NATIONAL COUNCIL
OF
UNIVERSITY RESEARCH ADMINISTRATORS

INTELLECTUAL PROPERTY SERIES

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NATIONAL COUNCIL OF UNIVERSITY RESEARCH ADMINISTRATORS

Introduction to

PATENTS AND PATENT RIGHTS

Workshop Materials - NCURA Intellectual Property Series - 1984

Introduction to

PATENTS AND PATENT RIGHTS

This paper is one unit in a series prepared by the sponsored program and patent offices at M.I.T. for use in their own professional development program and in the workshop on intellectual property at the 1984 NCURA annual meeting. The NCURA Committee on Professional Development is making it available to NCURA members who need a basic understanding of intellectual property in connection with the negotiation and administration of sponsored research agreements.

Copies of this and other units in the series may be obtained from NCURA Headquarters.

Other Guidance

This series is intended to provide university research administrators with only an introduction to the basic concepts of intellectual property. Those who require a more complete understanding of the subject will wish to study other materials cited herein or developed from time to time by such organizations as the Society of University Patent Administrators, the Licensing Executives Society, the COGR Committee on Patents, Copyrights and Rights in Data, and the National Association of College and University Attorneys.

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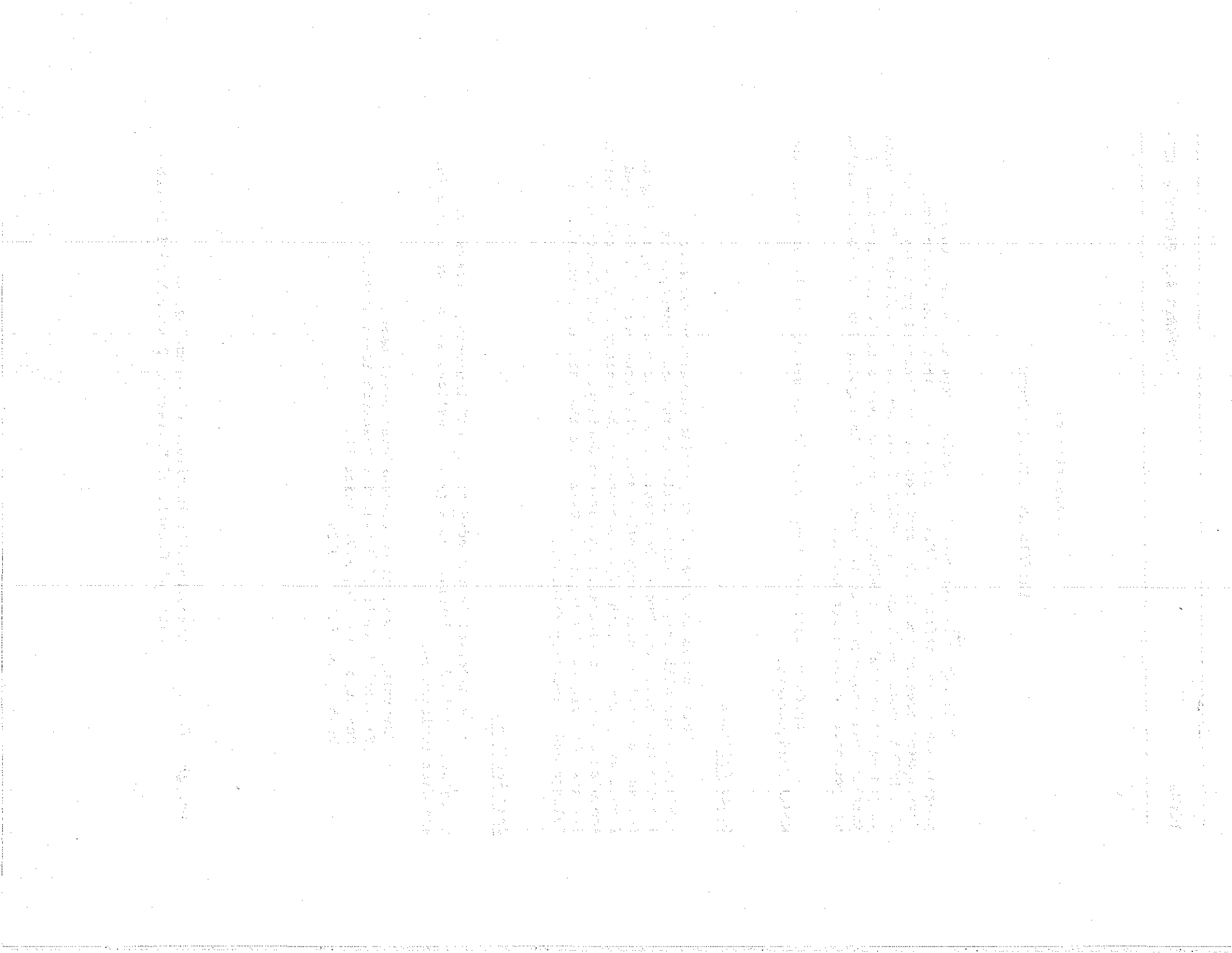

Introduction to

PATENTS AND PATENT RIGHTS

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1. PATENT LAW

The United States Constitution

Article 1, Section 8 of the Constitution provides that:

> "The Congress shall have power...to promote the Progress of Science and useful Arts, by securing for limited Times to Authors and inventors the exclusive Right to their respective Writings and Discoveries."

Under this broad Constitutional authority, the Congress has enacted the Patent Laws, Title 35 of the United States Code, and the Copyright Laws, Title 17 of the United States Code.

The economic philosophy behind this Constitutional authority to grant patent and copyrights is the conviction that the opportunity for personal gain will provide an incentive for authors and inventors to devote their talents to science and the useful arts to the ultimate benefit to the public. As stated in an early court decision, the authority of Congress is exercised in the hope that the "productive effort thereby fostered will have a positive effect on society through the introduction of new products and processes of manufacture into the economy, and the emanations by way of increased employment and better lives for our citizens."

In order to provide an incentive for research and inventiveness and for disclosing the results, thereby promoting scientific progress, the U.S. patent laws grant to the inventor, the right to exclude others from making, using or selling his/her invention for a limited period.

Without this protection, anyone who learns of another's invention (assuming it does not violate a nondisclosure agreement or other legal obligation) would be free to copy that invention and make full use of it in the same manner as the inventor, and without having shared any of the costs incurred in its development.

In return for this exclusive right, however, the inventor must make a full disclosure of his invention to the public. The purpose of disclosure is to spur other inventors into activity and make possible additional advances in the art, and to ensure that the public gains the benefit of the original invention after a limited period.

Title 35, United States Code

Under the authority of Article 1, Section 8, of the Constitution, Congress has from time to time enacted various laws relating to patents. The first patent law was enacted in 1790. The law now in effect is a general revision which was enacted on July 19, 1952. The U.S. patent laws are found in Title 35 of the U.S. Code and are reprinted in a pamphlet entitled Patent Laws, which is sold by the Government Printing Office.

The scope of 35 U.S.C. is indicated by the following table of chapters:

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2. THE NATURE OF PATENTS AND PATENT RIGHTS

The "Right to Exclude"

A patent is issued in the name of the United States. It grants to the patentee "the right to exclude others from making, using or selling the invention throughout the United States" for a term of 17 years. The patent contains the grant and a printed copy of the specification and drawing, which are annexed to the patent and form a part of it.

Since the essence of the right granted by a patent is the right to exclude others from commercial exploitation of the invention, the patentee is the only one who may make, use or sell his invention. Since a patent is a property right, it may be sold or assigned, pledged, mortgaged, licensed, willed or donated, and may be the subject of grants, contracts and other agreements. It may be controlled by the exercise of the exclusive rights which the patent grants, or by permitting others to exercise such rights under the terms of a license agreement.

The exact nature of the right conferred must be carefully distinguished, and the key is in the words "right to exclude." The patent does not grant the right to make, use, or sell the invention. The patent only grants the right to exclude others from doing so.

Since the patent does not grant the right to make, use or sell the invention, the patentee's own right to do so depends upon the rights of others and whatever general laws might be applicable. Merely because he has received a patent for an invention, a patentee is not thereby authorized to make, use or sell the invention if it is prohibited by law, violates state licensing requirements, infringes the prior rights of others, violates the anti-trust laws, etc. Ordinarily, however, there is nothing which prohibits a patentee from making, using or selling his own invention unless he thereby infringes another patent which is still in force.

Patent rights are purely statutory: there is no definitive body of common law relating to patents as such. However, assuming that his invention is not illegal and does not infringe another patent, an inventor has the right, independent of the Constitution and the patent laws, to make, use sell and otherwise enjoy his invention. These rights are sometimes spoken of as an inventor's common law rights and are subject to the protection of that law. If, for example, an inventor discloses an unpatented invention to another individual under agreement of confidentiality, that individual, if he breaches that agreement and attempts to manufacture an article which embodies the invention, may be liable for damages on the basis of common law and equity.

Assignment

As noted in the preceding section, a patent is personal property and may be sold, assigned, pledged, mortgaged, licensed, willed or donated, and may be the subject of grants, contracts and other agreements. The patent law provides for the transfer or sale of a patent, or of an application for

a patent, by an instrument in writing. Such an instrument is referred to as an assignment and may transfer the entire interest in the patent. The assignee, when the patent is assigned to him, becomes the owner of the patent and has the same rights that the original patentee had.

