNSEL

February 22, 1974

Chairman Morris K. Udall
Subcommittee on the Environment
Committee on Interior and Insular Affairs
House of Representatives
Room 1324, Longworth Building
Washington, D. C. 20515

Dear Congressman Udall:

It is my understanding that in Mrs. Irene Till's testimony before your Subcommittee on the patent clauses to be included in the Udall Bill creating a Department of Energy, she made reference to the grant by the Department of Health, Education, and Welfare of an exclusive license to a Department contractor, notwithstanding a request from a third party for a nonexclusive license. I understand that the example was cited to illustrate an abuse of the agency's discretionary powers left to the head of the agency under the President's Statement on Patent Policy.

I am attaching herewith copy of the original 15-page briefing memorandum supporting the grant of such license, which was in Mrs. Till's hands prior to her testimony before your Subcommittee. I am making this available to the Subcommittee so that they might make their own decision on the validity of Mrs. Till's criticisms.

I understand that the proposed patent clauses of the Energy Bill do not contain a provision that would provide for waivers of exclusive rights to contractors such as that made in the above situation. (The provision in the Bill for exclusive licensing of agency-owned inventions after a period of attempting to license nonexclusively and after a hearing is not the full equivalent of a waiver procedure.)

I further understand that the Department of Commerce, speaking for the Administration, has made or will make recommendations that such provisions be included in the Energy Bill's patent clauses. It has been the long experience of the Department of Health, Education, and Welfare that inclusion of such waiver clauses is an essential part of a research and development agency's ability to afford rapid public utilization of inventions first conceived with Government funding, but which require additional private risk capital to complete development for public use.

February 19, 1971
Norman J. Latker
Chief, Patent Branch, OGC/BAL

Marquardt Corporation's request for an exclusive license under Marantz/Greenbaum Application, Serial No. 680,417 and Baxter Laboratories' request for a nonexclusive license under the same application.

TO: Dr. Roger O. Egeberg
Assistant Secretary for Health
and Scientific Affairs

THROUGH: Manuel B. Hiller
Assistant General Counsel, OGC/BAL

Precedent Case

This case involves the first request by a commercial concern for an exclusive license under a Department-owned invention pursuant to our newly instituted licensing program. (See paragraph 6.3 of Department Patent Regulations, copy enclosed as Exhibit A.)

Review of Actions to Date

The invention under which Marquardt Corporation seeks to be licensed was made by this corporation under a contract with the Artificial Kidney Program of the National Institute of Arthritis and Metabolic Diseases (NIAMD). The invention involves treatment of a dialysate solution for removal of excess urea in the bloodstream resulting from impaired renal function. It was estimated at the time of the original request by Marquardt for such license that $800,000 would be required to bring the invention to the point of practical application. Since the NIAMD did not intend to further fund the development and Marquardt Corporation indicated their willingness to do so under an exclusive license, we began, with NIAMD and your consent, to negotiate such a license as a necessary incentive toward completion of the invention.

On May 26, 1970, DHEW published a notice, enclosed as Exhibit B, in the Federal Register, Page 8246, Volume 35, Number 102, indicating its intent to issue a limited, revocable, exclusive patent license under subject patent application. The notice provided a 30-day period within which objections to the granting of the license could be made.

During the 30-day period afforded by the May 26 notice, Travenol Laboratories, a subsidiary of Baxter Laboratories, objected to the granting of the exclusive license and indicated a willingness to develop the invention under a nonexclusive license.

4. Since the end of Government funding, Marquardt will have invested in the modification and perfection of the initial chemical concept by April 30, 1971, approximately $985,000, which is approximately four times the original Government-funded contract. This expenditure is divided into the following broad categories:

$350,000	for clinical testing
575,000	for research and development on sorbents, mechanical components, and systems integration
60,000	for construction of 12 prototype machines

The Marquardt brief discusses more specifically the steps taken by Marquardt to develop the invention. They particularly note that there are aspects of calcium, ammonium, and sodium handling in the system which have been perfected by Marquardt's funding and which are essential to the effective and safe clinical application of the techniques and not known to any potential manufacturer of the device. Marquardt contends that it would take substantial time for anyone else to develop these techniques, and it would also take substantial time to pursue the necessary clinical testing on an independently developed device. It is emphasized that it would take any other company at least two years to achieve the same level of accomplishment that Marquardt has reached through their own efforts. The evident success of the prototype machine was established by the fact that to date 15 persons have been dialyzed over 125 times for a total of over 900 hours of dialysis time.

5. Marquardt estimates that in addition to the $985,000 to be expended by the end of April 1971, development of its machine and its establishment as a commercial product will require the expenditure of approximately $4,000,000.

