

FLC ORTA Handbook



*A Comprehensive Guide for Office of Research
and Technology Applications Personnel*

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Section One

INTRODUCTION – THE ORTA HANDBOOK

From its beginning several decades ago, technology transfer has become an integral element of federal laboratories from coast to coast. Partnerships between the labs and industry have resulted in the successful commercialization of thousands of technologies and products. That many of the things we use every day had their beginnings in a government laboratory is a testament to how our nation has come to rely on technology transfer as a means to strengthen the economy.

The Office of Research and Technology Applications (ORTA) plays a key role in shaping a federal laboratory’s approach to technology transfer by developing and promoting the partnerships necessary for technology transfer. Federal scientists and their industrial partners see ORTAs as the first step in getting their technology transfer efforts off the ground. Patent applications and licensing, Cooperative Research and Development Agreements (CRADAs), technology assessments, state and local technology transfer programs—these are just some of the areas where ORTAs are actively involved.

As a representative of an ORTA, you serve as a broker, connecting the people essential for the effective transfer of technology. While technology transfer does have technical components, it is also dependent on person-to-person relationships forged inside and outside of the laboratory. Having a greater understanding of not only the function of the ORTA but of technology transfer issues in general, will make your efforts encouraging your laboratory’s participation in technology transfer that much more effective. This *ORTA Handbook* will help you facilitate the transfer of technology developed in your laboratory to the private sector for commercialization.

The *ORTA Handbook* provides a wealth of information on not only the legislative origins of the office but the most prominent issues regarding technology transfer. On the following pages you will find information on:

- Overview of the ORTA’s functions
- What an ORTA does—the technology transfer process
- Technology transfer mechanisms (including model CRADAs for government-owned, government-operated [GOGO] and government-owned, contractor-operated [GOCO] laboratories)
- Federal and nonfederal organizations supporting technology transfer
- Intellectual property rights
- Legal basis for ORTAs.

In short, this *ORTA Handbook* is a reliable and up-to-date reference tool that you will find useful again and again.

Section Two

THE ORTA—AN OVERVIEW

The ORTA Defined

Although the Office of Research and Technology Applications (ORTA) is an organizational structure that was established in federal laboratories through congressional legislation, the acronym “ORTA” has evolved to include the individual(s) who actually performs the functions of the ORTA organization and serves as the focal point for the lab’s technology transfer activities. The legislation establishing ORTAs specified that those individuals who fill the positions in an ORTA should be “highly competent technical managers” who are “full participants in the technology transfer process” (15 USC 3710).¹ Thus, the ORTA manager, who should possess basic knowledge of intellectual property rights and basic technology transfer mechanisms, is empowered to develop and promote the key partnerships necessary for technology transfer.

The ORTA, which is one of the federal government’s key technology transfer organizations, functions as a technology “broker,” connecting the people inside and outside of the laboratory who are essential for the effective transfer of technology.

The Legal Foundation of the ORTA

The ORTA has its origins in congressional legislation. The Stevenson-Wydler Technology Innovation Act of 1980 (amended by the Technology Transfer Act of 1986) called for the establishment of an ORTA in each major federal laboratory. As specified in 15 USC 3710, each federal laboratory with 200 or more scientific, engineering, and related technical positions must have an ORTA staffed by at least one full-time person who is a highly competent technical manager and a full participant in the technology transfer process. In addition, each federal agency that operates one or more federal laboratories must make available sufficient funding (either as a separate line item or from the agency’s research and development [R&D] budget) to support the technology transfer function at the agency and at its laboratories, including support of the ORTA. The specific staffing and funding levels for ORTAs are determined by each federal laboratory and its parent agency.

¹ For citations from the United States Code (USC), the reader is referred to the FLC publication *Federal Technology Transfer Legislation and Policy* (known as “the Green Book”), which contains the technology transfer legislation and presidential executive orders that constitute the framework of the federal technology transfer program.

According to 15 USC 3710, the specific functions of each ORTA office are to:

- Prepare application assessments of selected R&D projects in which the laboratory is engaged that may, in the opinion of the laboratory, have potential commercial applications.
- Provide and disseminate information on federally owned or originated products, processes, and services with potential application to state and local governments and private industry.
- Cooperate with and assist the Federal Laboratory Consortium for Technology Transfer (FLC), the National Technical Information Service (NTIS), and other organizations that link the R&D resources of that laboratory and the federal government to potential users in state and local governments and private industry.
- Provide technical assistance to state and local government officials.
- Participate, where feasible, in regional, state, and local programs designed to facilitate or stimulate the transfer of technology for the benefit of the region, state, or local jurisdiction in which the federal laboratory is located.

At many laboratories, the function of the ORTA includes technology assessment; marketing of laboratory resources; the establishment, negotiation and management of cooperative R&D under CRADAs; and the negotiation of licenses for intellectual property. An ORTA is similar to a “high-tech marketing department” that focuses on two types of marketing efforts: technology transfer services and, in conjunction with the technology developer, specific applications to potential collaborators or adopters. The ORTA is the laboratory’s focal point for implementing technology transfer and performs the role of a technology “broker,” connecting the people and organizations inside and outside the laboratory that are essential to effective technology transfer (see Figure 2-1).

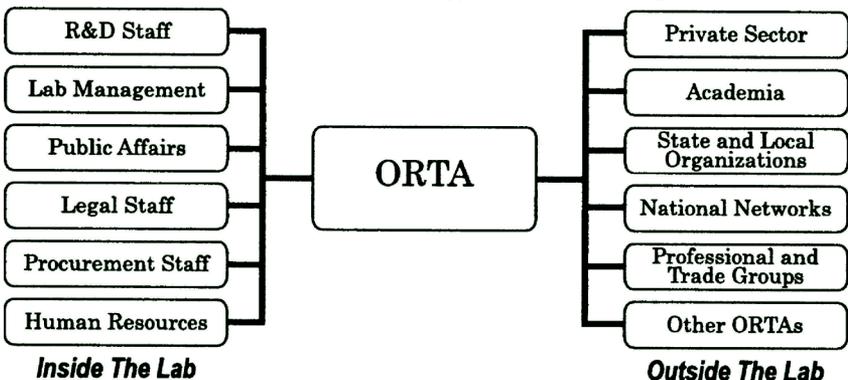


Figure 2-1. The ORTA as a Technology Broker

The ORTA Manager’s Role and Responsibilities—an Overview

The ORTA manager at each laboratory, as with any high-tech marketing department, must:

- Make potential clients aware of the laboratory’s technology
- Identify to the client the value of utilizing the technology
- Understand and appreciate issues related to commercial markets
- Understand organizational resistance to change.

The ORTA manager’s responsibilities include: technology applications assessment, marketing, and aid to potential clients through technical assistance and organizational outreach.

- **Technology applications assessment**—The assessment of laboratory or center technology is a process that must be flexible enough to reveal formerly unsuspected applications. This assessment often includes the ORTA staff’s continuous interacting with scientists and engineers, reviewing patent applications and other documents, and presenting assessment progress and results to management personnel.

The technology applications assessment process should identify technology that is representative of laboratory capabilities and/or has a clear, economically significant commercial application. The result of the technology applications assessment process will be a knowledge base that the ORTA can use to respond to inquiries and unanticipated application opportunities defined by potential clients, and information that may be used to generate “application assessment” documents.

- **Marketing**—There are two types of marketing efforts the ORTA can pursue—technology “pull,” in which private industry seeks technology from the laboratory, and technology “push,” in which the ORTA and other laboratory representatives seek private collaborators to commercialize specific laboratory technology.
 - **Technology pull**—If an inquiry from the private sector matches the capability of the laboratory, then technology transfer may take place. However, if the inquiry is outside the capabilities of the laboratory, an effort should be made to refer the inquiry to another laboratory. (Note: This enhances the reputation of the laboratory and increases its visibility marketing its own technology.) An important technology referral mechanism is the FLC Technology Locator Service, which is accessed through the FLC’s website (www.federallabs.org).

- Technology push—The ORTA may disseminate information and provide technical briefings detailing the laboratory’s technology in a number of venues, including:
 - Trade shows
 - Technical symposia
 - Technology transfer meetings and conferences
 - Trade association meetings
 - Trade or laboratory newsletters
 - FLC or other technology transfer newsletters
 - Open house with industry or academia
 - Working with news and educational media
 - Regional economic development meetings
 - Technology transfer organization and/or laboratory websites.
- **Technical assistance and organizational outreach**—Technical assistance/organizational outreach services may be made available by the laboratory to state and local governments, the private sector, and schools and academia. These services, which would include help by laboratory volunteers with appropriate technical skills, should be marketed. Technical assistance may take the form of problem analysis, providing and interpreting technical information, “hands-on” technical help from laboratory volunteers, and limited projects within the laboratory. Providing such services to potential clients can enhance the image of the federal laboratory among many important constituents and easily result in positive technology transfer opportunities.
 - **Technical assistance to state and local governments**—One kind of technical outreach assistance is to help state and local governments assist the businesses in their area. This is based on the concerns of state governments and many local governments for economic development in their jurisdiction. The ORTA might, for example, help evaluate technical aspects of new business proposals or serve as a technical resource.
 - **Technical assistance to the private sector**— ORTAs have the opportunity to enhance U.S. competitiveness by linking interested private-sector companies with federal laboratory-developed technologies. Industry partners usually will only undertake activities that they believe will result in a profit. Even so, industry participation and investment in collaborative research activities are increasing as more private-sector companies discover the benefits of forming partnerships with federal laboratories.