The statute also provides for the assignment of a part interest, that is, a half interest, a fourth interest, etc., in a patent. There may also be a grant which conveys the same character of interest as an assignment but only for a particular, specified part of the United States.

An assignment, grant, or conveyance of any patent or application for patent should be acknowledged before a notary public or officer authorized to administer oaths or perform notarial acts. The certificate of such acknowledgement constitutes prima facie evidence of the execution of the assignment, grant, or conveyance.

The Patent and Trademark Office records assignments, grants and similar instruments sent to it for recording , and the recording serves as notice. If an assignment, grant or conveyance of a patent or an interest in a patent (or an application for patent) is not recorded in the Patent and Trademark Office within three months from its date, it is void against a subsequent purchaser for a valuable consideration without notice, unless it is recorded prior to the subsequent purchase.

Joint Ownership

Patents may be owned jointly by two or more persons, as in the case of a patent granted to joint inventors or where there is an assignment of a part interest. Any joint owner of a patent, no matter how small his part interest, may make, use, and sell the invention for his own profit, without regard to the other owner, and may sell his interest or any part of it, or grant licenses to others without regard to the other joint owner, unless the joint owners have entered a contract governing their relation to each other. It may, therefore, be unwise to assign a part interest without a definite agreement between the parties as to the extent of their respective rights and their obligations to each other.

Licenses

The owner, or joint owner, of a patent may grant licenses to others. A license is the permission granted by the patent owner to another to make, use or sell the invention. No particular form of license is required. A license is a contract and may include whatever provisions the parties agree upon, including the payment of royalties, etc.

Government Rights

The United States does not, by granting a patent, thereby acquire the right to use it. Such rights must be acquired in some manner, as, for example, by contract, by purchase, as a condition of employment for its own employees, etc. For small businesses and nonprofit organizations, government rights are determined in accordance with Public Law 96-517 and OMB Circular A-124, which are discussed in the paper in this NCURA series entitled Patent Rights under Government Contracts.

3. WHAT CAN BE PATENTED: PATENTABLE SUBJECT MATTER

Statutory Subject Matter

The patent law specifies the general field of subject matter that can be patented (i.e., statutory subject matter) and the conditions under which a patent may be obtained.

35 U.S.C. Chapter 10 deals with the patentability of inventions. Sec. 101 describes patentable subject matter as follows:

> " Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvements thereof, may obtain a patent therefor, subject to the conditions and requirements of this title."

(a) Process

Sec. 101(b) states that:

> "The term process means process, art or method, and includes a new use of a known process machine, manufacture, composition of matter or materials."

A statutory process may consist of a combination of physical or manipulative steps. Where it consists of more than one step, patentability may depend on various factors, such as the particular arrangement, order or sequence of individual steps which are not novel in themselves. On the other hand, if the combinations of steps is not new, patentability of a process may depend on the materials used. Depending on the circumstances, computer software may be eligible for patent protection as part of a patentable process.

(b) Machine

As the terms are used in patent law, "machine" is virtually interchangeable with mechanism, device, engine or apparatus, the latter term being more common in practice. The term "machine" includes tools and other implements intended for use by hand. The particular way in which the components are arranged, as well as the nature of the components themselves, are the parameters which define and distinguish a machine.

(c) Manufacture

This is synonymous with "articles of manufacture" and refers to articles which are man-made. The Supreme Court has held that to obtain a patent for a product made from raw material, it must possess a new or

distinctive form, quality, or property. Excluded are articles whose appearance, properties, function, form, and/or shape have been only slightly altered in the manufacturing process.

(d) Composition of matter

This relates to chemical compositions and may include mixtures of ingredients as well as new chemical compounds. A mixture is deemed to be new even where the only novelty is in the proportions of the constituent ingredients. The novelty of a mixture may also reside in the arrangement or segregation of its ingredients. The patentability of a composition of matter may turn not only upon the novelty of its ingredients but on the manner in which these are combined.

After protracted litigation, the Supreme Court has held that live bacteria, and perhaps other forms of living microorganisms, that result from genetic engineering, such as gene splicing, and which do not occur naturally, are patentable subject matter as compositions of matter or as articles of manufacture (Diamond vs. Chakrabarty (1980)).

The court stated that "In choosing such expansive terms as 'manufacture' and 'composition of matter' modified by comprehensive 'any,' Congress plainly contemplated that the patent laws would be given wide scope." However, the court noted further that:

> "This is not to suggest that 101 has no limits or that it embraces every discovery. The laws of nature, physical phenomena and abstract ideas have been held not patentable. Thus a new mineral discovered in the earth or a new plant found in the wild is not patentable subject matter. Likewise, Einstein could not patent his celebrated law that $E=mc^2$ nor could Newton have patented the law of gravity. Such discoveries are manifestations of nature, free to all men and reserved exclusively to none."

Other Statutory Subject Matter

Designs - The patent laws (35 U.S.C Chapter 16) provide for the granting of design patents to any person who has invented any new, original and ornamental design for an article of manufacture. The patentability of a design rests in its appearance, and all portions of it are material in that they contribute to the overall appearance which constitutes the design. Some physical objects may have aspects which are patentable as a manufacture and others which are patentable as a design. A patentable design, like a patentable process, machine, manufacture or composition of matter, must be new and unobvious, but the requirement of utility does not apply. Patents for design are granted for a period of up to 14 years.

Plants - The patent laws (35 U.S.C. Chapter 15) also provide for the granting of a patent to anyone who has invented or discovered and asexually reproduced any distinct and new variety of plant, including cultivated sports, mutants, hybrids, and newly found seedlings. Specifically excluded from plant patent protection are tuber propagated plants (because of their

importance as a food source) and plants found in an uncultivated state. Asexual reproduction refers to vegetative propagation, i.e, without the use of seed). Patents for plants confer upon the patentee the right to exclude others from asexually reproducing the plant and from selling and using any plants so reproduced. What constitutes a distinct plant variety within the meaning of the plant patent act appears to be a plant which possesses at least one significantly different characteristic, such as color, immunity to disease, size or shape, etc.

In addition, the Plant Variety Protection Act provides patent like protection to breeders of plants that have been reproduced by sexual means, i.e., by seed. It is administered by the Office of Plant Variety Protection in the Department of Agriculture. Grants under the Plant Variety Protection Act are called certificates of plant variety protection.

Nonstatutory Subject Matter

(a) Specifically excluded by statute. Certain subject matter is specifically excluded from patent protection by the patent law itself. The principal example is the exclusion of certain plants, as noted in the preceding section.

Some subject matter which might otherwise fall into the statutory classes defined under the patent law is excluded by other statutes. For example, the Atomic Energy Act contains a blanket provision excluding from patent protection any invention or discovery which is useful solely in the utilization of special nuclear material or atomic energy in any atomic weapon. Anti-radiation agents have been deemed not to constitute such special nuclear materials and are, therefore, statutory subject matter.

(b) Discoveries. Often considered as a class of unpatentable subject matter is that which is so broad as to be incapable, as a practical matter, of adequate definition and/or which is not really new but was merely unknown or unappraciated previously. Such inventions are more appropriately styled discoveries and have been characterized in the court decision quoted in a preceding section. They include principles or laws of nature and naturally occurring articles.

(c) Other. Another class of subject matter has been excluded by judicial construction and includes, for example, printed matter (which may be protectable under the copyright laws but does not have novelty based on its physical structure), methods of doing business (which may be protected to some extent unde the law of trademarks), and mental processes.

4. CONDITIONS FOR PATENTABILITY

Novelty, Utility and Non-obviousness

The requirements of novelty, utility and non-obviousness derive from 35 USC 101, 102, 103.

(a) Novelty

35 U.S.C. Sect. 102. Conditions for patentability; novelty and loss of right to patent, reads in part as follows:

"A person shall be entitled to a patent unless --

"(a) The invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for patent, or

"(b) The invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of the application for patent in the United States."

In other words, a patent cannot be obtained on an invention described in a printed publication anywhere, or known or used by others in the United States, before the invention is made by the applicant. Nor can a patent be obtained if the invention has been described in a printed publication anywhere, or has been in public use or on sale in this country, more than one year before the date on which a patent application is filed in this country. Regardless of when the invention was made, if the inventor, or someone else, describes the invention in a printed publication, uses it publicly, or places it on sale, the inventor must apply for a patent before one year has gone by, or lose the right to do so.

Although there is a one year grace period in the United States for filing a patent application following publication, most other countries require "absolute novelty" as a condition for obtaining patent protection. Absolute novelty is destroyed if the invention is published or publicly disclosed prior to the filing of a patent application in that country or some other country. Consequently, issues relating to the dissemination of research results are quite likely to arise when a university or a research sponsor wishes to pursue foreign filings on inventions resulting from the research.

In addition, a publication includes any written material to which the public has access. For example, a single copy of a thesis which has been catalogued and placed in a library available to the public is a "publication" The amount of use is immaterial.

(b) Utility

35 U.S.C. Section 101, quoted earlier, provides that subject matter and improvements thereof must be "new and useful. to be patentable. The subject matter must have a useful purpose and operability, i.e., it must operate to perform its intended purpose. 35 U.S.C. Sect. 112 requires that the applicant describe how to use the invention:

> "The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same..."

