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## **LOS ALAMOS NATIONAL LABORATORY AND TECHNOLOGY TRANSFER**

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From its beginnings in 1943, Los Alamos National Laboratory (Los Alamos) has traditionally used science and technology to find creative, but practical solutions to complex problems. Los Alamos National Laboratory is operated by the University of California, under contract to the Department of Energy. We are a Government Owned-contractor Operated (GOCO) facility, and a Federally-funded research and Development Center (FFRDC). At Los Alamos, our mission is to apply science and engineering capabilities to problems of national security. Recently our mission has been broadened to include technology transfer to ensure that our scientific and technical solutions are available to the marketplace. We are, in staff and technical capabilities, one of the worlds largest multidisciplinary, multiprogram laboratories. We conduct extensive research in energy, nuclear safeguards and security, biomedical science, conventional defense technologies, space science, computational science, environmental protection and cleanup, materials science, and other basic sciences. Since 1980, by a series of laws and executive orders, the resources of the federal laboratories have been made increasingly available to private industry via technology transfer efforts. Los Alamos National Laboratory uses a variety of technology transfer methods including laboratory visits, cooperative research, licensing, contract research, user facility access, personnel exchanges, consulting, publications, and workshops, seminars and briefings. We also use unique approaches, such as our negotiating teams, to ensure that transfer of our developed technology takes place in an open and competitive manner. During my presentation, I will discuss the overall process and some of the mechanisms that we use at Los Alamos to transfer laboratory developed technology.

## **Authority**

In order to ensure the full use of the results of research and development (R&D) efforts of, and the capabilities of, the laboratory, technology transfer at Los Alamos is a mission area covered under the prime contract (W-7405-ENG-36) between the University of California (UC) and the Department of Energy (DOE). Technology transfer as a mission of the Laboratory is an implementation of the National Competitiveness Technology Transfer Act of 1989 (Sections 3131, 3132, 3133, and 3159 of Public Law 101-189), and is consistent with the policy, principles, and purposes of Sections 11(a)(1) and 12(g) of the Stevenson-Wydler Technology Innovation Act of 1980, as amended (15 U.S.C. 3710a); and of Chapter 38 of the Patent Laws (35 U.S.C 200 et seq); Section 152 of the Atomic Energy Act of 1954, as amended (42 U.S.C 2182); Section 9 of the Federal non-Nuclear Act of 1974 (42 U.S.C. 5908); and Executive Order 12591 of April 10, 1987. Los Alamos conducts technology transfer activities with the clear intent of providing benefit from Federal research to U.S. industrial competitiveness.

At Los Alamos National Laboratory, technology transfer is focused in the Industrial Partnership Center (IPC), which is the designated Office of Research and Technology Applications (ORTA). The IPC is currently under development and will have satellite centers associated with it to concentrate on specific multidisciplinary research and development efforts that generally cross our Laboratory organizational boundaries. The IPC will incorporate most of our current outreach activities and will be the focal point for Los Alamos technology outreach and initial interaction with the commercial sector. The Industrial Agreements Office (IAO) portion of the Center will conduct the business negotiations of technology transfer agreements and provide technology transfer guidance, training, and education to potential industrial or business partners as well as to Laboratory personnel regarding the business aspects of technology transfer. The IAO group also provides the overall technology transfer business and administrative support, and coordinates the legal, financial and contracting functions attendant to technology transfer at Los Alamos.

## **Fairness of Opportunity**

Los Alamos has developed procedures and is taking what we consider to be reasonable measures to ensure widespread availability of technologies suited for transfer. Technology transfer activities at Los Alamos are undertaken in an open, fair and competitive manner. An overview of the process typically used includes the following:

**Identification of Technology for Transfer.** Normally, the process starts with the identification of a technology that is ready for transfer or that is determined to have potential commercial/industrial use. This identification may come from the inventor(s)/developer(s), line management or program management. Business/industry may also identify Los Alamos developed technology that has commercial or industrial potential. Programmatic initiatives driven by the DOE, or other federal research activities at Los Alamos, and internally driven research to support our technology base are additional ways to identify current or emerging technologies suitable for transfer. These same initiatives can be used to develop new areas of technology development that may lead to technology transfer potentials.

**Los Alamos Negotiating Team.** At about the same time that a technology is identified as available/ready for transfer, a Negotiating Team is established. This team is composed of an individual from the Industrial Agreements Office (Chair); the developer(s) or inventor(s) of the technology; representatives(s) from line (and if appropriate program) management; a representative from the Laboratory's Legal Counsel/Intellectual Property office; and, if appropriate, representation from the Laboratory's contracting and financial offices. Primarily, this Negotiating Team selects the company or companies that the technology is to be transferred to and advises the legal and business negotiators on technical issues during the negotiation process. Other federal agency funding sources can supply input into the Negotiating Team through the Los Alamos Program Offices and the developer(s)/inventor(s).