- **Technical assistance to schools and academia**—Assistance may include a variety of activities, such as help with a system operation, computer networking, or assistance to teachers and students to improve science and technical education.

The ORTA manager’s role and responsibilities are addressed in greater detail in Section Three, “The ORTA and the Technology Transfer Process.”

Section Three

THE ORTA AND THE TECHNOLOGY TRANSFER PROCESS

A Technology Transfer Process

As previously indicated, technology transfer is primarily a function of person-to-person relationships that must be forged inside and outside the laboratory. The ORTA performs this role by serving as the interface who connects the people and organizations that are essential to the technology transfer (T2) process. This process is often more of an art than a science; and two technology transfer opportunities rarely follow a similar development process, nor is the process always linear. Nevertheless, this section provides a model for conducting the technology transfer process. It should be kept in mind that the model in this section is only one suggestion for structuring the technology transfer process; there are other models for implementing the process.

The following paragraphs provide a model for the typical technology transfer process conducted by an ORTA at a federal laboratory.

The T² Process—Step One: Screening of Technology

The first phase in the process of transferring technology is to gather information on each technology in the laboratory and perform a preliminary screening to select those with the highest perceived potential for commercial application. This includes identifying the technologies and/or processes that have been patented by laboratory personnel, that have patents pending, or for which invention disclosures have been filed. It also includes assessing the work in progress at the laboratory by reviewing project documentation and interviewing technical personnel as well as program and project managers. The goal of the initial screening process is to identify the basic and alternate uses for the technology and to identify embedded technologies with commercial or public use potential that may have been hidden until the embedded technology was identified. Alternate uses include spinoffs of the existing technology, the evolution of the technology, or an entirely new use for the technology in other industries. (For example, what could be done with an aerospace technology in the medical industry, automobile industry, public safety, etc.?)

The following suggestions may be helpful in screening technologies for their transfer potential.

Know the Technology

To identify technology that may be available for transfer, it is necessary to have a detailed understanding of the work being conducted in the laboratory. In larger laboratories it may be impossible to know all of the activities. If this is the case, you may want to concentrate on developing an in-depth understanding related to the laboratory's:

- Core competencies
- Areas of technical excellence
- Patented products and processes
- Areas where specific (and perhaps local) markets exist.

Some methods to maintain awareness of laboratory activities include:

- Talking frequently with researchers
- Reviewing patent applications
- Reading reports of R&D results in the laboratory
- Accessing databases of experts and areas of expertise
- Attending program reviews and strategic planning sessions
- Making people aware of the ORTA and its role.

Educate Your Laboratory Partners

To effect technology transfer, many people in the laboratories must participate actively with the ORTA. You will want to coordinate with a number of individuals and organizations within the laboratory who will comprise your "technology transfer team." This team will most likely include:

- Laboratory management
- Researchers
- Legal staff
- Public affairs staff
- Procurement personnel.

For all these individuals and organizations, the ORTA should provide training related to:

- The legislative mandate for technology transfer
- Technology transfer and the laboratory's mission
- The benefits of technology transfer to the laboratory

- Potential benefits of technology transfer for the U.S. economy and global competitiveness
- Technology transfer mechanisms
- Technology transfer success stories and lessons learned.

Train Laboratory Personnel in How to Protect Potential Innovations

The ORTA can facilitate technology transfer only if innovative laboratory technologies are identified and protected. Laboratory personnel need to be trained in intellectual property (IP) issues, and you may want to provide or arrange for IP training in the following topics:

- A general understanding of intellectual property and intellectual property rights
- The necessity of protecting innovations
- Keeping adequate research records
 - Bound laboratory notebook with numbered pages
 - Chronological record of events
 - Signed and dated by witnesses at frequent intervals
- Avoiding premature disclosure
- Working with the ORTA
- Filing disclosure statements
- Filing U.S. and foreign patent applications.

The T² Process—Step Two: Assessment of Technology

The purpose of assessment is to identify and prioritize technologies that appear worthy of full-scale evaluation. The first step is to determine the potential of candidate technologies for commercialization. Not all innovations for which invention disclosures or patent applications have been filed or for which patents have been issued can be commercialized. Determining those technologies and processes with the greatest transfer potential is essential.

Many technologies developed in the laboratory for a particular use may have a very different use in the private sector. For example, a technology might have been developed for defense purposes but might have potential for nondefense applications. Or a technology might be identified as a “spinoff” technology—from a technology developed in one particular technical area but with potential application in different technical areas or markets. Because a technology may be commercialized for very different purposes from the original intent, it is important to consider the commercial potential from diverse viewpoints.

Convene Multidisciplinary Teams

One way of considering commercial potential from a variety of viewpoints is to convene teams with diverse technical backgrounds to consider the technology's potential. A multidisciplinary team could:

- Define the technology in sufficient detail so all team members have an adequate understanding of it.
- Use brainstorming techniques to encourage divergent and creative thinking about possible uses of the technology.
- Select the most promising ideas for further discussion and identification of potential markets.
- Decide to consider options in more detail or not to pursue further.
- If the decision is to explore options, determine who inside and outside the laboratory should be consulted and assign responsibilities. Some areas that should be explored may include:
 - Estimation of capital requirements needed to bring the technology to commercialization
 - Manufacturing process needed
 - Patent likelihood
 - Competitive advantage possibilities
 - Market niches
 - Possible field-of-use licenses (Patents can be licensed for more than one field of use. For example, a patent can be licensed for both medical and electronics applications.)
 - Possible problems related to classified technologies.

The T² Process—Step Three: Evaluation of the Commercialization Possibilities/Marketing of Technology

The next phase in the process of transferring technology to the private sector is to identify:

- Potential markets or market niches for the technology
- Competing technologies
- The financial potential for the selected technology.

Identify Potential Markets and Partners

The ORTA performs a critical role in connecting private industry, academia, state and local organizations, and professional and trade organizations to the laboratory. Where particular areas of excellence or core competencies in the laboratory can be identified, some techniques for identifying potential partners outside the laboratory may include:

- Identifying and interacting with relevant professional and trade organizations
- Using web-based commercial tools for technology assessment and determination of market potential
- Talking with area Chambers of Commerce
- Interacting with state economic development organizations
- Asking researchers to identify their peers outside of the laboratory.

Making Opportunities Known to the Private Sector

Some of the techniques that have been used effectively by federal agencies and laboratories to inform the private sector, universities, and state and local governments about opportunities available in the federal laboratories are identified below. It is important to note that using a combination of these techniques ensures that “freedom of opportunity” requirements are met (see the discussion of “Freedom of Opportunity” below):

- **Innovator’s contact with peers**—The direct contacts that inventors have with their peers through professional societies and conferences is a highly effective method for creating interest in specific innovations outside of the laboratory.
- **Technology briefs**—Short summaries of technologies and their potential commercial uses can be widely distributed to targeted populations via mail, e-mail, or a website.
- **Presentation at professional and trade associations**—These associations bring together professionals with similar interests and can provide a forum to discuss opportunities in the laboratories. Advertisements in professional magazines have also proven effective.
- **Small business workshops**—Workshops targeted at small businesses in specific technology areas are often sponsored by laboratories. State economic development organizations and the Small Business Administration may be potential partners in sponsoring these workshops.
- **Technology roundtables**—Discussion forums can be organized around a particular technology area with representation sought from one or more laboratories, private industry, academia, and state and local governments.
- **Laboratory representation at national meetings**—The FLC, AUTM, and other similar organizations sponsor national forums where private-sector companies are invited to visit laboratory displays and talk with laboratory personnel.

- **Advertisements and articles in R&D magazines**—Targeted exposure of laboratory technologies in R&D magazines can provide effective connections among parties with similar interests.
- **Website posting**—Potential partners search for partnership or licensing opportunities on laboratory/facility websites.
- **Advertisement in FedBizOps**—FedBizOps (www.fedbizopps.gov) is widely read by many U.S. technology companies and provides a forum for broad dissemination about possible opportunities in the laboratory.

The T² Process—Step Four: Transfer of Technology

The transfer phase of the technology transfer process begins when information about the technology is disseminated and a transfer strategy is developed. In this phase, agreements are initiated, negotiated, and completed.

Negotiating Technology Transfer Agreements

Negotiating agreements with the private sector is a complex process. Both federal and private-sector parties need to identify early in the process what they hope to gain from the agreement. Many factors will need to be considered when negotiating agreements that are advantageous to all parties. Some of these factors include:

- **Laboratory**
 - What is the relevance of the technology to the laboratory's mission?
 - What are the benefits to and needs of the laboratory?
 - What federal resources will be required?
- **Technology**
 - What is the stage of development?
 - What resources will be required to bring it to commercialization?
 - What additional “know-how” will be needed?
 - What are the potential fields of use?
 - What is the size of the market for the technology?
- **Company**
 - What is the size of the company and what are its resources?
 - What is its ability to develop, manufacture, market, and distribute the commercialized product?
 - What are the potential profits?
 - What is the need to protect proprietary data and to obtain a competitive advantage?