(C) Nonobviousness

The following provision was incorporated in the 1952 Patent Act as 35 U.S.C. Sect. 103, Conditions for patentability; non-obvious subject matter:

> "A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the difference between the subject matter sought to be patented would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains...."

Even if the subject matter sought to be patented is not exactly shown by the prior art, and involves one or more differences over the most nearly similar thing already known, a patent may still be refused if the differences would have been obvious to a person skilled in the art at the time the invention was made. The subject matter sought to be patented must be sufficiently different from what has been used or described before so that it may be said to be non-obvious over the prior art. Small advances that would be obvious to a person having ordinary skill in the art are not considered inventions capable of being patented. For example, the substitution of one material for another, or changes in size are not ordinarily patentable.

Other Conditions

(a) Abandonment

35 U.S.C. Sect. 102(c) declares that a person is not entitled to a patent if he has abandoned his invention, but leaves the question of what constitutes abandonment to the courts. Although it is beyond the scope of this presentation, it might be noted that there is a distinction between abandoning a patent application and abandoning the invention it discloses.

(b) Prior foreign filing

35 U.S.C. Sect. 102(d) precludes from patent protection in the United States an invention on which the same applicant filed a foreign patent application more than twelve months prior to the United States filing date, and which matured into a patent before an application was filed in the United States. In other words, where the U.S. application is filed late (more than year after the foreign filing), a U.S. patent can be obtained only if a foreign patent does not issue in the meantime.

However, an invention which was the subject of a foreign filing within twelve months of the United States filing date is not only entitled to patent protection but can receive the benefit of the earlier foreign filing date.

(c) Previously filed patent application

35 U.S.C. Sect. 102 (e) provides that a patent cannot be obtained if the invention was described in a patent granted as the result of an application which was filed before the applicant made his invention. In other words, the specifications of United States patents become prior art as of their filing date, even though what they disclosed was not then actually available to the public. The rationale is that if the applicant's invention is fully described in an earlier application that subsequently results in a patent, that is prima facie evidence that the later applicant is not the first inventor. Were this not the case, any administrative delays in the Patent Office which, in turn, delayed the issuance of the patent would adversely affect the first applicant's rights.

(d) Non-inventorship

35 U.S.C. Sect. 102(f) states a person shall not be entitled to a patent if he did not himself invent the subject matter sought to be patented. It is primarily applicable where the appplicant has derived the invention from another.

(e) Prior invention

35 U.S.C. Sect. 102(g) negates novelty where the same invention was made earlier by another inventive entity in the U.S. and such earlier inventive entity is deemed not to have abandoned, suppressed or concealed the invention. Section 102(g) is the basis for interference proceedings to determine the priority of inventions and may be the basis for a defense in a suit for patent infringement.

5. PATENT APPLICATIONS AND PROSECUTION

Who may apply for a patent

According to the statute, only the inventor may apply for a patent, with certain exceptions. If a person who is not the inventor should apply, any patent obtained would be void. The person applying in such a case who falsely states that he is the inventor would also be subject to criminal penalties. If the inventor is dead, the application may be made by his legal representatives, that is, the administrator or executor of his estate. If an inventor refuses to apply for a patent or cannot be found, a joint inventor or a person having a proprietary interest in the invention may apply on behalf of the missing inventor.

If two or more persons make an invention jointly, they apply for a patent as joint inventors. A person who makes only a financial contribution is not a joint inventor and cannot be joined in the application as an inventor; to be an inventor, a person must contribute to the conception of the invention. It is possible to correct an innocent mistake in omitting a joint inventor or in erroneously joining a person as an inventor.

Preliminary Search

Since a patent is not always granted when an application is filed for an invention, many inventors or institutions to which an invention is assigned conduct a so-called preliminary search through the prior United States patents to discover if the particular device or one similar to it has been shown in some prior patent. This preliminary patent search is usually conducted by a patent searcher before a patent application is filed.

The search may be conducted in the Search Room of the Patent and Trademarks Office, and to some extent in public libraries which have data links to the Patent and Trademarks Office. This search is not always as complete as that made by the Patent and Trademark Office during the examination of an application, but only serves a preliminary purpose as the name indicates. The Patent and Trademark Office examiner may, and often does, reject claims in an application on the basis of prior patents or publications not found in the preliminary search.

The Application

The application for a patent is made to the Commissioner of Patents and Trademarks and includes:

1. A written document in the English language which comprises a specification (description), claims, and an oath or declaration;
2. A drawing in those cases in which a drawing is possible;
3. The filing fee

As noted earlier, the specification must include a written description of the invention and of the manner and process of making and using it, and is required to be in such clear, concise, and exact terms as to enable any person skilled in the art to which the invention pertains, or with which it is most nearly connected, to make and use the same.

The specification must describe completely a specific embodiment of the process, machine, manufacture, composition of matter or improvement invented, and must set forth the best mode contemplated by the inventor of carrying out his invention.

The application must conclude with one or more claims, which are brief but precise definitions of the subject matter of the invention, eliminating unnecessary details and reciting all essential features necessary to distinguish the invention from what is old. The claims are the operative part of the patent. Novelty and patentability are judged by the claims, and, when a patent is granted, questions of infringement are judged by the courts on the basis of the infringement of the claims.

The inventor must make an oath or declaration of his or her belief to be the original and first inventor, as well as other allegations required by the Patent and Trademark Office rules.

One portion of the oath requires acknowledgment of the inventor's duty to disclose informtion which is material to the examination of the application in accordance with Title 37, Code of Federal Regulations, Section 1.56(a), which imposes a duty of candor and good faith toward the Patent and Trademark Office on the part of the inventor and others substantively involved in the preparation or prosecution of the application. An application will be stricken from the files under certain circumstances, including fraud on the Patent Office and any violation of the duty of disclosure through bad faith or gross negligence.

The basic fee for filing an appplication for an original patent is $300, but if the invention is owned by an educational institution and has not been licensed to a large business concern, the fee is $150. There are other fees which must be paid, including fees for excess claims, recording assignments, patent issue and patent maintenance.

Prosecution

The prosecution of a patent application usually runs from a year and a half to three years, but may run for several additional years if it involves certain appeals or the resolution of an interference. In most case, prosecution includes the following steps:

(a) Examination. Applications filed in the Patent and Trademark Office, if complete, are assigned for examination to the group of examiners responsible for the class of inventions involved.

The examiner to whom the application is assigned studies it for compliance with legal requirements, and searches the prior art contained in

prior United States and foreign patents, and such prior literature as is available, to determine if the invention is new. The examiner reaches a decision as to compliance with the statutes and rules, novelty and patentability of the invention, and other matters.

(b) Office Action. The applicant is notified in writing of the examiner's decision by an "Office action" mailed to his attorney or agent. The reasons for any adverse Office action, objection or requirement are stated in the action plus information or references which may help the applicant judge the propriety of continuing the prosecution of his application.

If the invention is not considered patentable, or patentable as claimed, the claims (or those considered unpatentable) will be rejected. It is not uncommon for some or all of the claims to be rejected on the first action by the examiner. Relatively few applicatons are allowed as filed.

(c) Applicant's Response

If the Office action is adverse in any respect and the applicant wishes to persist in applying for a patent, he must reply within the time allowed, and may request reexamination or reconsideration, with or without amendment of the application. The request must be in writing and distinctly and specifically point out the supposed errors in the examiner's action. It must also respond to every ground of objection and rejection in the prior Office action.

After response by the applicant, the application will be reexamined and reconsidered, and the applicant will be notified if claims are rejected, or objections or requirements made, in the same manner as the first examination. The second Office action will usually be made final.

(d) Final Rejection or Allowance. On the second, as noted above, or on any subsequent examination or consideration, the rejection or other action may be made final. In responding to a final rejection or action, the applicant must cancel each claim which is rejected, or appeal the rejection. If any claim is allowed, the applicant must comply with any requirement or objection as to form.

Interviews with examiners may be arranged, but an interview does not remove the necessity for responding to office actions within the required time, and the action of the Patent Office is based solely on the written record.

As a result of the examination by the Patent and Trademark Office, patents are granted for roughly two out of every three patent applications filed.

(e) Abandonment or Final Issue. The response of an applicant to an action by the Patent Office must be made within a prescribed time limit.The maximum period being set at 6 months by the statute, which also provides, however, that the Commissioner may shorten the time for reply to not less than 30 days. The normal period for response to an office action is 3 months. If no reply is received within the time period, the application

is considered abandoned and no longer pending, although there are procedures for petitioning for a revival.

(f) Appeals. If the examiner persists in his rejection of any of the claims in an application, or if the rejection has been made final, the applicant may appeal to the Board of Appeals in the Patent and Trademark Office. The applicant must file a brief and is entitled to an oral hearing, if desired. (As an alternative to appeal, in situations where an applicant desires consideration of different claims or further evidence, a new continuation application is often filed.) If the decision of the Board of Appeals is still adverse to the applicant, other avenues of appeal to the courts are available.

(g) Interferences. Occasionally two or more applications are filed by different inventors claiming substantially the same patentable invention, and a proceeding known as an "interference" is instituted by the Patent and Trademark Office to determine who is the first inventor and therefore entitled to the patent. About 1% of the applications filed become involved in an interference proceeding. Interference proceedings may also be instituted between an application and a patent already issued within the preceding twelve months.