In view of the requirement for additional, substantial investment, Marquardt indicates that it will not be feasible to continue their program if the request for exclusive license is denied or not granted within a reasonable time. The chronological plan for taking the device to market is as follows:

a. Complete clinical testing. This is now scheduled for May 1, 1971.

b. Complete production of prototype design.

c. Establish a source for production of zirconium phosphate.

and promote production of better devices from all manufacturers at lower prices. Because Travenol already dominates the artificial kidney device market, it does not have the same incentive on Marquardt to develop a new machine using the zirconium phosphate absorption principle. There can be no assurance that in view of the development effort, the investment required, and the risks involved, Travenol would develop such a machine at all. Even if it did, the result could only be to enhance Travenol's already superior market position, reduce the ability of the other existing firms to compete with Travenol, and discourage the entry of any new competitors. Thus, according to Marquardt, if a nonexclusive license is granted to Travenol, it would not leave the competition in the artificial kidney machine market "as-is", but, in fact, significantly reduce competition. Finally, if Travenol did develop a device using the zirconium phosphate absorption principle, it would be in competition with existing Travenol machines. With Travenol in control of both types of machines, the price competition between the two types that would otherwise develop would be lost, as would competition with respect to other machine features.

Synopsis of Travenol Brief Requesting a Nonexclusive License

The Travenol brief in support of their request for a nonexclusive license is enclosed as Exhibit E. After introductory language setting forth Travenol's credentials as a manufacturer of devices for medical use, the brief discloses a proposed experimental program to bring the Marantz/Greenbaum invention to the marketplace. This program will be instituted by Travenol nine months after issuance of a nonexclusive license to Travenol by the Department.

The program comprises four major phases covering an estimated period of 48 months, and costing approximately $585,000. The four phases are as follows:

	Project Period and Cost	
Phase I		
Zirconium phosphate study	1 - 6.5 mos.	$45,000
Urinase immobilization study	1.5- 9.5 mos.	54,500
Charcoal and zirconium oxide assessment	6.5- 13 mos.	15,200

3. Travenol's proposal is considered to be technically insufficient. Marquardt contends that the proposal indicates less knowledge of the Marantz/Greenbaum invention and of the work needed to develop it into an effective clinical device than Marquardt already imparted to Travenol in briefings conducted to educate the artificial kidney machine industry in the Marquardt process. In this regard the proposal underestimates the work to be done and the cost for which it can be done. Travenol suggests that a total cost for the development phase, including clinical testing, will amount to approximately $585,000. As Marquardt has previously shown in its brief, it will have expended approximately $985,000 by the same point.

4. Travenol has indicated that even after it starts development, it will take Travenol four years to reach the same point in the development program that Marquardt has reached in two years. At the rate Travenol proposes to proceed, even the four years may be an understatement, for Travenol has made no allowance for the actual design and development of the artificial kidney machine utilizing the absorption cartridge, which is likely to take another six months to a year, and, in addition, it is likely it will take Travenol further time to establish production and marketing, even with its existing position in the field. Thus, the total time to the availability, even on a limited basis, of a production device under Travenol's extended program could be anywhere from five to about seven years from now.

Synopsis of Travenol's Reply to Marquardt's Brief

Travenol's reply brief, enclosed as Exhibit C, is 20 pages long. Here again, for the sake of brevity, only the more salient arguments supporting their request for a nonexclusive license are synopsized below:

1. It is contended that since Marquardt indicates their development program will be discontinued if they are not assured exclusivity in the market, and since other circumstances may well deny Marquardt an exclusive market and subject it to the threat of competition -- i.e., failure of the Marantz/Greenbaum patent application to issue as a patent, or a competitor's development of a competing sorbent system -- it is concluded that the happening of any of these circumstances will cause Marquardt to discontinue their program. Travenol does not have such reservations concerning patent protection and market exclusivity, and is willing and eager to operate in a competitive market.

6. It is noted that Marquardt would be required to make arrangements with a company in the medical supply field in order to arrange for distribution and servicing of the invention. Travenol implies that these arrangements should be firm prior to the granting of any exclusive license. It further notes that such arrangements are unnecessary as relating to Travenol, since they have an established marketing system already committed to distribution and servicing of new artificial kidney products.

7. Travenol does not at present see significant advantage in incorporating the zirconium phosphate sorbent system into its existing coil kidney system. Rather, Travenol views the most attractive possibility as being one which incorporates one of a new-generation of miniature, parallel flow dialysis units with the sorbent system. It is contended that Marquardt intends to utilize existing dialyzer elements available from other manufacturers, and probably not initiate a new program to develop a dialyzer element for use in their system.