Federal-Sector Concerns

The federal government has unique concerns about the technology transfer process, including:

- Freedom of opportunity/fairness of opportunity
- U.S. preference
- Special considerations for small business
- Conflicts of interest
- Freedom of information requests.

Freedom of Opportunity/Fairness of Opportunity

Notice of opportunities should be made available to interested parties in as much detail as possible and to as wide an audience as possible. Avoiding the appearance of showing preference to a particular organization or individual is of concern to all federal laboratories and their agencies. It should be noted that when a GOGO laboratory agrees to grant an exclusive license, it is required to advertise that intent in the *Federal Register* prior to granting the license.*

U.S. Preference

The Federal Technology Transfer Act of 1986 (P.L. 99-502) states that preference should be given to business units located in the United States, particularly companies that agree to manufacture the technology substantially in the United States. In order to ensure a maximum “payoff” on taxpayers’ investment in R&D, federal technology transfer policy is designed to ensure that U.S. business and U.S. workers receive preference in the commercialization of the technology.

Special Consideration for Small Business

The Federal Technology Transfer Act of 1986 mandates that special consideration be given to small businesses. Small businesses employ the majority of U.S. workers and are often more ready to accept risk and to innovate than larger companies. But small businesses generally do not have the R&D funds and other capital resources to commercialize technology, so giving consideration to the unique needs of small businesses is a concern for federal parties.

Conflicts of Interest

Before negotiating agreements, it is important to be familiar with local conflict-of-interest policies. Federal agencies and their laboratories are

* This requirement does not apply to GOCO laboratories.

concerned with avoiding the appearance of impropriety in their dealings with private-sector parties. Generally, conflict-of-interest provisions regulate the employment of laboratory employees by private-sector parties, the acceptance of gratuities, and situations where inventors receive “undue gain” as a result of the position they hold in the federal laboratory. Legal interpretation of conflict-of-interest provisions as they apply to technology transfer negotiations may be needed.

Freedom of Information Requests

The Freedom of Information Act (FOIA) of 1986 (P.L. 89-554) allows the public access to public records, including the results of federally funded R&D. Federal officials are required to respond to requests for information. In technology transfer activities, however, the private-sector party is unlikely to invest in commercializing a technology if its competitors have full access to knowledge about the technology. Certain provisions have been made in technology transfer legislation to protect data developed under a CRADA from disclosure for up to five years. However, it is important that private-sector parties mark as proprietary any data shared with federal parties that the private entity considers to be proprietary. It is also important that federal parties have procedures in place for protecting proprietary data provided by their private-sector partners.

Private-Sector Concerns

Private-sector concerns regarding involvement in technology transfer with the federal government include:

- Risk versus potential return on investment
- Speed of moving technologies into the marketplace
- Licenses for the technology.

Risk vs. Potential Return on Investment

In assessing whether to proceed with the development of a new product or service, private-sector parties must weigh the potential risks of the situation. A low-risk opportunity would probably involve:

- A need for a product that is widespread
- A small investment to bring the technology to market
- A potential for a return on an investment that is high.

Conversely, a high-risk situation might include:

- A small market niche

- A high investment to bring to the market
- A potential return on an investment that is low.

In order to weigh potential risk versus potential return on investment, private sector parties will need to know:

- The potential lifetime of the technology
- Cost of development
- Ability to monopolize product sales
- Ability to obtain capital and the cost of that capital
- Extent of commitment of federal parties.

Speed of the Process

The private sector often views federal laboratories as slow and bureaucratic. As rapidly as technology develops, the private-sector party is concerned with moving new technologies to the marketplace as quickly as possible. The private-sector party is also concerned about the level of effort required to come to an agreement with a federal laboratory.

Licensing

The granting of a license may be exclusive, nonexclusive, or restricted to a particular field of use, and/or restricted to a particular geographic territory (partially exclusive). An exclusive license is generally preferable to the private-sector party because it keeps the competition from practicing the invention. Private-sector parties, however, may be very open to acquiring a license that is restricted to the particular field of use in which their company specializes or the specific geographic territory in which they do business.

State and Local Government Concerns

State and local governments are interested in promoting new business in the community. Both are often willing to provide funds to foster the growth of new business; but funds are limited, and state and local governments must make decisions about where the greatest return on investment to the community will occur. Additionally, state and local governments will be concerned with:

- Public perception
- Potential environmental impacts
- Potential creation of new jobs.

The T² Process—Step Five: Post-transfer of Technology

The post-transfer phase occurs after all negotiations are complete. During this phase the ORTA monitors the performance of the parties involved and ensures that the agreements of the transfer are implemented.

ORTA Role in Monitoring Agreements in Place

The ORTA role does not end when an agreement is successfully negotiated. Followup activities include:

- Maintaining a liaison role to ensure the agreement is being successfully executed
- Resolving problems that arise
- Obtaining principles for renegotiating agreements if situations warrant
- Ensuring that the technology is being commercialized successfully
- Maintaining records of activities and sharing of “lessons learned.”

Other ORTA Technology Transfer Support Activities

Provide Technical Assistance

Often, technology transfer opportunities may arise from “unsolicited” calls from parties seeking technical assistance or other interactions with the laboratory or center.

Be Responsive to Queries from the Private Sector

Developing systems and networks to handle incoming inquiries from the private sector helps to forge partnerships outside the laboratory. Some processes that may be helpful include:

- Developing standard methods for recording information on incoming calls
- Having in place systems for tracking inquiries from initial call, to referral, to record of followup action
- Developing or utilizing databases of experts and areas of expertise in the laboratory for the purpose of directing referrals
- Following up referrals to determine if further action is needed.

Section Four

TECHNOLOGY TRANSFER MECHANISMS

The laws, orders, and regulations that have been written to implement federal technology transfer have created or encouraged the development of technology transfer mechanisms. Two of the most significant mechanisms used widely throughout the federal government are cooperative R&D, formalized through Cooperative Research and Development Agreements (CRADAs), and the licensing of intellectual property owned by the federal government. Other types of technology transfer mechanisms include professional interactions, different types of contractual arrangements, grants, use of user facilities, etc. The following paragraphs describe a number of the mechanisms that facilitate technology transfer efforts between federal laboratories and nonfederal entities, but focus on CRADAs and licensing. (Models/samples of many of these mechanisms are available in the FLC Technology Transfer Mechanisms Database at <www.federallabs.org/t2mechanisms>.)

Cooperative Research and Development Agreements (CRADAs)

CRADAs were authorized under the Federal Technology Transfer Act of 1986 (P.L. 99-502) and modified or extended by later legislation. They provide federal laboratories with an extremely flexible vehicle to facilitate the transfer of commercially useful technologies from federal laboratories to the nonfederal sector. Later legislation extended the use of CRADAs to federal research centers and to government-owned, contractor-operated (GOCO) laboratories. Thus, the primary purpose of the CRADA legislation is to allow government-owned, government-operated (GOGO) and GOCO laboratories to enter into cooperative agreements for technology transfer with all types of organizations. (As currently written into law, the stipulations and requirements for a CRADA are contained in 15 USC 3710a.)

CRADAs are legal instruments that allow one or more federal laboratories and one or more nonfederal parties (i.e., units of state or local government; industrial organizations; public and private foundations; nonprofit organizations, including universities; and others, including individuals who are licensees of government-owned inventions) to enter into agreements to conduct specified research- and development-related activities that are consistent with the laboratory's mission.

A CRADA is neither a procurement contract nor a grant, but it is a contract in the sense that it is a legally enforceable document. Through CRADAs, federal laboratories can commit resources such as personnel, facilities, equipment, intellectual property, or other resources (with or without reimbursement), but not funds, to the nonfederal parties. Nonfederal parties can commit funds as well as other resources as a part of the agreement. CRADAs should not be viewed as an alternative to normal procurement procedures. Because CRADAs are not subject to the terms of federal procurement contracts, Federal Acquisition Regulations (FARs) are not applicable.

CRADAs support the broader purpose of providing the means for a laboratory to leverage its R&D efforts consistent with the laboratory's mission. Through a CRADA, for example, a laboratory may gain access to outside expertise and facilities (and in some cases, funds) that can be used to further the mission goals of the laboratory. In addition, the commercialization efforts of the CRADA partner may result in royalty payments to the laboratory as well as to the laboratory inventor(s).

The establishment of cooperative R&D efforts through a CRADA has perhaps the greatest possibility for long-term payoff of any technology transfer mechanism. An intimate working relationship between federal and commercial researchers will allow the federal side to understand commercial needs and allow ideas from the commercial sector to flow into federal laboratories. The ideal CRADA partner will be an innovative and entrepreneurial organization that can succeed in taking federal technology to a competitive market and that has the potential for inspiring innovation in the laboratory's mission work.

With regard to licensing, CRADAs can incorporate a wide variety of arrangements. In addition, CRADAs are sensitive to the needs of business organizations to protect commercially valuable information. Trade secrets or confidential information supplied by a partner should not be disclosed. Information developed in whole or in part by government employees during the course of a CRADA can be protected from disclosure for up to five years.