Each party to such a proceeding must submit evidence concerning when the invention was made. If no evidence is submitted, a party is restricted to the date his application was filed as his earliest date. The determination as to priority is made by a three examiners on the Board of Patent Interferences on the basis of the evidence submitted. The losing party may appeal to the Court of Customs and Patent Appeals or file a civil action against the winning party in the appropriate United States District Court.

The terms "conception" and "reduction to practice" are encountered in connection with priority questions since the inventor who proves to be the first to conceive the invention and the first to reduce it to practice will be held to be the prior inventor. However, there are many complicated circumstances where the rule cannot be stated this simply and the nuances of "conception" and "reduction to practice" are many. However, due to the importance of these terms and the fact that the rights acquired by research sponsors are also determined on the basis of conception and/or reduction to practice, a brief discussion of these follows in the next part.

(h) Allowance and Issue of Patent. If, on examination of the application, or at a later stage during the re-examination or reconsideration of the application, the application is found to be allowable, a notice of allowance will be sent to the applicant or his attorney, and a fee for issuing the patent is due within 3 months from the date of the notice. The basic issue fee for each original or reissue patent, except in design cases, is generally $250 for educational institution patents.

6. PRIORITY: CONCEPTION AND REDUCTION TO PRACTICE

Introduction

35 U.S.C. Sect. 102(g) provides that:

> "A person shall be entitled to a patent unless: before the appplicant's invention thereof the invention was made in this country by another who had not abandoned, suppressed, or concealed it. In determining priority of invention there shall be considered not only the respective dates of conception and reduction to practice of the invention, but also the reasonable diligence of one who was first to conceive and last to reduce to practice, from a time prior to conception by the other."

Thus, the United States settles the question of priority on the basis of who is "first to invent." Nearly every other country (except Canada and the Philippines) resolves the conflict solely on the basis for who is "first to file" the application disclosing the invention. For accuracy, however, it should be noted that even in this country, one's date of invention is presumed to be one's application filing date. The presumption is rebuttable, however, whereas in "first to file" countries it is not.

For the purpose of determining what constitutes the making of an invention, the inventive process is broken down into two steps: (1) conception, the mental part, and (2) reduction to practice, the physical part. Under general patent law, an invention is not completed until both the conception and reduction to practice have occurred, whether separately or simultaneously.

One should remember, however, that under Federal research contracts and applicable regulations, the Federal government defines the making of an invention as the conception or reduction to practice, and acquires Government rights on the basis of either. This contractual definition should not be confused with the patent law under discussion here, and the consequence of this Federal policy will be discussed in a separate part of this series entitled "Patent Rights under Government Contracts."

Conception

"Conception" has been defined by one court as follows:

> "The conception of the invention consists in the complete performance of the mental part of the inventive act. All that remains to be accomplished..., belongs to the department of construction, not invention. It is therefore the formation, in the mind of the inventor, of a definite and permanent idea of the complete and operative invention, as it is thereafter to be applied in practice, that constitutes an available conception, within the meaning of the patent law. This definition consists of two elements. First,

conception is a "mental" act. Second, this mental act must embody the invention that is actually reduced to practice. Or, to state it differently, the invention that is actually reduced to practice must have been anticipated by the alleged mental act for that act to be deemed the conception of the invention."

Another court has defined "conception" in the following terms:

"The formation in the mind of the inventor of a definite idea of a complete and operative invention as it is thereafter to be reduced to practice...The date of conception is the date when the invention is crystallized in all of its essential attributes and becomes so clearly defined in the mind of the inventor as to be capable of being converted to reality and reduced to practice by the inventor or by one skilled in the art."

The conception is, furthermore, of legal significance only if it is disclosed, but the mere idea or appreciation of what the inventor wishes to accomplish is not legally sufficient. With conception, the corroboration goes to the inventor's formation of the idea. If the invention is recorded in a readily identifiable form, it can be corroborated by a witness who is completely ignorant of the technology. Where there is no record of conception, however, and verbal testimony is offered, the witness must have a fairly sophisticated understanding of the technology to establish that the conception was in the same form.

The second element, that the mental act must be embodied in a physical form, presents certain problems. The ultimate expression of an idea tends to differ in some degree from the original idea itself. The inquiry therefore is whether the embodiment is a mere refinement of the mental act, or one of a different concept brought about by a more detailed study of the initial idea.

The courts have attempted to refine further the rule enunciated in one classic case that conception is shown when "the inventor or others skilled in the art can reduce the conception to practice without any further excercise of inventive skill." In restating the above rule, one case expanded the requirment into "without any further research or exercise of the inventive skill."

Emphasizing the concept of "research", the courts have tended to distinguish the inventor and persons of like skill in the art from those of ordinary skill in the art. If the inventor or others with his qualifications stayed with the idea, any later development is considered to be research. If the idea was "turned over" to one of ordinary skill who then altered it or added some feature to its physical embodiment, that development was considered something less than research. It suggests the view that if the inventor, or one of comparable skill, stayed with the idea, it was not complete, but if the inventor was willing to turn it over to a mechanic, the inventor at least believed it was complete.

Reduction to practice

In the eyes of the law, an invention is not complete and does not exist until it has been reduced to practice. Actual reduction to practice contemplates actual and complete use of the invention for its intended purpose. It occurs when an invention has been (1) embodied in some physical form which is (2) used to demonstrate its workability.

Physical embodiment involves the actual construction of an article of manufacture, preparation of a composition of matter, etc. that demonstrates in tangible form every element of the invention. Every particular aspect of the invention as claimed must be found in the physical embodiment, although it is still the claim, and not the physical embodiment, that defines the invention. Reduction to practice does not occur until there is a recognition and appreciation that the invention was in fact made.

Demonstrating workability requires that the physical embodiment be tested to determine whether it performs as contemplated, and it must be reasonably certain that the invention will perform its intended function in actual use. Workability, and hence reduction to practice, is established when it is shown that the invention is able to perform its intended purpose beyond a probability of failure in order to give assurance that the device will operate under normal working conditions for a reasonable length of time. The nature of testing required to establish actual reduction to practice depends upon the particular facts of each case.

Tests have been held to establish a reduction to practice when they show actual performance of the intended function with a quality, extent and character of operation sufficient to indicate that the invention has utility in the environment in which it is to be used. Testing is generally deemed sufficient if the paramaters observed in the testing bear an established relationship to performance in actual use and if the tests are sufficiently comprehensive to assure one reasonably skilled in the art that the intended functions either were being performed or would be performed in actual use. The invention need not pass the test with flying colors. A single successful use of the invention is sufficient to establish its actual reduction to practice.

Reduction to practice is not equivalent to commercialization, and it is not necessary that the invention be capable of commercial exploitation without further refinement.

Constructive reduction to practice

A reduction to practice may be either actual or constructive. An actual reduction to practice involves the physical construction or carrying out of the invention. The actual reduction to practice of a process occurs when the constituent steps have been performed. In the case of a product producing process, reduction requires the establishment of a utility for the products produced. The actual reduction of a composition of matter occurs when the composition has been produced and its usefulness demonstrated by actual testing, unless its utility is self evident.

A constructive reduction to practice, however, is a reduction to practice deemed to be such solely in the contemplation of the law without any physical construction or carrying out of the invention. A constructive reduction to practice involves only the formal filing in the Patent and Trademark Office of a patent application disclosing the invention.

Constructive reduction to practice is, in effect, a fiction which has arisen to meet the requirement that in order to file a patent application in the Patent and Trademark Office there must be a completed invention. The fiction assumes that the invention was previously conceived and the filing of the patent application completes the inventive act. This practice, of course, results in many paper patents which pertain to inventions that have never been built or tried. The same standards of proof of utility are applicable to a constructive reduction to practice as are applicable to an actual reduction.

Diligence

As noted earlier, 35 U.S.C. 102(g) states in part that "In determining priority of invention there shall be considered not only the respective dates of conception but also the reasonable diligence of one who was first to conceive and last to reduce to practice..."

Diligence is only significant where one party was the first to conceive but the last to reduce to practice. The party who was first to conceive need not have commenced due diligence at the time of his own conception. Diligence must, however, commence prior to his rival's conception and be continuously maintained until his own reduction to practice. Consequently, one who was the first to conceive cannot recapture priority by spurting into renewed activity upon learning that another has entered the field. At that point he can only regain priority by becoming the first to reduce to practice. Commercialization is not a requirement for diligence, conception or reduction to practice.

Diligence has the same significance whether there is reliance on an actual or a constructive reduction to practice. (In the latter case, there must have been diligence in preparing and filing the patent applicaton.) However, an unreasonable delay in filing after an actual reduction to practice, which in a sense is a lack of diligence, is more commonly characterized as suppression, as discussed below.

Diligence, as used in 35 USC Sect. 102(g) involves the continued application of the inventor or his representative to the task of reducing the conceived invention to practice. The law requires only ordinary or reasonable diligence, not uninterrupted effort or the concentration of all the applicant's energies. A party charged with showing diligence must account for the entire period during which diligence is required. Reasonable diligence may be shown by affirmative acts toward reduction to practice or by reasons for failing to act. Reasonable diligence by an inventor must be corroborated. Mereley asserting diligence does not factually establish it. A showing of diligence must include a showing of what acts occurred as well as the specific dates on which they occurred.