8. Travenol argues that Marquardt may obtain an exclusive position through the retention of proprietory rights in developments that occurred after Government funding ended, and therefore an exclusive position in that portion of the program funded by the Government is unnecessary.

9. It is submitted that even through Travenol is the largest manufacturer of dialyzing equipment, its position has not proven to be a significant deterrent to entrance of new competition. Travenol provides a list of a number of companies who have chosen to compete in the various product areas of its line, and suggests that these companies might also be interested in actively pursuing development of sorbent systems on a nonexclusive basis.

10. While Travenol has not contacted its competition in the artificial kidney field to make a factual determination, it is of the opinion that the majority of such firms do not pursue substantial Government R and D business. Rather, they, as Travenol, usually prefer to undertake independent development as dictated by market demand. Thus, it can be expected that a Government patent policy that favors exclusive licensing would most benefit those organizations that already hold strong positions as R and D contractors, while depriving the smaller firms that service the artificial kidney field of access to inventions made under Federal contract.

granting of limited, exclusive licenses in cases where it appeared that the public interest would be better served. The case at hand seems to justify the above concern. It is apparent that the Marantz/Greenbaum invention was available for nonexclusive licensing from at least July 1968, the date of Marquardt's final report to the Government, to May 26, 1970, the date that the Department announced its intent to grant a limited, exclusive license. (The date could be brought back to January 23-24, 1968, if Marquardt's presentation to the Annual Contractors' Conference is considered.) During the period of nearly two years, the details of the Marantz/Greenbaum invention were available to all of the medical device industry through the final report and through Marquardt's own efforts to interest major producers and distributors of kidney dialysis machines. Both Marquardt and Travenol have advised that Marquardt had contacted Travenol to enlist their aid in developing the invention. During this period there was no evidence of interest on the part of any manufacturer other than Marquardt in bringing the invention to the marketplace. After the May 26, 1970, notice of intent to grant a limited, exclusive license, we received five inquiries in regard to the invention. After disclosure of the invention to those concerns making inquiry, the Department received only Travenol Laboratories' request for the granting of a nonexclusive license to further develop the invention.

These facts lead us to conclude that Travenol's basic argument as it relates to encouraging further development of the invention by the rest of industry is without merit. The facts further refute Travenol's argument that they would have involved themselves in development of the invention if the results of Marquardt's Government-funded research had been available to them. It is clear from our records that these results were available to Travenol and Travenol made no effort to capitalize on them until after the May 26, 1970, notice of intent to grant an exclusive license.

It should be further noted that the granting of an exclusive license to Marquardt or any other corporation should not deter competitors from researching and developing the Marantz/Greenbaum invention, or the sorbent system area, if they so chose. The case of Chesterfield v. U. S. 116 USPQ 445 makes it clear that experimental use of a patented invention does not infringe. Infringement would only occur upon commercial sale of the invention. Accordingly, under the Chesterfield case, Travenol Laboratories can implement the development program which they have suggested to the Department without fear that they might be enjoined by Marquardt under an exclusive license. Infringement would occur only if Travenol commercially introduced the Marantz/Greenbaum invention while Marquardt was in possession of an exclusive license. Presuming that the period of development presented by Travenol is

in bringing the invention to the marketplace. It seems quite possible that Marquardt would be unable to obtain the services required if they were unable to show an exclusive market position. The fact that Travenol would not have to make these arrangements does not add to their attractiveness as a prospective nonexclusive licensee, since they are still years behind Marquardt's effort in bringing the invention to the public.

4. Travenol's argument that Marquardt may obtain an exclusive position through the retention of proprietary rights developed after Government funding ended has no foundation in fact. We have no evidence that would indicate that Marqaurdt could maintain an exclusive market position through ownership of developments subsequent to the Marantz/Greenbaum invention. In fact, if Marquardt could establish such an exclusivity position, our granting of an exclusive license should make no difference to Travenol, since they would be faced with the exclusivity established through Marquardt's subsequent developments.

5. Travenol states that a Government patent policy that favors exclusive licensing would most benefit those organizations that already hold strong positions as DHEW research and development contractors, while depriving the smaller firms that service the artificial kidney field without DHEW contracts access to an invention made under a Department contract. First, it should be noted that there is no guarantee that a DHEW contractor will receive any exclusivity in an invention made in performance of an DHEW contract. If the contractor makes a request for an exclusive license in an invention made in performance of his contract, a determination as to whether such license will be granted will be made on the basis of the facts as they relate to that invention. Further, it should be noted that those firms not having Government contracts are not estopped from requesting nonexclusive or exclusive licenses under inventions made by Government contractors. Accordingly, we find no validity to Travenol's contention that DHEW contractors will most benefit from our exclusive licensing program. It is also noted that if Travenol's contention were correct, no firm is estopped from attempting to obtain contracts from DHEW and gaining whatever fruits the results of these contracts might yield. It is assumed that a number of firms, including Travenol, have never contracted with DHEW due to the fact the Department will not guarantee, at the time of contracting, exclusive positions in inventions that derive from such Government-supported work and, accordingly, remain outside Government-funded work so that they may establish proprietary positions in research funded through their own resources.