Advantages of CRADAs

CRADAs offer many benefits to the laboratories, the laboratory scientist, and the industry or university partner.

- **For the laboratory, the CRADA:**
 - Allows a flexible mechanism for transferring the results of federally funded R&D to the private sector.
 - Allows private-sector parties to provide funds as well as other resources to assist with the commercialization of technology.

- Allows federal laboratories to get a percentage of the royalties generated as a result of commercialization.
- **For the laboratory scientist or engineer**, the CRADA:
 - Affords an opportunity for federal personnel to provide expertise to private-sector parties in the commercialization of their work.
- **For private-sector parties**, the CRADA:
 - Allows nonfederal partners an opportunity to obtain rights to commercialize the results of government or joint R&D.
 - Provides for effective leveraging of resources through a team effort.
 - Provides for access to federal expertise.

Characteristics of CRADAs

The following characteristics distinguish CRADAs from other technology transfer mechanisms:

- The work must be consistent with the laboratory's mission.
- While federal laboratories cannot provide funds as part of the agreement, private-sector parties may.
- CRADAs are not subject to the terms for procurement contracts.
- Special consideration is to be given to small businesses.
- Preference is to be given to private-party collaborators who agree that products embodying inventions made under the CRADA or produced through the use of such inventions will be manufactured substantially in the United States.
- CRADAs must contain provisions to control a variety of intellectual property issues such as data rights, property ownership, and rights to subject inventions made under the CRADA.
- Certain data resulting from the work can be protected for up to five years.
- At a minimum, the government must have a nonexclusive, nontransferable, irrevocable, paid-up license for use by the government of any government invention or joint invention.

Establishing a CRADA

A CRADA can be originated from sources within or outside of the laboratory.

- **Laboratory-Initiated CRADAs**—The most common CRADA-development scenarios involve CRADAs initiated by individuals in the laboratory. The following paragraphs describe some typical scenarios:

- An individual in the laboratory sees the commercial potential (or public use potential) for an invention or idea that originated in the laboratory and is able to identify a potential external partner. For inventions with commercial potential, one of the principal roles of the industry partner is to market the invention. Therefore, the laboratory should seek an industry partner with the right resources and industry position to successfully market the invention.
- An individual in the laboratory has developed a new and original technology, but it is so new that there is no existing market demand. In this case, the inventor should seek an industry partner who will eventually stimulate a market. In projects of this sort, the protection of trade secrets and confidential information is particularly important in order to preserve the advantages of owning an original technology.
- An individual in the laboratory knows or is aware of a private industry or academic organization that has unique resources that the laboratory needs or would like to use. In this situation, the laboratory creates a CRADA with this partner that will mutually benefit the laboratory and the partner.
- Industry-Initiated CRADAs—CRADAs may also originate with the nonfederal partner. In a typical scenario, a business may have begun developing a product, but believes that a government laboratory has unique resources or innovative technology that could enhance the success of the product. In this case, the business organization approaches the federal laboratory with a proposal to either pay for the needed resources or offers the government some form of joint ownership or profit-sharing as the basis for cooperation.

Generic CRADA Development Process

If the potential exists for establishing a CRADA, it is important that personnel from the ORTA be involved in the process as early as possible. ORTA staff can provide much valuable information and assistance in this area. Because the basic process involved in originating a CRADA and following it through to approval and implementation is generally similar across federal agencies, this handbook provides the following generic step-by-step outline to familiarize the ORTA with the overall CRADA-development process. To further assist the ORTA in the development of CRADAs, sample generic CRADAs for both GOGO and GOCO laboratories are provided in Appendices B and C, respectively. (The ORTA will find additional CRADA models in the FLC's T2 Mechanisms Database (as well as other technology transfer mechanisms) utilized by various federal agencies and laboratories. The T2 Mechanisms Database can be accessed on the FLC website at <www.federalallabs.org/t2mechanisms>.)

However, because each agency and laboratory is free to develop its own CRADA model (and even within an agency or an individual laboratory, the exact process may differ from place to place or over time), ORTA personnel must ensure that they utilize their agency’s specific wording and format for CRADAs.

The **generic** CRADA process, which is slightly different for GOGO and GOCO laboratories, comprises the following steps (see Figure 4-1):

- Define the concept
- Draft the CRADA
- Review the CRADA
- Conduct formal negotiations
- Obtain appropriate laboratory signatures
- Review and approval by agency
- Execute the CRADA

The ORTA usually oversees the entire process and can provide the principal investigators with the necessary documents and support to originate a CRADA. The following paragraphs provide a detailed description of the process, including the key role of the ORTA.

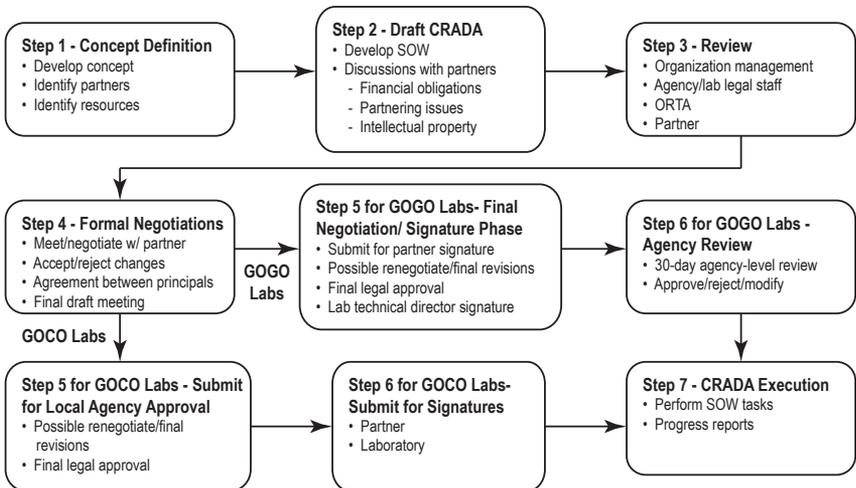


Figure 4-1. Generic CRADA Process

- Step 1: Concept Definition—The CRADA process usually starts with an individual in the laboratory who becomes the Principal Investigator (PI) for the project. If the idea for the CRADA originates within the laboratory, presumably the person with the idea is the PI. If the idea has originated outside of the laboratory, most likely the idea will be channeled to the ORTA from a PI in the laboratory with whom the outside entity has already discussed the concept.
 - PI (whether self-selected or assigned) develops the concept for the cooperative R&D project.
 - ORTA and PI coordinate and discuss the basic concept for the CRADA, the potential CRADA partner(s), and laboratory resources required to implement the CRADA.
 - ORTA provides the PI with a CRADA information package (if available) consisting of a model CRADA used by the agency/laboratory, CRADA guidelines, and a CRADA checklist.
 - ORTA initiates contact with the laboratory/agency legal department.
- Step 2: Draft CRADA
 - Using the model CRADA provided by the ORTA, the PI identifies required information and drafts the preliminary Statement of Work (SOW).
 - Discussions are initiated with the potential partner regarding financial obligations, partnering issues, and intellectual property issues.
- Step 3: Review
 - Preliminary draft provided to the ORTA for review (after PI obtains organization management approval).
 - ORTA ensures that the draft CRADA is reviewed by the laboratory/agency legal office.
 - ORTA tracks the progress of the potential CRADA internally.
 - ORTA reviews revised CRADA and provides the draft CRADA to the legal office for final review.
 - After legal office approval, the ORTA submits the draft CRADA to the potential partner for review.
- Step 4: Formal Negotiations
 - ORTA convenes the laboratory negotiating team, which may consist of the PI, legal, management and technical personnel, and the ORTA.
 - ORTA coordinates negotiations with the partner, which continue until there is a clear understanding and agreement between the

- laboratory and the partner regarding all terms of the CRADA, including intellectual property, the tasks outlined in the SOW, liability, resource commitments, etc.
- After negotiations, a final draft is prepared and forwarded to organization management, the ORTA, and the legal office for concurrence.
 - Step 5: Final Negotiations/Signature Phase
 - ORTA coordinates final agency/laboratory approval and, after final approval by the legal office, submits the CRADA to the partner for signature. (Further negotiations with the partner may be required.)
 - After the copy signed by the partner has been returned, the ORTA attaches the laboratory concurrences and forwards the CRADA to the laboratory technical director for signature.
 - Step 6: Laboratory/Agency Review
 - After receiving approval from the laboratory technical director, the ORTA forwards copies to agency headquarters (usually the agency R&D head), legal office, organization management, research partner, and PI.
 - The agency R&D head has 30 days to act on the CRADA; actions may include approval, rejection, or request for modifications.
 - During this time, the ORTA manages the interface with the agency. If modifications are required, the process returns to Step 2.
 - Step 7: CRADA Execution
 - When a CRADA is approved, the ORTA notifies the PI, organization management, legal office, and laboratory technical director.
 - The laboratory and partner then perform the cooperative R&D tasks outlined in the SOW according to the agreed-upon schedules.
 - The ORTA receives periodic progress reports from the PI and monitors the progress of the CRADA.

Licensing of Intellectual Property²

A license is a contract between a licensor (e.g., the holder or owner of a patent) and a licensee (e.g., an industry partner) that ensures the licensee that the licensor will not sue the licensee for patent infringement. In other words, the government agrees not to sue the industry partner for infringing the government's patent.