A party who was the first to reduce to practice, but thereafter suppressed or concealed his invention, forfeits the right to use the date of that reduction to practice to establish priority over a subsequent inventor. Such right cannot be resurrected by thereafter taking steps to file a patent application, even if such steps are taken before an opponent enters the field. However, even though an inventor has suppressed or concealed his invention, he will be entitled to a patent where his filing date is earlier than his rival's date of actual reduction to practice.

7. REMEDIES

Infringement

35 U.S.C. 271(a) provides that the making, using or selling of a patented invention without authority within the United States during the patent term infringes the patent. In addition, 35 USC 271 (c), provides that the sale of a component of a patented machine, or of a composition, material, or apparatus for use in practicing a patented process, while knowing the same to be made especially for use in an infringement of the patent (and not a staple article or commodity of commerce) is contributory infringement.

If a patent is infringed, the patentee may sue for relief in the appropriate Federal District court, and ask the court for an injunction to prevent the continuation of the infringement and for damages because of the infringement. The defendant may question the validity of the patent, which is then decided by the court. The defendant may also aver that what he is doing does not constitute infringement, and this question will be determined primarily on the basis of whether what the defendant is doing falls within the language of any of the patent claims.

In all suits for patent infringment, the patent is presumed valid and the burden of establishing invalidity is on the challenging parties (35 USC 282). Remedies for infingement by a private party include injunctive relief (35 USC 283) and damages adequate to compensate for the infringment, but in no event less than a reasonable royalty for the use made of the invention by the infringer, together with interest and costs as fixed by the court (35 USC 284). Suits for infringement of patents follow the rules of procedure of the Federal courts.

The United States Government may use any patented invention without permission of the patentee and no injunction can issue against such use. If the Government use infringes the patent, however, the patentee has a remedy for damages in the Court of Claims of the United States (28 USC 1498(a)).

If the patentee notifies anyone that they are infringing his patent or threatens suit, the one charged with infringement may himself start a Declaratory Judgment action in a Federal court and get a judgment in the matter.

Interferences

The policy of awarding a patent only to the first inventor is the basis for interference proceedings. An interference arises when two or more inventors claim the same invention and seek to determine which competing claimant made the invention first and is entitled to patent rights in it.

A patent owner who suspects that another patent interferes with his patent may seek to have his patent declared "prior in time." An action to determine priroty commences when the Patent Office, in considering the application of the potential infringer, believes that conflicting interests exist and gives notice to the parties (35 USC 135). In an action instituted under that section, the question of priority is determined by the Board of Patent Interferences. A party dissatisfied with the decision of the Board may appeal to the Court of Appeals for the Federal Circuit, although the party that prevailed before the Board may elect a different procedure which provides for review by civil action in the district court, with an appeal to the federal circuit. The remedy in an interference action is a declaration of priority.

Interference actions involving the government most often result when the government requests rights in a patent application filed by a party who allegedly reduced his invention to practice with federal funds. Such interference actions generally are authorized by agency enabling statutes. Those statutes provide that the Commissioner shall forward certain patent applications to agency administrators and shall issue patents in the name of the administrator upon request, unless the applicant petitions for a hearing before the Board of Interferences.

8. TREATIES AND FOREIGN PATENTS

Since the rights granted by a United States patent extend only throughout the territory of the United States, an inventor who wishes patent protection in foreign countries must apply for a patent in those countries.

Each country has its own requirements on patenting and the laws of other countries differ in various respects from the patent law of the United States and even from each other. In most foreign countries, publication of the invention before the date of the application will bar the right to a patent. Most foreign countries require that the patented invention must be manufactured in that country after a certain period, usually 3 years. If not, the patent might be void in some countries, and in others might be subject to the grant of compulsory licenses to other qualified licensees.

A treaty relating to patents, known as the Paris Convention for the protection of Industrial Property, is adhered to by 79 countries, including the United States. It provides that each country guarantees to the citizens of the other countries the same rights in patent and trademark matters that it gives to its own citizens. The treaty also provides for the right of priority in the case of patents, trademarks and industrial designs. This right means that, on the basis of a regular first application filed in one of the member companies, the applicant may, within a certain period of time, apply for protection in all the other member countries. These later applications will then be regarded as if they had been filed on the same day as the first application. The period of time within which the subsequent application may be filed in other countries is 12 months in the case of applications for patents and 6 months in the case of industrial designs and trademarks.

Another treaty, known as the Patent Cooperation Treaty, prersently signed by 35 countries, including the United States, became effective on January 24, 1978. The treaty facilitates the filing of applications for patents on the same invention in member countries by providing, among other things, for centralized filing procedures and a standardized application format.

Under United States law it is often necessary, in the case of inventions made in the United States, to obtain a license from the Commissioner of Patents and Trademarks before applying for a patent in a foreign country. Such a license is required if the foreign application is to be filed before an application is filed in the United States or before the expiration of 6 months from the filing of an application in the United States. After 6 months from the United States filing, a license is not required unless the invention has been ordered to be kept secret.

9. BIBLIOGRAPHY

Patent law and practice is a complex topic, most of it beyond the scope of this introductory material. However, there are a great many materials available to those who wish to pursue the subject. The following provide a useful starting point:

1. General Information Concerning Patents, a publication of the Patent and Trademark Office of the U.S. Department of Commerce. This 44-page pamphlet is described as "A brief introduction to patent matters including definitions of patents, copyrights, and trademarks; the workings of the Patent and Trademark Office; and what applicants must do." The table of contents of this publication is reproduced as Attachment 1 to this material. It may be ordered from the Government Printing Office. The current price is $3.

2. Patent Law Fundamentals (Second Edition) by Peter D. Rosenberg, New York: Clark Boardman Company LTD, 1981. This is a two-volume reference work, the price of which includes a subscription to continuing releases which keep the material up-to-date. The title pages and a summary of the contents are reproduced as Attachment 2 to this material. The price is 1983 was approximately $125.

NATIONAL COUNCIL OF UNIVERSITY RESEARCH ADMINISTRATORS

Introduction to

PATENT RIGHTS UNDER GOVERNMENT CONTRACTS

Workshop Materials - NCURA Intellectual Property Series - 1984

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Introduction to

PATENT RIGHTS UNDER GOVERNMENT CONTRACTS

This paper is one unit in a series prepared by the sponsored program and patent offices at M.I.T. for use in their own professional development program and in the workshop on intellectual property at the 1984 NCURA annual meeting. The NCURA Committee on Professional Development is making it available to NCURA members who need a basic understanding of intellectual property in connection with the negotiation and administration of sponsored research agreements.

Copies of this and other units in the series may be obtained from NCURA Headquarters.

Other Guidance

This series is intended to provide university research administrators with only an introduction to the basic concepts of intellectual property. Those who require a more complete understanding of the subject will wish to study other materials cited herein or developed from time to time by such organizations as the Society of University Patent Administrators, the Licensing Executives Society, the COGR Committee on Patents, Copyrights and Rights in Data, and the National Association of College and University Attorneys.

User Feedback

This material is intended to be self-improving. Users are, therefore, invited to forward comments, suggestions and new materials for the next revision to:

Chairman, Committee on Professional Development
National Council of University Research Administrators
One Dupont Circle, N.W., Suite 618
Washington, D.C. 20036

Introduction to

PATENT RIGHTS UNDER GOVERNMENT CONTRACTS

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1. GOVERNMENT RIGHTS IN PATENTS

Unit 1 in this series, "Patents and Patent Rights", discusses the legislative authority granted to Congress under the Constitution for the enactment of the Patent Laws contained in Title 35 of the United States Code, and the Copyright Laws, Title 17 of the Code.

The fact that the governnment may grant a patent under the authority of the patent laws, however, does not in and of itself give the government a right to use it. To obtain this right, the government must acquire it in some manner, as, for example, by contract, by purchase, as a condition of employment for its own employees, or by special procedures in the interest of public safety, etc.

In this paper we are primarily interested in the extent to which the United States may acquire rights in inventions made in the performance of Federally funded research grants and contracts. This may depend on such factors as the manner in which the Federal funds contributed to the making of the invention, the nature of that invention, the particular agency from which the funds were received, whether an independent contractor is a nonprofit organization or small business or other entity, etc.

As university administrators, however, our interest tends to focus more narrowly on rights acquired by the Government in inventions resulting from federally funded research grants and contracts with small businesses and non-profit organizations. This is determined in accordance with Public Law 96-517, OMB Circular A-124, the implementing Federal Acquisition Regulations (FAR Chapter 27), and agency supplements.

Public Law 96-517 creates a dichotomy in federal policy regarding the disposition of patent rights inventions arising from federally supported research and development efforts, (i.e., in "subject inventions"), between small business firms and non-profit organizations on the one hand, and private enterprises not qualifying either as a small business firm or non-profit on the other. It establishes a uniform policy for all federal agencies, except the TVA, thereby replacing some 26 different policies.

PL 96-517 and the implementing regulations are, therefore, of major importance to universities in the determination of patent rights and ownership under federal research grants and contracts, and are the focus of this paper.