It is also believed by both the Patent Branch and NIAMD that Marquardt's contention that the granting of an exclusive license to them would actually bring competition into the artificial kidney device area is probably correct, and should be weighted in favor of granting Marquardt's request. The grant of a nonexclusive license to Travenol will probably enhance their already dominant market position, especially if Marquardt withdraws and no other concern develops a kidney device utilizing the Marantz/Greenbaum sorbent system.

Travenol's proposed schedule of four years and nine months after the granting of a nonexclusive license to bring the invention to the marketplace also supports the granting of Marquardt's request for an exclusive license. Since the granting of an exclusive license to Marquardt need not preclude Travenol's development program (as explained above), and such license would be for a period which would possibly end prior to any Travenol introduction of an artificial kidney device incorporating the Marantz/Greenbaum system, we are unable to determine how the public interest could be damaged by the granting of Marquardt's request. In fact, in our opinion, the public would benefit through the availability of the Marquardt device during the period prior to any introduction of a competing device by Travenol.

As noted above, we are not in agreement with Travenol's basic contention that nonexclusive licensing of this invention will result in further development of the invention and ultimate competition from other manufacturers. We believe the facts are clear that no manufacturer other than Marquardt has taken any steps toward bringing the invention to the marketplace. Travenol's interest in possible future development has occurred only after an indication that an exclusive license might be granted to a competitor and comes too late to outweigh Marquardt's contentions.

No attempt has been made to determine the accuracy of Marquardt's $4,000,000 estimate to complete the development and marketing of the Marantz/Greenbaum sorbent system. However, we believe that the amount of risk capital necessary to accomplish the remaining steps enumerated by Marquardt to bring the system to the marketplace reasonably supports granting the request for a period of limited market exclusivity.

Norman J. Lather
Chief, Patent Branch

Attachments:
2 proposed letters
8 Exhibits

cc: Dr. Benjamin Burton - NIAMD

This is no longer fashionable and getting much more difficult.

The poorer countries are learning fast, and they don't like it.

I think the United States sort of has given up on this. Most countries have given up on this.

Exploitation of the poor is also done by locals as well as by outsiders.

The second good way is to find a sea of oil under you or a great deal of gold or something you can export, and do nothing else.

This is not possible for the United States for many reasons. It is not even possible for many of the Arab countries now.

Perhaps Kuwait is an exception.

The third and only way that is left is to improve the productivity of the country itself, to provide more services, more goods for the same effort.

I am not talking about doubling the working hours because that is not improving a standard of living.

I am talking about working less or working the same amount and producing more goods and services.

This is only possible with scientific advance. It is also possible, in small ways, by improving health, for example, so if we don't have many colds, we can work the full amount of time we are supposed to.

Or perhaps better rationalization of production or services could improve efficiency.

Our factories, however, are so efficient today that without big scientific advancements I doubt that they could produce very much more.

Certainly in distribution there could be improvement, but these are minor things.

The real way to improve the standard of living -- and I speak with some experience; I have spent a good part

The transistor was done at Bell Labs, and I have some question whether the Bell Lab is a private company.

TV was done at RCA because David Sarnoff and several other people at RCA were personally interested.

If you want such great technology to be developed, you have to make or keep the system such that people who do this will be encouraged.

For this purpose, the patent system was invented in 1474, in Venice.

It is rather interesting that since that day roughly 500 years ago, every major country in the world adopted it, including communist countries, and including France, who didn't have it until recently. They had a registration system.

The only exception to this is China. I am quite sure when they become more technically advanced, they, too, will probably go the way of Russia and the rest of the Communist world.

Yet when I talked to some friends and argued about whether patent systems are needed, I have heard them say, "No."

I say, "But 500 years and every country in the world?" and they say, "They are all crazy."

This is a lack of modesty which I have trouble in defining in language which is not profane.

How can one disregard the experience of Russia where everybody works for the government, where the government is practically the only user of technology, and where all the machinery is owned by the government? They, too, found it necessary to set up a patent system and reward inventors with royalties even though the government is the employer and the user.

While some of the royalties are limited, perhaps 25,000 rubles per invention, with ten inventions, which is easily possible, a man becomes a quarter of a millionaire. Even in Russia, 250,000 rubles is not hay.

The thing that is interesting is that people who talk about the patent system simply don't know what