² A complete discussion of licensing and royalties is provided in the *FLC Technology Transfer Desk Reference*, which is available at the FLC website (www.federalallabs.org).

Licensing is the transfer of less-than-ownership rights to another party so that the other party can use the intellectual property. The licensing of government-owned patents is one of the tools used to promote the utilization and commercialization of inventions that arise from agency-supported R&D. The government may grant licenses to the private sector for the use of federally funded inventions, and the private sector may grant licenses to the government. For CRADAs, patent license agreements may be incorporated within the CRADAs and handled according to CRADA guidelines.

Before the government grants a license to a government patent, the industry partner must satisfy a number of conditions. The potential licensee must supply the government with a satisfactory development or marketing plan, as well as information about its ability to implement the plan. The company must commercialize the invention within a specified period of time and must continue to make the benefits of the invention reasonably accessible to the public. The company must report its utilization of the patent periodically to the government agency holding the patent. Preferably, licenses will be granted to companies that agree to substantially manufacture in the U.S. the product developed through the use of the invention. However, foreign licenses can be obtained.

The government may grant nonexclusive, partially exclusive, or exclusive licenses. **Nonexclusive** licenses are granted when participation by several companies offers better opportunities for the broad development and use of an invention or when an invention has already been substantially developed for commercial sale. **Nonexclusive** licenses may be granted without the publication of any notice. In general, nonexclusive licenses are preferred over exclusive licenses.

An **exclusive** or **partially exclusive** (e.g., limited to a field of use or geographic area) license grants the licensee the sole right to use, manufacture, and sell a patented article. When granting exclusive licenses, GOGO laboratories must publish in the *Federal Register* the notice of availability and the notice of intent to grant an exclusive license and provide an opportunity for the public to respond. (Note: A partially exclusive license that is granted for a specific field of use (e.g., medicine) or for a particular geographic area allows the government to grant more than one license for that invention.)

For GOCO laboratories, the contractor organization implements similar licensing arrangements, but without the need to publish a notice in the *Federal Register*.

Whatever licensing arrangement (i.e., nonexclusive, exclusive, or partially exclusive) is made, the government must retain a nonexclusive, royalty free, paid-up right to practice the invention for government use.

The licensing of inventions arising under a CRADA must follow CRADA guidelines on licensing.

Licensing From the Private Sector to the Laboratory

The government acquires licenses to software and other intellectual property through contracts that specify limitations concerning use, copying, transfer, and disclosure. All laboratory employees are bound to follow these agreements and should ensure that information or materials received are clearly marked with any restrictions that apply.

The laboratory and the individual may be held liable for violating the terms of the intellectual property agreements. The government routinely conducts audits to ensure that unauthorized software is not being used on government equipment.

Other Technology Transfer Mechanisms

In addition to CRADAs and licensing intellectual property and, depending on the statutory authority available to the relevant agency, there are a significant number of other methods utilized by federal laboratories to facilitate technology transfer, including:

- **Alliances**—Informal tools that allow a federal laboratory to enter into a MOU with other organizations to pursue common technology interests. Alliances enhance the technical capabilities of partners and facilities, and are implemented by a nonbinding document that outlines the principles of the alliance.
- **Collegial Interchange, Conferences, and Publications**—Collegial interchange is the informal and free exchange of information among colleagues; it is a basic mechanism for technology transfer. Presentations at professional and technical conferences concerning results of research and development or discussions of work in progress are considered mechanisms of technology transfer. Conference presentations are often published and distributed to conference attendees. Government research and development results are often published in professional journals to share information with others having similar interests. Caution should be taken in all of these exchanges not to disclose information prematurely if the results of the research may result in a patent application or if other proprietary data are involved.
- **Consulting to the Laboratory**—Consulting services to the laboratory are procured by means of a contract. These contracts are generally for a specific period of time and involve a well-defined scope of work.

- **Consulting by Laboratory Personnel**—In certain cases, nonfederal personnel in GOCO laboratories may provide consulting to a private-sector party to further the technology transfer process. The laboratory must approve these arrangements to ensure there are neither conflicts of interest nor potential intellectual property concerns. (Note: This does not apply to federal employees in GOGO laboratories.)
- **Personnel Exchange Programs**—Exchange programs provide for a transfer of personnel either to the laboratory from another party or from the laboratory to another party. These arrangements are generally for the purpose of exchanging expertise and information. Exchanges of laboratory personnel to the private sector and private-sector personnel to the laboratory to exchange expertise and information can enhance the knowledge, expertise, and research of both parties and are excellent first steps toward long-term alliances between federal R&D facilities and U.S. industry. Generally, no proprietary data are exchanged, the cost is paid by the organization sending the personnel, and the programs are short-term (usually one year).
- **Incubators**—An incubator is a multi-tenant business development facility for startup companies. During the time the startup company is physically located in the incubator facilities, the sponsor (i.e., state or local business community) can assist the company with technical and managerial aspects. After a certain length of time, though, the company is expected to move to a new location where it can function on its own.
- **Informational Materials**—Various mechanisms are used to implement technology transfer awareness among laboratory personnel and potential partners in the private sector, academia, and other government agencies. These may include presentations, newsletters, brochures and pamphlets, electronic and collateral materials, and Internet websites. (Note: Examples of these types of informational materials are available on the FLC website at <www.federallabs.org>.)
- **Memorandum of Understanding (MOU) and Memorandum of Agreement (MOA)**—An MOU or MOA is an agreement between two government, academic, or private-sector partners (e.g., government, university, or private sector, including nonprofits). In a number of cases, MOUs have been used to establish the organizational links in technology transfer efforts.
- **Partnership Intermediaries**—Affiliated with a state or local government, a partnership intermediary assists companies with utilizing federal technology, provides assistance to ORTAs, and serves as a technology broker (see 15 USC 3715). A partnership intermediary relationship is normally implemented via a contract or an MOU.

- **Small Business Innovation Research (SBIR)**—The SBIR Program (www.sba.gov/sbir) was originally authorized in 1982 and reauthorized through 2008 by the Small Business Research and Development Enhancement Act of 2000. SBIR is a highly competitive program designed to encourage the commercialization of products and processes developed by small businesses through federal funds. Each year 11 federal departments and agencies are required to reserve a portion of their R&D budgets for SBIR awards. These agencies designate SBIR R&D topics and accept proposals. SBIR awards or grants are awarded competitively to small U.S.-owned commercial businesses with less than 500 employees that submit proposals addressing topics published by the agencies. Following submission of proposals, agencies make SBIR awards based on small business qualification, degree of innovation, technical merit, and future market potential. Small businesses that receive awards or grants then begin a three-phase program. The SBIR Program provides two years of confidentiality for data created in the program, and the contractor obtains title to the inventions. For more information on the SBIR program, visit the Small Business Administration's (SBA) SBIR/STTR website at www.sba.gov/sbir or contact the SBA Office of Technology at (202) 205-6450.
- **Small Business Technology Transfer (STTR)**—Authorized in 1992, STTR is a three-phase program similar to the SBIR program in many ways (see above). The key differences are that STTR funding is available only from five agencies and award applicants must be collaborative partnerships involving a small business and a U.S.-located college or university, nonprofit research organization, or federally funded research center. The designated agencies select R&D topics, accept proposals, and award grants for a three-phase program that mirrors the SBIR program. Awards are based on small business/nonprofit research institution qualifications, degree of innovation, and future market potential. The STTR program was reauthorized through 2009 by the Small Business Technology Transfer Program Reauthorization Act of 2001. The STTR program provides early-stage R&D funding directly to small companies working cooperatively with researchers at other research institutions. The objectives of the STTR program are to bridge the funding gap between basic research and commercial products, and to provide a way for researchers to pursue commercial applications of technologies. For more information about the STTR Program, visit the SBA SBIR/STTR website (www.sba.gov/sbir) or call the SBA Office of Technology at (202) 205-6450.
- **Technical Assistance**—Technical assistance allows the laboratory or facility to provide knowledge, specialized equipment, and facilities to be used for promoting U.S. competitiveness. Technical assistance

agreements allow government scientists and engineers to provide assistance, with or without a fee, to nonfederal parties, that may be as simple as providing information over the phone or as involved as spending a few days onsite.

- **Use of User Facilities**—Laboratory facilities designated by the government as “user facilities” contain unique, complex, experimental scientific equipment and expertise that are not readily available in the private sector. The government allows the use of user facilities by the technical community, universities, industry, and other federal laboratories and centers to conduct specified research. The research may be proprietary or nonproprietary in nature, and intellectual property provisions must be detailed in the agreement.
- **Nonfederal Work for Others**—Many agencies have statutory authority to sell services (including engineering and research services) that are not available in the private sector. This allows the private sector to tap into the intellectual knowledge of federal employees without requiring the collaborative activity of a CRADA.