2. THE PATENT AND TRADEMARK AMENDMENTS OF 1980

(Public Law 96-517)

On December 12, 1980, the Patent and Trademark Law Amendments Act (P.L. 96-517) was signed into law. This Act seeks to reform a number of areas of the United States patent law which have been troublesome for many years. Of major importance to university research administrators, however, the Act adds a completely new chapter to Title 35 of the U.S. Code. Chapter 38, entitled "Patent Rights in Inventions Made with Federal Assistance," and commonly referred to as the Uniform Patent Legislation, allows non-profit organizations and small business firms to elect to retain, with limited exceptions, title to inventions made in the course of government sponsored research.

Chapter 38 declares that it is the policy and objective of Congress to use the patent system to promote the utilization of inventions arising from federally supported research or development; to encourage maximum participation of small business firms in federally supported research and development efforts; to promote collaboration between commercial concerns and nonprofit organizations, including universities; to ensure that inventions made by nonprofit organizations and small business firms are used in a manner to promote free competition and enterprise; to promote the commercialization and public availability of inventions made in the United States by United States industry and labor; to ensure that the Government obtains sufficient rights in federally supported inventions to meet the needs of the Government and protect the public against nonuse or unreasonable use of inventions; and to minimize the costs of administering policies in this area.

These policies and objectives are in marked contrast to the position urged for many years in Congressional hearings by those who viewed the patent system with suspicion and who felt that the Federal government should acquire title to all inventions resulting from federally funded research and that universities and other contractors should not be granted title and the right to license government funded inventions.

In effect, the policy stated in Chapter 38 is more likely to effectuate the intent of Article 1, Section 8, of the Constitution, which provides that the Congress shall haved power "To promote the progress of science and useful arts by securing for limited times to authors and inventors the exclusive right to their respective writings and discoveries."

3. OMB CIRCULAR A-124

Public Law 96-517 was initially implemented by OMB Bulletin 81-22, which university representatives felt did not accurately reflect the intent of the law. A period of further discussion and negotiation followed, and OMB Circular A-124, which was effective March 1, 1982, superseded OMB Bulletin 81-22.

The stated purpose of OMB Circular A-124 is to provide "the policies, procedures and guidelines with respect to inventions made by small business firms and nonprofit organizations, including universities, under funding agreements with Federal agencies where a purpose is to perform experimental, development, or research work."

It is important for university representatives to be familiar with OMB Circular A-124 to ensure that the implementing FAR patent regulations and agency supplements are consistent with that Circular from a university standpoint. However, on a day-to-day basis, university administrators will be working with the policies and procedures set forth in FAR Chapter 27 and the standard patent rights clause in FAR 52.227-11, as these relate to universities, since they have been picked up almost verbatim, or with non-substantive modifications, in the various Federal agency supplements. For this reason, OMB Circular A-124 is not included in the appendices.

However, in order to avoid confusion, the following section explains how the standard patent rights clause first issued as Attachment A to Circular A-124 became the standard patent clause set forth at FAR 52.227-11.

Standard Patent Rights Clause

OMB Circular A-124 stipulates that each "funding agreement" (as defined in the Circular) must contain the standard patent rights clause which is set forth as Attachment A to that Circular. As issued in March 1982 that clause was intended to be used only in contracts with small businesses and domestic nonprofit organizations. However, the Presidential Memorandum of February 1983 stipulated that all Federal agencies would extend the principles of P.L. 96-517 to Federal R&D contracts with large business organizations (unless precluded by statute, as is the case with DOD, DOE and NASA). Consequently, in 1984, the standard clause was revised in minor details so that it could be used in all such contracts. It was also improved in a manner favorable to universities. That revised clause is now set forth in FAR 52.227-11, "Patent Rights - Retention by the Contractor (Short Form)," and is the clause contained in Appendix 2 to this paper.

4. COMMINGLING

Those individuals negotiating patent clauses in contracts with industrial sponsors must understand the issue of "commingling."

Part 6.a. of OMB Circular A-124 defines "funding agreement" as follows:

> "a. The term 'funding agreement' means any contract, grant or cooperative agreement entered into between any Federal agency, other than the Tennessee Valley Authority, and any contractor for the performance of experimental, developmental, or research work funded in whole or in part by the Federal government." (Underlining added)

Thus, the partial support of research by the Federal government may result in the "commingling" of Federal funds and private funds, with the government acquiring rights in the resulting inventions, which thereby become subject to the provisions of OMB Circular A-124. It should be noted that "commingling," as used in this context, is not limited to the mixing of Federal and non-Federal funds in the same account, since the partial Federal support may be provided in separate research accounts, or may have been provided at an earlier time. It is important, therefore, to know under what circumstances the government will be considered as having provided partial support. The following guidance is taken from the transmittal letter to OMB Circular A-124 (prefaced by "OMB"), from inputs provided by OMB to the Director of NIH (prefaced by "NIH"), and from a GAO report requested by Rep. Albert Gore (prefaced by "GAO").

1. "De Minimus"

OMB: "There were several comments that some 'de minimus' standard be established to define the threshold contribution of government funding to the making of a jointly funded invention below which the Circular regulation should not apply. These recommendations were rejected as being inconsistent with the Act, which does not define subject invention in terms of the size of the government financial contribution in making the invention.

2. Direct vs. Indirect Costs

NIH: "Many apparent problems can be resolved by the application of general cost accounting and auditing principles. In a project funded by commingled funds, the Federal Government's support is either through direct costs (i.e., salaries of the principal investigator and staff, laboratory supplies, equipment) or indirect costs (i.e., reimbursement of general university overhead, construction costs). As

a general rule, when a project is supported in whole or in part through direct costs, the patent regulations apply and the Government retains rights. When the Government supplies indirect costs only, as in previous Government funding for equipment or facilities, the patent regulations don't apply, unless there is a quid pro quo stipulated in the funding agreement."

Note: Those who have read the GAO report prepared at the request of Rep. Albert Gore concerning the contract between Massachusetts General Hospital and the Hoechst Company of West Germany, will recall the statement below (underlining supplied), which apparently contradicts the NIH formulation. There is reason to believe, however, that the GAO report overstated the case with respect to indirect costs, and this has been conceded by a GAO representative familiar with the report:

GAO: "Care must be taken, however, that no Federal funds directly or indirectly support the research leading to an invention if MGH is to claim that the terms of a (NIH) funding agreement do not apply. This may very well mean that MGH must account separately for all expenses leading to an invention including the cost of the research itself as well as indirect or overhead costs, to be able to show that the expenses were paid with funds provided by Hoechst. In the event MGH is unable to prove that NIH funding was in no way involved, the terms of the Act, as embodied in a (NIH) funding agreement, would apply."

3. Supplemental projects

OMB: "Notwithstanding the right of research organizations to accept supplemental funding from other sources for the purpose of expediting or more comprehensively accomplishing the research objectives of the government sponsored project, it is clear that the Act would remain applicable to any invention 'conceived or first actually reduced to practice in the performance' of the project. Separate accounting for the two funds used to support the project in this case is not the determining factor."

4. Simultaneous, closely related projects

OMB: "To the extent that a non-government sponsor establishes a project which, although closely related, falls outside the planned and committed activities of a government funded project and does not diminish or distract from the performance of such activities, inventions made in performance of the non-government sponsored project would not be subject to the conditions of the Act. An example of such related but separate projects would be to expand scientific understanding in a field, with a closely related industry sponsored project having as its objective the application of such new knowledge to develop usable new technology. The time relationship in conducting the two projects and the use of new fundamental knowledge from one in the performance of the other are not important determinants since most inventions rest on a knowledge base built up by numerous independent research efforts extending over many years. Should such an invention

be claimed by the performing organization to be the product of non-government sponsored research and be challenged by the sponsoring agency as being reportable to the government as a 'subject invention,' the challenge is appealable as described in Part 14.c."

Note: The legal significance of the proviso that the private research "does not diminish or distract" from the performance of the government funded project is unclear, but in other respects the position appears reasonable.

NIH: "If a single individual spends one-half time on a project supported with Government funds and one-half time on a privately supported project, the Government obtains patent rights only if the privately supported project is directly dependent on ideas or materials generated in the publicly supported project."

Note: It would seem more useful if this description were revised to refer to the "conception of the invention" rather than the "project" being directly dependent.

5. Sequential research

NIH: "Similarly, if a scientist spends ten years on a publicly supported project and then ten years on a privately supported project, the Government obtains no patent rights to the invention developed under private support unless it is clear that the idea was conceived with public funds".

6. Use of equipment

OMB: "An invention which is made outside of the research activities of a government funded project but which in its making otherwise benefits from such project without adding to its cost, is not viewed as a "subject invention" since is cannot be shown to have been "conceived or first actually reduced to practice" in performance of the project. An obvious example of this is a situation where an instrument purchased with government funds is later used, without interference with or cost to the government funded project in making an invention all expenses of which involve only non-government funds.

7. Use of buildings

NIH: "In the situation where privately supported work is done in a building previously constructed with Government funds, the Government obtains no patent rights in inventions developed through those private funds."

Where Federal Rights Apply

In those situations in which the Federal government acquires rights in an invention by having funded the research "in whole or in part," and the licensing of the invention is, therefore, subject to OMB Circular A-124 and the implementing Federal Acquisition Regulations, the following constraints apply. They are set forth in the paragraphs cited below in the patent rights clause at FAR 52.227-11. That clause is reproduced in Appendix 2 of this paper as published in the Federal Register. The page numbers after "Ref:" identify the page of the Register and the column (Left, Middle, Right) in which the paragraph may be found.