**Public Announcement.** A public announcement of the technology available for transfer is made in the Commerce Business Daily (CBD) soliciting expressions of interest from the commercial sector. The CBD announcement may be augmented by a directed mailing to industries, businesses, and companies known to be engaged or expert in the technology area. Potential CBD responders are given a reasonable time period to respond with an indication of interest. Other public announcement methods used include, for example, the Laboratory's participation in the R&D 100 Award system, trade publication articles, and news media articles.

**Proprietary Information.** Responders to the public announcement(s) are requested to sign a Proprietary Information Agreement (PIA). A PIA may be unilateral (proprietary information provided by one side only) or bilateral (proprietary information provided by both sides). Recent changes in the law allow Los Alamos to protect company proprietary information for up to five years.

**Technical Exchange.** Following the signing of the PIA, we provide prospective industrial partners additional technical details on the technology available for transfer so that they can make an informed business decision as to whether or not they want to continue the technology transfer process. This technical exchange may take several forms, including seminars, conferences, publications, telephone discussions, technical staff member discussions, etc.

**Technology Development Plans.** Once the technical exchange is well under way or near completion, a technology development plan is developed. This plan can take the form of a Joint Work Statement (JWS), which is a document that is part of the Cooperative Research and Development Agreement (CRADA) system. Under licensing activity, Los Alamos requires that the company/business submit a plan, variously called a marketing plan, a business plan, or a development plan. Los Alamos prepares a solicitation-type package that includes evaluation criteria, type of agreement anticipated (license, CRADA, WFO, etc), along with other terms and conditions expected to be a part of the final negotiated document. This information is based on previously held discussions and the

public announcement. The interested parties are given an opportunity to respond with their plan which lays out in detail how the company plans to use, develop, market, and support the technology. This is a fairly extensive document, and is reviewed and evaluated by the Negotiating Team to identify the company (or companies) that we will initiate formal negotiations with for the technology transfer. Whatever form the technology development plan takes, it identifies the technical work to be accomplished, and can identify the business aspects in significant detail.

### **Technology Transfer Mechanisms.**

Once the company (or companies) are identified by the Negotiating Team, the technology transfer mechanism discussions and negotiations commence. Technology transfer can be accomplished by the following mechanisms:

- Technical Visits
- Publications
- Workshops, Seminars, Briefings
- Personnel Exchange
- User Facility Access
- Contract Research
- Consulting
- Licensing
- Cooperative Research

**Technical Visits:** In a general sense, technical visits, publications, and workshops/seminars/briefings are somewhat more informal technology transfer mechanisms, although they may be part of a more formal agreement.

**Personnel Exchanges** are typically conducted as part of a formal agreement such as cooperative research agreements and may be unilateral or bilateral.

User Facilities are designated by the DOE and are established at Los Alamos (and other DOE facilities) to ensure widespread participation by the scientific community in specific areas of research. User Facilities are also accessible to commercial and industrial users through agreement with the DOE. It is important to understand that the contractual agreement in this case is between the DOE and the company.

Contract research (also called Work for Others) is based on an agreement with the industry/business and the DOE for the business/industry to completely fund the research or technology development. This type of research must meet several criteria, including non-competition with industry and non-interference with other research activity at Los Alamos. The contractual agreement, in this case, is also between the DOE and the company.

Consulting provides access to key Laboratory technical individuals, and can be part of a licensing or cooperative research activity. Consulting agreements are a Los Alamos line management approval function.

Licensing can occur as the result of technology developments from other technology transfer mechanisms or can occur based on a Los Alamos developed technology which is mature enough to have commercial/industrial viability without further Laboratory development activity. The full range of licensing activity (i.e. exclusive; non-exclusive; royalty or non-royalty bearing) is undertaken at Los Alamos and is a negotiated process conducted by the Industrial Agreements Office, with support from the Negotiation Team. The actual licensing agreement is a contractual agreement between the University of California and the involved company.

Cooperative research is accomplished under a formal program and process called the Cooperative Research and Development Agreement (CRADA). This is a negotiated process that includes initial DOE approval of the work to be conducted (identified in a Joint Work Statement); a negotiated contractual agreement between Los Alamos and the commercial entity; and overall approval by the DOE.

### **Other Issue Areas**

Technology transfer issues, such as conflict of interest, US preference, small business consideration, are specifically addressed by detailed University of California, DOE, and Los Alamos policies and procedures, and are covered in the Price Contract between the University of California and the Department of Energy.

National Security issues are specifically covered under appropriate security regulations.

Los Alamos conducts technology transfer activities with the clear intent of providing benefit from Federal research to U.S. industrial competitiveness. In the interest of enhancing U.S. industrial competitiveness, Los Alamos, in its licensing and assignments of Intellectual Property, gives preference to U.S. business and industry so as to enhance the accrual of economic and technological benefits to the U.S. domestic economy.