Section Five

FEDERAL ORGANIZATIONS SUPPORTING TECHNOLOGY TRANSFER

The ability to connect federal laboratory resources with other federal laboratories, industry, academia, and state and local governments is essential to the success of technology transfer. A number of federal organizations and many federal agencies, as well as many nonfederal organizations on national, state, and local levels, share the responsibilities for technology transfer activities and are available to provide the connections needed to effect technology transfer. The key federal technology transfer organizations are the federal agencies, federal laboratories, ORTAs, and the FLC; other organizations include professional societies, and state and local government organizations. This section provides details on the roles played by the federal organizations, the relationships among them, and how you can use their resources to assist with your own technology transfer activities. The role of the nonfederal organizations is discussed in Section Six.

Federal Agencies

Executive Order 12591, “Facilitating Access to Science and Technology,” directs federal agencies and departments to improve the transfer of federally developed technology and technical information to the marketplace. The Executive Order spells out the means by which federal agencies can accomplish technology transfer. These include:

- Encouraging federal laboratories to collaborate with state and local governments, universities and business through CRADAs
- Licensing intellectual property developed through CRADAs or by individual federal laboratories
- Encouraging “science entrepreneurs” to act as conduits among federal laboratories, universities, and the private sector
- Implementing royalty-sharing programs for federal inventors
- Developing a uniform federal policy permitting federal contractors to retain rights to software, engineering drawings, and other federally generated technical data, in exchange for royalty-free use by the government
- Developing and implementing an exchange program for scientists and engineers in the federal laboratories to take temporary assignments in the private sector and vice versa.

Two federal agencies have specific roles to play in the federal technology transfer effort. These agencies are:

- **Department of Commerce**

- ***National Technical Information Service (NTIS)***—As the largest central resource for government-funded scientific, technical, engineering, and business-related information, NTIS (www.ntis.gov) actively disseminates scientific and technical information generated by federally funded research and development in over 350 subject areas from over 200 federal agencies. Such information includes technical reports, computer software, technology transfer application assessments, and information regarding training technologies. NTIS, which is open to the public, provides a range of services, including:
 - Searchable online database of over 600,000 government information products, including summaries of completed government-sponsored studies from 1964 to the present, and research projects currently in progress
 - Hard-copy documents, which provide bibliographies with full abstracts, and directories with sources of technology information
 - Documents in multimedia formats, including CD-ROMs, microfiche, magnetic tapes, and diskettes
 - Compilation and sale of documents describing federal technologies available for licensing, as well as resources and technical expertise available within the government's R&D system
 - Public sale of government-sponsored research, development and engineering reports, as well as foreign technical reports and other analyses prepared by national and local government agencies, their contractors, and grantees
 - Management of the Federal Computer Products Center and the Center for Utilization of Federal Technology
 - Summaries of current U.S. and foreign research reports, as well as other specialized information for publication in a variety of weekly newsletters, a biweekly journal, and an annual index.
- ***National Institute of Standards and Technology (NIST)***—Formerly the National Bureau of Standards, NIST (www.nist.gov) promotes U.S. innovation and industrial competitiveness by advancing measurement science, standards, and technology in ways that enhance economic security and improve quality of life. During its 100-plus years of existence, NIST has served

U.S. industry and the public with a mission and approach unlike any other government agency. Specifically, NIST's primary goals are to strengthen U.S. industry's competitiveness; support the science and engineering community through fundamental research; and improve public health, safety, and the environment. NIST provides a wide variety of services to help U.S. industry accomplish its most pressing tasks of innovation, rapid commercialization of technology, and achieving total quality in all facets of business operations, including:

- **Baldrige National Quality Program**—Promotes and recognizes organizational performance excellence
 - **Hollings Manufacturing Extension Partnership**—Provides technical and business assistance to smaller manufacturers.
- **Department of Defense (DOD)**
 - **Defense Technical Information Center (DTIC)**—DTIC (www.dtic.mil) provides a central point within the DOD for acquiring, storing, retrieving and disseminating scientific and technical information. DTIC maintains a variety of technical information databases and provides online access to these databases, as well as gateways to other government and commercial databases. In support of technology transfer, DTIC has organized a list of 22 technology transfer topics (e.g., domestic technology transfer, dual-use technology transfer, manufacturing technology transfer, technology assessments, etc.) and provides sample lists of citations to encourage access to the referenced reports. A new online system, the Cooperative Programs for Reinvestment (CPR), has recently been established to provide Internet access to information on more than 300 consortia and federal programs. The CPR service provides, among other things, access to Technology Reinvestment Project (TRP) announcements, Small Business Innovation Research (SBIR) announcements, and the technology transfer programs of individual federal laboratories. There are also plans to add information regarding active CRADAs to the system.

Federal Laboratories

Because technology transfer is a responsibility of each laboratory, resources have been established to support laboratory science and engineering professionals in this task. These resources include the ORTA and the Office of Patent and General Counsel.

- **ORTA**—An ORTA was established at each federal laboratory by the Stevenson-Wydler Technology Innovation Act of 1980

and reaffirmed by the Federal Technology Transfer Act of 1986. Laboratories with 200 or more R&D employees are required to establish and maintain an ORTA for the purpose of managing and coordinating technology transfer efforts with state/local governments, universities and private industry. At many laboratories, the function of the ORTA includes technology assessment; marketing of laboratory resources; the establishment, negotiation and management of cooperative R&D under CRADAs; and the negotiation of licenses for intellectual property.

- **Office of Patent and General Counsel**—This office in a federal laboratory or agency determines whether the government or the employee owns the title to an invention. If there is evidence that the government contributed in the form of funds, time, services of other employees on duty, equipment, facilities, information, materials, or supplies, the title will most likely be granted to the government. Staff in this office is generally responsible for filing activities associated with patents, licenses and copyrights, and assists the ORTA with negotiating. The ORTA in each laboratory should coordinate closely with the laboratory's or agency's Office of Patent and General Counsel.

Federal Laboratory Consortium for Technology Transfer (FLC)

Chartered by Congress in 1986, the FLC (www.federallabs.org) is a nationwide network of federal laboratories to advance technology transfer. In accordance with 15 USC 3710, membership in the FLC includes all major federal laboratories and R&D centers with 200 or more full-time scientific and engineering positions and any other federal laboratories that choose to join. The FLC promotes the rapid movement of federal technology R&D from federal laboratories into the mainstream of the U.S. economy by:

- Providing training, advice, and assistance to individual technology transfer professionals
- Providing a clearinghouse for technology user requests received at the laboratory level
- Facilitating interagency/laboratory communication and coordination
- Assisting individual laboratories with developing technology transfer mechanisms
- Facilitating communication and cooperation with public and private technology transfer organizations and user groups
- Developing regional advisory groups.

The FLC comprises several hundred federal R&D laboratories and centers that represent 18 federal departments and agencies. The users who seek technologies from the federal laboratories are an extremely diverse group, including the private sector, academia, state and local governments, and federal agencies themselves. These users have access to a number of FLC services, including:

- **Electronic Communications**—Includes a website that provides technology transfer data, access to searchable databases to find federal laboratories and resources, and technology news and events
- **Technology Locator Service**—Centralized service for reviewing and routing requests from potential partners to the appropriate resource (i.e., laboratory or center)
- **Meetings**—National and regional meetings that provide a forum for formal and informal exchanges of information
- **Training**—Courses and materials are offered at various expertise levels, from fundamental to advanced, to help participants carry out their technology transfer roles and responsibilities
- **Communication**—Includes *FLC NewsLink*, a monthly technology transfer newsletter, FLC informational publications, brochures, articles, exhibits, and panel presentations
- **Technology Transfer Awards Program**—National and regional awards for outstanding accomplishments in technology transfer are presented annually
- **Trade Shows**—Provide member laboratories with opportunities to showcase their technologies and offer the private sector “one-stop shopping” for federal laboratory technologies and services.

Section Six

NONFEDERAL ORGANIZATIONS SUPPORTING TECHNOLOGY TRANSFER

A number of nonfederal organizations on the national, state, and local levels can provide the ORTA with the connections to industry, academia, and state and local governments that are necessary to effect technology transfer. These organizations include professional societies and state and local governments. The following pages provide information about these organizations and how you can use their resources to assist with your own technology transfer activities.

National Technology Transfer Organizations

- **Association of University Technology Managers (AUTM)**—A nonprofit association with a membership of more than 2,700 technology managers and business executives who manage intellectual property. AUTM's roots are in the academic technology transfer community; however, in addition to members from universities, AUTM has members representing institutions, teaching hospitals, industry, legal and financial institutions, and government organizations. AUTM offers an annual licensing survey and the results of other research activities, annual and regional meetings, professional development courses, publications, and public education. AUTM can be accessed online at <www.autm.net>.
- **Licensing Executives Society (LES)**—A professional organization of over 5,000 members involved in the transfer, use, development, manufacture, and marketing of intellectual property. LES membership includes professionals in the fields of law, academia, and science from both government and the private sector. LES focuses on networking and training to keep members up-to-date on developments in licensing practices, law, regulation, and current issues relevant to licensing; and publishes numerous books, pamphlets and other educational materials relating to licensing issues. LES can be accessed online at <www.usa-canada.les.org>.
- **Technology Transfer Society (T2S)**—A not-for-profit professional organization founded in 1975 and dedicated to sharing methods, opportunities, and approaches with the technology transfer community. T2S provides resources of information and contacts through: technology transfer programs; training; publications, including the *Journal of Technology Transfer*, a bimonthly newsletter, and the

Annual Proceedings of the Technology Transfer Society; forums; and annual conferences. TTS can be accessed online at <www.t2society.org>.