Paragraph in FAR 52.227-11	Ref: Federal Register page in Appendix 2

(b) Allocation of principal rights. Provides the Federal government with a nonexclusive, nontransferable, irrevocable, paid-up license to practice or have practiced for or on behalf of the United States the subject inventions throughout the world. Ref: 12989-M

(i) Preference for United States industry. Exclusive licensees must agree that products embodying the subject invention will be manufactured substantially in the United States. Ref: 12990-R

(j) March-in rights. Government may require granting of a license to responsible applicant(s) under certain specified circumstances and subject to procedural safeguards. Ref: 12990-R

(k) Special provisions for contracts with nonprofit organizations.

(1) Rights may not be assigned without Federal agency approval except to patent management organizations which meet the criteria set forth therein. Ref: 12991-L

(2) Contractor may not grant exclusive licenses to persons other than small business firms for a period in excess of those set forth therein (5 years from first commercial sale or use, 8 years from date of the exclusive license, not counting time for pre-market regulatory clearance, with fields of use differentiated). Ref: 12991-L

5. FEDERAL ACQUISITION REGULATIONS (FAR) - PART 27

In order to understand the current status of the Federal Acquisition Regulations, Part 27, with respect to patents, it may be useful to provide the following background.

1983 - Proposed FAR Part 27

In mid-1983, a proposed Part 27 of the Federal Acquisition Regulations was issued. After its Committee on Patents, Copyrights and Rights in Data had reviewed the proposed Part 27, the Council on Governmental Relations (COGR) responded with two main points:

1. The proposed regulations were materially inconsistent with P.L.96-517 and OMB Circular A-124; and

2. The proposed regulations attempted to set new federal policy on rights in data by (a) restricting the use and release of research data by university scientists and (b) shifting to the government title to computer programs arising under contracts.

March 20, 1984 - Revisions to the A-124 Standard Patent Rights Clause

On March 20, 1984, in the Federal Register at page 10393, the Office of Federal Procurement Policy, part of OMB, published a revision to OMB Circular A-124 consisting of minor modifications to the standard patent rights clause set forth in Attachment A of that circular. The purpose of the modifications was to implement the President's memorandum of February 1983, which directed that all Federal agencies, to the extent permitted by law, extend the principles of Public Law 96-517 to large businesses, in addition to small business firms and non-profit organizations. As modified, the clause can be used for all classes of research contractors.

It is intended that agencies use the revised clause in all grants, contracts, and cooperative agreements awarded after April 1, 1984 to small business and nonprofit organizations for the performance of research and development work. It is also to be used in such awards to big businesses to the extent permitted by law (which primarily excludes DOD, DOE and NASA).

The only substantive change, viewed by universities as favorable, provides that a Federal agency wishing to obtain title to an invention must request title within 60 days after learning of the contractor's failure to report the invention or failure to elect title within the specified times. This precludes a continuing cloud on the contractor's title to an invention when the agency could, but does not intend to request title.

This revised clause is now contained in FAR 52.227-11, "Patent Rights - Retention by the Contractor (Short Form)," which is reproduced in Appendix 2 of this paper.

March 30, 1984 - Publication of FAR - Part 27

When the FAR's were first published, Part 27, dealing with patents, data and copyrights, was omitted due to a number of unresolved policy issues, many of which related to data and copyrights.

On March 30, 1984, Federal Acquisition Circular 84-1 was published in the Federal Register, beginning on page 12794. In addition to various amendments to the FAR's published earlier, it contained Part 27 for the first time. (Subpart 27.4, however, relating to data and copyrights, contained only a brief policy statement to guide Federal agencies in framing their own regulations until FAR 27.4 is eventually issued.)

Federal agencies have generally incorporated FAR Part 27 with respect to patents into their own regulations by reference, although some have woven new explanatory text of their own around the FAR regulations. In any event, this paper will not discuss individual agency FAR supplements relating to patents since, in one way or another, they adopt the substance of FAR Part 27.

FAR Subparts 27.1, 27.2 & 27.3 and 52.227-11

University administrators should be familiar with FAR Subparts 27.1, 27.2 and 27.3, and these are reproduced in Appendix 1, as published in the Federal Register of March 30, 1984 at pages 12974 through 12985.

FAR Subpart 27.3 deals with "Patent Rights under Government Contracts," and Section 27.303 requires that the clause at 52.227-11, "Patent Rights - Retention by the Contractor (Short Form)," be inserted in contracts for experimental, developmental, or research work where the contractor is a small business concern or non-profit organization or (except for contracts of DOD, DOE or NASA) any other type of contractor. Limited exceptions to this requirement are set forth in 27.303(d) and involve (1) contracts for the operation of a Government-owned research or production facility, (2) exceptional circumstances, or (3) foreign intelligence activities.)

The patent rights clause set forth in FAR 52.227-11 is included in Appendix 2, and was reproduced from the same Federal Register at pages 12989 through 12991.

However, Subpart 27.3, "Patent Rights under Government Contracts," intertwines the guidance for all types of contractors in a sometimes confusing manner which makes it difficult to isolate that which relates solely to universities and small businesses from that which pertains to other contractors. In addition, the standard clause in 52.227-11 is not organized in a way which parallels the material in Subpart 27.3. It is, therefore, difficult to move back and forth between the two. For these reasons, we have added to the front of Appendix 1 a summary of the sections in Subpart 27.3 and have cross-referenced them to the paragraphs in the standard clause. Similarly, we have added to the front of Appendix 2 a summary of the paragraphs in the standard clause and have cross-referenced these back to the sections in Subpart 27.3.

APPENDIX 1

FAR SUBPARTS 27.1, 27.2 & 27.3

Summary and Cross-Reference

SUBPART 27.1 GENERAL

This subpart states that Part 27 is applicable to all agencies, which may adopt alternate policies, procedures and clauses only to the extent determined necessary to meet the specific requirements of laws, executive orders, treaties, or international agreements. It also lists eight guiding principles underlying goverrnment policy on patents, rights in data, and copyrights.

SUBPART 27.2 PATENTS

This subpart prescribes policy with respect to:

a. Patent infringement liability resulting from work performed by or for the government (including authorization and consent, notification and assistance, and indemnification).

b. Royalties payable in connection with performing government contracts, and

c. Security requirements covering patent applications containing classified subject matter filed by contractors.

The policy statements set forth in this subpart also identify the implementing contract clauses set forth in FAR 52.227. These policies and implementing clauses, however, will not be discussed further since our principal focus is on patent rights under government contracts. For that reason, we will concentrate on Subpart 27.3 in the remainder of this Appendix, and on the clause in 52.227-11 in Appendix 2.

SUBPART 27.3 PATENT RIGHTS UNDER GOVERNMENT CONTRACTS

In order to simplify the use of Subpart 27.3, we have listed below the section headings and, in parentheses, the page and column (Left, Middle or Right) in which each is located in the Federal Register as reproduced in this Appendix 1. No comments are provided where the material is self-explanatory.

In order to facilitate a comparison of Subpart 27.3 with the standard clause in 52.227-11 as set forth in Appendix 2, each section listed below is also cross-referenced to the corresponding paragraph, if any, in the standard clause. For example, "Ref: 12990-R-(j)" next to a section heading means that the most closely related paragraph, if any, in the standard patent clause is paragraph (j), located on page 12990, right-hand column, of the Federal Register as reproduced in Appendix 2.

Subpart 27.3		Ref: to 52.227-11 para. (if any) in F.R. (Appendix 2)
27.300	Scope (12978-R)	
27.301	Definitions (12978-R)	Ref: 12989-L-(a)
	Same as short-form clause but different order	
27.302	Policy (12979-L)	
(a)	Introduction - Origin and objectives	
(b)	Contractor right to elect title	Ref: 12989-M-(b)
(c)	Government license	Ref: 12989-M-(b) Ref: 12991-M-Alt.I
(d)	Government right to receive title	Ref: 12989-R-(d)
(e)	Utilization reports	Ref: 12990-M-(h)
(f)	March-in rights	Ref: 12990-R-(j)
(g)	Preference for United States Industry	Ref: 12990-R-(i)
(h)	Minimum rights to contractor	Ref: 12989-R-(e)
(i)	Confidentiality of inventions	

Subpart 27.3

Ref: to 52.227-11 para. (if any) in F.R. (Appendix 2)

27.303 Contract clauses (12980-M) Ref: 12989-L

(a) (1) Clause at 52.227-11, "Patent Rights - Retention by the Contractor (Short Form)" to be inserted where the contractor is a small business concern or non-profit organization (except as may be required under (d) below)), or and other type of contractor, except for contracts of DOD, DOE or NASA.

(2) Contracting officer may modify paragraph (f) of the clause to require certain listings, notifications, and copies of documents.

(3) Contracting office may add Alt. I to permit the government to sublicense foreign governments.

(b) (1) Criteria for use of clause at 52.227-12, "Patent Rights - Retention by the Contractor (Long Form) for contractors other than small business firms or nonprofit organizations.