- **State Science & Technology Institute (SSTI)**—A national non-profit organization dedicated to improving government-industry programs that encourage economic growth through the application of science and technology. SSTI, which has developed a nationwide network of practitioners and policy makers, assists states and communities with building technology-based economies, conducts research on best practices and trends in technology-based economic development, encourages cooperation among and between state and federal programs, and disseminates information about technology-based economic development. SSTI can be accessed online at <www.ssti.org>.
- **Association of Small Business Development Centers (ASBDC)**—A partnership program of private enterprise, government, higher education, and local nonprofit economic development organizations whose purpose is to promote growth, expansion, innovation, increased productivity, and managerial excellence for small and medium businesses in order to grow local, state, and national economies. The ASBDC network provides nationwide technical assistance, counseling, exchange of information, and advice to small and medium business owners and those who want to start their own business. The ASBDC can be accessed online at <www.asbdc-us.org>.

State and Local Technology Transfer Organizations

State and local programs designed to promote business interests will usually differ from state to state. In general, however, the business service providers in a particular state or region will be effective intermediaries between the laboratory and the needs of business and industry in that state/region. These resources can assist the ORTA by providing a wide variety of services, including:

- Preview technical assistance requests from businesses to ensure that assistance is not competing with private enterprise
- Provide existing networks to leverage resources leading to more contracts with small and/or disadvantaged businesses
- Match laboratory/facility technology to industry
- Provide input regarding industry needs
- Ensure that laws do not impede technology transfer
- Provide a matching grant approach to consortia of university and private research teams

- Start venture capital or commercialization programs
- Provide incentives for adopting more productive technologies.

Among the variety of organizations, centers, and commissions that actively support technology transfer at the state and local level are:

- **Chambers of Commerce**—Local Chambers of Commerce are very closely tied to the needs of local business and industry and will most likely know most of the existing small businesses and economic development organizations in the state. Working through a local Chamber of Commerce can result in cooperative relationships with local civic and business leaders as well as members of organizations who provide a variety of services to business and industry.

Other state and local resources that can provide the ORTA with information about to the needs of local industry include:

- Local business organizations, such as state bankers' or realtors' associations
- Local chapters of professional organizations
- Other area federal laboratories and agencies
- State agencies
- Local business incubators
- Service Corps of Retired Executives (SCORE)
- State Association of Counties
- National Conference of State Legislatures
- Council of State Governments
- American Legislative Exchange Council
- National Association of State Energy Officials
- National Congress of American Indians.
- State Offices of Economic Development.

Academic Institutions

Most state and local postsecondary academic institutions work closely with state business and industry through collaborative research, consulting, provision of information services, and continuing education. Many academic institutions provide market research, innovation centers, and patenting and licensing services. Making area academic institutions aware of the resources in a local laboratory can help these institutions connect business and industry to resources in the laboratory and may stimulate the academic institution to become involved in collaborative research with the laboratory in areas of mutual interest.

Section Seven

INTELLECTUAL PROPERTY RIGHTS

The transfer of intellectual property rights affects the marketability of a technology and the selection of the appropriate manufacturer; therefore, the right to intellectual property is often a substantial component of the technology transfer process. This section addresses intellectual property, with a focus on U.S. patents. However, the subject of intellectual property—and patents, copyrights, and licensing in particular—is immense and requires considerable legal expertise to cover thoroughly. Although this section cannot cover all of the details of intellectual property, it does provide a basic introduction so that you can seek appropriate legal advice when the need arises. (Please note that the subject of intellectual property is covered in greater depth in the *FLC Technology Transfer Desk Reference*, Section Four, “Intellectual Property Issues.”³)

Intellectual Property Rights—an Overview

“Intellectual property” is a generic term that applies to any product of the human intellect, such as an invention, discovery, technology, creation, development, or other form of expression of an idea, that can be protected under the patent, trademark, trade secret, or copyright laws that govern the different forms of intellectual property.

The intangible right to intellectual property, which includes patents, copyrights, trade secrets, and trademarks, can be bought and sold, leased or rented, or otherwise transferred between parties. Intellectual property rights are most often transferred through contracts or licenses. If intellectual property rights are not adequately considered throughout the technology transfer process, valuable opportunities may be lost and serious liability issues may result. Therefore, protecting the rights to intellectual property is an important part of the technology transfer program in a federal laboratory.

Intellectual property rights are generally protected through the use of patents, copyrights, trade secrets, and trademarks. These forms of intellectual property protection are discussed in the following pages.

Patents

A patent is a contract between the government and an inventor whereby, in exchange for the inventor’s complete disclosure of an invention, the

³ The *FLC Technology Transfer Desk Reference* is available online at the FLC website at <www.federalallabs.org>.

government gives the inventor (or patent owner) the right to exclude others from making, using, or selling the invention for a period of 20 years from the filing date of the patent application.

Patents benefit the inventor and at the same time promote technology transfer. Patenting an invention ensures that the inventor receives credit, the research and development is not lost, the inventor and the laboratory may profit, and the invention may advance the national welfare.

There are three types of nonprovisional⁴ U.S. patents:

- **Utility**—The most common, utility patents cover virtually any inventions that are useful.
- **Design**—Cover the unique shape or ornamental appearance of an object, such as sports uniforms, dresses, computer housings, automobile bodies, buildings, shoes, game boards, etc.
- **Plant**—Cover asexually reproducible plants such as flowers and fruit trees.

In addition, the Plant Variety Protection Act covers sexually propagated varieties such as soybeans and tubers such as potatoes. The owner of a Plant Variety Protection Certificate (PVPC) has the right to exclude others from multiplying, selling, importing and exporting, and stocking the protected variety. However, the protected variety may be used to breed new varieties. Farmers may both sell seed of the protected variety as a commodity (for use in food or feed) and save seed to be used in the production of a crop for use on their own farms.

The patent statutes (beginning at 35 USC 101) provide that whoever invents or discovers any new and useful process, machine, manufacture or composition of matter, or any new and useful improvement to these categories may obtain a patent subject to certain conditions. Patentable subject matter includes any new and useful:

- Industrial or technical process or method
- Machine
- Article that is made, including all manufactured articles
- Chemical compositions, including mixtures of ingredients and new chemical compounds
- Improvements, including new uses of old devices or new combinations of well-known components
- Software
- Business methods
- Biological materials.

⁴ Provisional patents are discussed below.

A few subject matter areas are generally not patentable, including:

- Printed matter
- Purely scientific or mathematical principles
- Physical phenomena (e.g., electricity or magnetism)
- Abstract ideas
- Laws of nature.

There is a special category for patent applications on classified inventions that are held secret until declassified. As times and technology change, the range of things that can be patented can also change. The question of patentability is constantly being reinterpreted by the courts.

Patent Application

The following paragraphs provide an overview of the patent application process. A detailed discussion about how to apply for a patent can be found in the *FLC Technology Transfer Desk Reference*, Section Four, “Intellectual Property Issues.”

Technology transfer personnel, as well as government inventors, should understand that **premature public disclosure of the invention must be avoided**. Patent review should be obtained from the laboratory or agency patent counsel to protect the invention before it is publicly disclosed.

The key conditions required to obtain a patent are that the invention must differ from prior art, not be obvious to someone of ordinary skill in the art, and must have utility. A patent cannot be obtained if:

- The invention was previously known
- The invention does not have utility
- The invention was described in print or patented anywhere, or was in public use or on sale in the U.S. more than a year before the date of a provisional application
- The invention had previously been made in the U.S. by someone else who did not conceal it
- The differences between the subject matter to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time to a person having ordinary skill in the art.

To obtain a U.S. patent, the inventor has a one-year grace period from the time the invention was previously known through an enabling disclosure (i.e., described in print, patented elsewhere, or in public use or on sale in the U.S.) to file a patent application. However, foreign

countries will not allow this grace period, i.e., any public disclosure prior to filling out a patent application will prevent obtaining a patent in foreign countries. Although obtaining a patent in the United States is important to protect technology for subsequent transfer and commercialization, foreign patents may be even more valuable, especially if the international market for the technology is large.

Documenting the conception and the development of the invention is vital to the patent process. A technical notebook with the date the invention was conceived, ideas, experimental activities and results, and sketches and written descriptions of the invention provides important legal support for the patent. The notebook should be bound, contain sequentially numbered pages, and be witnessed and dated by people other than the inventor(s).

Patent applications should be filed as soon as there is an opinion that something is patentable. You should consult patent counsel to begin the process of disclosure. Patent counsel needs to ensure that patent applications contain only the name(s) of the inventor or co-inventors, if any.

The U.S. Patent and Trademark Office (USPTO) examines patent applications to determine that the application meets the statutory requirements of adequate disclosure and provides support for the patent claims and to ensure the claimed invention is unique.

The ORTA should be aware that U.S. law permits filing for **provisional patent applications** (see 35 USC 111(b) and 119 (e)). Filing a provisional patent application in the U.S. permits the establishment of an initial “effective, or priority, filing date,” which does not serve as the basis for measuring the 20-year term of patent protection. However, provisional patent applications serve several purposes. They can:

- Protect an invention against a conflicting patent by establishing an earlier filing date
- Allow the inventor to publish or give presentations on an invention without a threat of losing patentability.