(c) (1) Criteria for use of clause at 52.227-13, "Patent Rights - Acquisition by the Government"

(d) (1) Contracting officer may use alternative clauses in connection with the operation of a Government-owned research or production facility, exceptional circumstances, or foreign intelligence or counter-intelligence activities.

(2) Sets forth procedures for making determinations under (d)(1).

(e) Contractor may be required to certify that it is a small business firm or a nonprofit organization. The agency may protest.

(f) Alternate clause I providing license rights to foreign governments under (a)(3) above may be modified in certain respects.

27.304 Procedures (12981-R)

27.304-1 General

(a) Greater rights determination - (Covers acquisition of rights by the contractor or employee-inventor where the Government acquires rights under the clause at 52.227-13.)

(b) Retention of rights by inventor (where contractor does not elect to retain title)

(c) Government assignment to contractor of rights in Government employees' inventions.

Subpart 27.3	Ref: to 52.227-11 para. (if any) in F.R. (Appendix 2)

(d) Additional requirements (12982-L) - Contract modifications to require contractor to provide listings, reports, information, notices, copies of documents, confirmatory instruments, etc.

(e) Revocation or modification of contractor's minimum rights - (12982-L) - (covers written notice and appeal procedures applicable to revocation under Section 27.302(h)(2).

(f) Modification, waiver, or omission of rights of the Government or obligations of the contractor - Not applicable to universities; applies to contracts not subject to 35 U.S.C. Chapter 18.

(g) Exercise of march-in rights (12982-R) - States procedures governing the exercise of march-in rights set forth in paragraph (j) of the clause at 52.227-11. Ref: 12990-R-(j)

(h) Licenses and assignments under contracts with nonprofit organizations - Covers restrictions on assignment, and on the terms of exclusive licenses. Ref: 12991-L-(k)

27.304-2 Contracts placed by or for other government agencies.

27.304-3 Contracts for construction work or architect-engineer services.

27.304-4 Subcontracts (12983-R) Ref: 12990-M-(g)

(a) Policies and procedures of this subpart apply to all contracts at any tier. Hence, a contractor awarding a subcontract, and a subcontractor awarding a lower-tier subcontract, that has as a purpose the conduct of experimental, developmental or research work is required to determine the appropriate patent rights clause consistent with the policies and procedures of Subpart 27.3. Universities should always receive the clause at 52.227-11 unless an alternate clause is adopted in accordance with Subpart 27.3.

(b) Disputes to be resolved by agency contracting officer in consultation with counsel.

(c) "It is Government policy that contractors shall not use their ability to award subcontracts as economic leverage to acquire rights for themselves in inventions resulting from subcontracts."

Subpart 27.3

Ref: to 52.227-11 para. (if any) in F.R. (Appendix 2)

27.304-5 Appeals (12984-L)

Covers procedures by which contractors can appeal certain agency actions such as refusal to extend disclosure period, convey title, grant a waiver under 27.302(d), approve an assignment, extend an exclusive license period, etc.

27.305 Administration of patent rights clauses (12984-M)

Ref: 12989-M-(c)
Ref: 12990-L-(f)

27.305-1 Patent rights follow-up

27.305-2 Follow-up by contractor

27.305-3 Follow-up by Government

27.305-4 Conveyance of invention rights acquired by Government

27.305-5 Publication or release of invention disclosures

27.306 Licensing background patent rights to third parties (12985-R)

(a) Contracts with small business firms or nonprofits will not contain provisions allowing the Government to require the licensing to third parties of inventions owned by the contractor that are not "subject inventions" unless such provisions have been approved by, and written justification signed by the agency head.

(b) Criteria for determining whether licensing of background patents to third parties should be required.

APPENDIX 2

FAR 52.227-11, PATENT RIGHTS - RETENTION BY THE CONTRACTOR (SHORT FORM)

Summary and Cross-References

As noted earlier, the standard patent rights clause contained in Attachment A to OMB Circular A-124 was revised in the Federal Register of March 20, 1984 to be applicable also to other than small business firms and non-profits. That clause is now FAR 52.227-11, "Patent Rights - Retention by the Contractor (Short Form)" and is reproduced in this appendix.

In order to simplify the use of this clause, we have listed below the paragraph headings and, in parentheses, the page and column (Left, Middle or Right) in which each is located in the Federal Register as reproduced in this Appendix 2. The general content of individual paragraphs is summarized in some cases to help the reader locate particular topics, but these summaries should not be relied on as a legally adequate substitutes for a close reading of the paragraphs themselves.

In order to facilitate a comparison of this clause with Subpart 27.3 in Appendix 1, each paragraph listed below is also cross-referenced to the corresponding section, if any, of Subpart 27.3. "Ref: 12979-R-302(f)" next to a paragraph heading means, for example, that the most closely related section, if any, in Subpart 27.3 is Section 27.302(f), located on page 12979, right-hand column, Federal Register, as reproduced in Appendix 1.

Standard Patent Rights Clause at FAR 52.227-11	Ref: to Subpart 27.3 Section (if any) in Fed.Reg. (Appendix 1)
(a) Definitions (12989-L)	Ref: 12978-R-301
(b) Allocation of Principal Rights (12989-M)	Ref: 12979-L-302(b) Ref: 12979-M-302(c)

The contractor may elect to take title to any subject invention, with a non-exclusive, paid-up license to the United States to practice the invention or have it practiced on the government's behalf.

(c) Invention disclosure, election of title, & filing of applications by Contractor (12989-M) Ref: 12984-M-305

Note: The time periods referred to in each subparagraph below are critical and should be studied in detail from the clause itself.

Standard Patent Rights Clause at FAR 52.227-11	Ref: to Subpart 27.3 Section (if any) in Fed.Reg. (Appendix 1)

(c) 1. Disclosure - The contractor must disclose each subject invention to the federal agency within two months arter the inventor discloses it in writing to Contractor personnel responsible for patent matters.

Ref: to Subpart 27.3

2. Election - The contractor must elect in writing whether or not to retain title to any such invention by notifying the Federal agency within 12 months of disclosure; provided that the agency may shorten this period if the 1-year statutory patent filing period has been initiated by publication, sale or public use.

3. Filing - The contractor must file its initial patent application on an elected invention within a stated time.

(d) Conditions When The Government May Obtain Title (12989-R) Ref: 12979-M-302(d)

The contractor will convey title to the Federal Agency at its request when:

1. The contractor fails to disclose or elect within the times specified, or elects not to retain title

2. In those countries in which the contractor fails to file patent applications within the specified times, or decides not to continue prosecution or maintenance.

(e) Minimum Rights to Contractor (12989-R) Ref: 12980-L-302(h)

1. The contractor retains a nonexclusive, royalty-free license throughout the world (with limits on its transferability) in each invention to which the government obtains title, unless the contractor fails to disclose in the specified time.

2. The contractors license may be revoked under stated circumstances and (3.) with proper notice.

(f) Contractor Action to Protect the Government's Interest (12990-L) Ref: 12984-M-305
Ref: 12980-R-303(a)(2)

1. Contractor will cooperate in confirming government license rights or conveying title.

Standard Patent Rights Clause at FAR 52.227-11	Ref: to Subpart 27.3 Section (if any) in Fed.Reg. (Appendix 1)

(f) 2. Contractor will require employees, other than clerical and non-technical, by written agreement to disclose inventions and cooperate in filing and establishing government rights.

3. Contractor will notify Federal agency of decision not to prosecute or maintain patents.

(f) 4. Contractor will acknowledge Federal support and rights in the patent application and any patent issuing.

(g) Subcontracts (12990-M) Ref: 12983-R-304-4

Contractor will include this clause, suitably modified, in subcontracts, regardless of tier, for experimental, developmental or research work to be performed by a small business firm or nonprofit organization.

(h) Reporting on Utilization of Subject Inventions (12990-M) Ref: 12979-R-302(e)

Contractor will submit reports no more frequently than annually on utilization of subject inventions or on efforts at obtaining it.

(i) Preference for U.S. Industry (12990-R) Ref: 12980-L-302(g)

Precludes granting exclusive right to use or sell in the U.S. unless the grantee agrees that any products embodying the subject invention will be manufactured substantially in the United States, but with waiver by the Federal agency permitted under certain circumstances.

(j) March-in Rights (12990-R) Ref: 12979-R-302(f)
Ref: 12982-R-304-1(g)

The Federal agency, in accordance with procedures in A-124, may require the licensing of others in a field of use if it determines that such action is necessary for any of four reasons stipulated in the clause.

Standard Patent Rights
Clause at FAR 52.227-11

Ref: to Subpart 27.3
Section (if any) in
Fed.Reg. (Appendix 1)

(k) Special Provisions for Contracts with Non-Profit Organizations (12991-L) Ref: 12983-L-304(1)(h)

If the contractor is a non-profit organization, it agrees that:

1. Rights to the subject invention in the United States may not be assigned without approval of the Federal agency, except to a patent management organization as defined in this subpar. (k).

2. It will not grant exclusive licenses to other than small business firms for a period in excess of the earlier of five years from the first commercial sale or use of the invention, or eight years from the date of the exclusive license, excluding time before regulatory agencies necessary to obtain premarket clearance. Fields of use may be differentiated.

3. It will share royalties with the inventor.

4. The balance of royalties to the contractor after expenses incidential to the administration of subject inventions (including payments to inventors) will be utilized for the support of scientific research or education.