The provisional application must fully describe the invention and contain a complete written description of the invention, any necessary drawings, and the required filing fee, but—unlike a complete patent application—does not have to contain claims, an oath, or declaration. The provisional application is kept in confidence by the USPTO, will not be examined, cannot mature into a U.S. patent, and will expire 12 months after the filing date. To begin the patent application examination procedure, the inventor must file, within 12 months of the filing date of the provisional application, a complete patent application that references the

provisional application the inventor wishes to rely on for the “effective filing date.” The 20-year life of the patent begins from the filing date of the regular patent application—not the provisional application.

Ownership of Inventions

When an invention is made by a government employee, the ownership rights of the government and the inventor depend on the circumstances under which the invention was made. The inventor is entitled to all rights if there was no government contribution in hours, funding, facilities, etc., and if the invention was not related to the inventor’s official duties. The government is entitled to all rights if the invention was made during working hours; or if government funds, facilities, equipment, materials, or information were used; or if the invention is directly related to or made in consequence of the inventor’s duties.

However, the inventor may still be entitled to retain all rights if the government’s contribution is insufficiently equitable to justify a requirement of assignment or the government decides not to pursue patenting or otherwise to promote commercialization of the invention. Nevertheless, retention of ownership rights by the inventor is subject to the government’s right to freely use the invention for government purposes and in accordance with government employee conflict-of-interest statutes, regulations, and policies.

Inventions that are developed by employees during government time and using government funds are the property of the U.S. government. If the government is not interested in filing a patent application for an invention created with government funds or at government facilities, the employee inventor may claim title to the invention by filing a patent application at personal expense; however, the government retains a nonexclusive, nontransferable, irrevocable, paid-up license to use or have others use the invention anywhere in the world for the benefit of the government. (For inventors at GOCO laboratories, the inventor must request title before he/she may file a patent application.)

The Bayh-Dole Act (P.L. 98-620) allows nonprofit contractor organizations that manage federal laboratories to elect title to inventions and to license those inventions. GOCO laboratories operated by for-profit contractors are permitted to elect title to an invention for purposes of commercialization. In addition, for-profit contractor employees may request title should the government and the contractor both decide not to seek a patent.

Invention Awards

Federal government agencies and departments file for and maintain patents, among other reasons, to protect the right to practice inventions that are judged to have a potential for future government applications. In the case of government-owned, contractor-operated (GOCO) laboratories, the contractor operator of the laboratory has or may obtain commercialization rights to these inventions under the prime contract or by waiver of the government's rights, thus permitting the contractor to license to others as a part of its technology transfer mission. The Federal Technology Transfer Act of 1986 (P.L. 99-502) allows inventors at government laboratories to share royalties received from inventions licensed by the federal government.

Various federal agencies and laboratories have established royalty sharing and cash awards for those inventors who have who filed and/or received a patent. For example, an inventor may receive a monetary reward when an invention results in the filing or issuance of a patent and then a percentage of royalties or other payments after the technology is commercialized.

Even though the government owns the entire right to title of the invention, the Federal Technology Transfer Act (see 15 USC 3710c) entitles the inventor to the first \$2,000 per year and a minimum of 15% of the yearly royalty income thereafter received from patent licensing. Within this guideline, each agency is free to establish its own royalty-sharing plan. However, at GOGO laboratories there is a limit of royalties of \$150,000 per year per person without presidential approval. At GOCO laboratories, the inventor is not subject to a limit on the amount of royalties he or she may receive per year.

Copyrights

Copyrights provide legal protection for products of the mind that are produced in tangible expressions, such as writings, paintings, movies, music, sculpture, and computer software. The work must contain some original expression, which can exist in the form and arrangement of the material.

A copyright is defined as an exclusive right granted by the U.S. government to authors, composers, artists, or their assignees for the life of the creator plus 70 years to copy, exhibit, distribute, or perform their works. The individuals who created the work receive the rights unless other provisions are made. For works made for hire, which covers most work done by employees where the employer automatically gets copyright

privileges, copyright protection extends for 95 years from the date of the first publication or 120 years from the date of creation, whichever occurs first.

Copyright protection is initiated with the creation of a work, without registration or notice. Registration of copyrights with the federal government is optional and only required in order to prosecute infringers. A work can be registered by submitting an application, one copy of an unpublished work or two copies of a published work, and a check to the Copyright Office (Library of Congress).

Copyright protection for any works prepared as part of the duties of employees of the government is not permitted; however, the government may receive and hold copyrights transferred to it by assignment, bequest, or otherwise. The copyrighted works of GOCO employees are generally regarded as works for hire, and the copyrights are therefore owned by the GOCO employer. Agency approval is usually required to enable the GOCO to enforce the copyright and effect licensing arrangements and commercialization. In all cases, as a minimum, the government obtains a license for itself and others acting on its behalf for specified purposes.

Trademarks, Trade Names and Service Marks

The terms trademark, trade name, and service mark are used synonymously. The purpose of these terms is to establish a word(s), name, symbol, device, numeral, picture, or any combination of them, in any form or arrangement, that is used by a party to identify uniquely the origin of goods or services.

A trademark is established by actual and continuous association with products or services in interstate commerce. Trademarks may be registered and protected for exclusive use, although registration is not required. Registration can be applied for only after the mark has been used in interstate commerce, and this protection is dependent upon continuous use of the trademark. A trademark is registered by making application to the USPTO. Federal trademark registration must be renewed every ten years. State trademarks have various terms and also require renewal.

Trade Secrets

A trade secret is any commercial formula, device, pattern, process, or information that affords its owner an advantage over others (e.g., potential competitors) who do not know it. A trade secret derives its protection

from being withheld from all except authorized users. This exclusion makes trade secrets extremely important to the competitive position of many companies.

A trade secret is a method used to protect ownership rights that cannot be patented or copyrighted for some reason. It is also used frequently for information that would be compromised by making it publicly accessible, which would be the case for a patent or copyright. Trade secrets are effective protection only if the information is not subject to reverse engineering. (Reverse engineering is taking apart a product to see how it is made.)

Unlike patents, copyrights, and trademarks, there is no formal governmental procedure for establishing ownership of a trade secret. The two requirements for establishing a trade secret are novelty and secrecy. The level of novelty need not be great; however, secrecy is essential. In the event of a lawsuit, the owner of a trade secret must show that adequate precautions were taken so that an individual accused of stealing a trade secret cannot claim that he or she did not know the information was secret. These precautions include the use of confidential disclosure agreements, security precautions against third parties entering an area where trade secrets are kept, stamping documents with a confidentiality label and limiting access to the documents, and informing individuals with access to trade secrets about the need for security.

It is important for ORTAs to be aware that trade secrets are protected by federal law (i.e., the Trade Secrets Act (18 USC 1905) and the Economic Espionage Act of 1996 (18 USC 90)) as well as state laws. (In contrast, patents and copyrights are protected by federal laws only.) Misappropriation of a trade secret can entail both civil and criminal penalties. A lawsuit may be filed in state court according to the laws of that state to defend the trade secret and claim damages. Moreover, if a criminal charge should be brought against a federal employee in federal court, the federal government could not defend the employee because it would be prosecuting him or her.

Because data generated at federal facilities are generally subject to public dissemination, the data cannot qualify as trade secrets; however, under the 1989 amendments to the Federal Technology Transfer Act, certain types of confidential data generated by a laboratory under a CRADA may be withheld from public disclosure for up to five years. This allows data generated with federal funds to be treated as a trade secret. If a trade secret is provided by the CRADA partner, it must be protected from disclosure; and there are severe penalties for government employees who release trade secrets.

Protecting Proprietary Data

Proprietary information and data from the private sector may be provided to laboratories and other facilities in the process of technology transfer activities. Such information and data require protection in order to retain their commercial value. Trade secrets or commercial or financial information that is privileged or confidential and is not generally known or available from sources other than the provider may qualify as proprietary information.

General Guidelines for the Management of Proprietary Data

The ORTA should develop a policy that states the importance of protecting proprietary information and establishes guiding principles for carrying out that policy and negotiating the restrictions on use of the data. General guidelines for such a policy are:

- Limit the acceptance of proprietary data to information that is absolutely essential to the success of the project or program objectives.
- Limit the use of proprietary data to essential activities or to individuals who need to know.
- Determine where the proprietary data are to be accessed and stored.
- Do not agree to protect orally transmitted data or information unless it is promptly reduced to writing by the owner or sponsor and appropriately marked with a legend.

Make certain that all information received is categorized and that proprietary data contain legends that specifically identify the restrictions for use and disclosure of the information or data.

You also need to identify the office or personnel responsible for the management of proprietary data. The responsibilities include:

- Determination of what proprietary information is essential to the project or program objectives
- Overall protection of proprietary data
- Assurance that each employee is aware of the confidential nature of proprietary data and the responsibility to protect it
- Formal receipt of proprietary data
- Assurance that private-sector parties abide by the terms of any nondisclosure agreements they have signed.

A Quick Reference

Table 7-1 summarizes the methods for protecting intellectual property rights discussed in this section.

Table 7-1. Methods of Protecting Intellectual Property Rights

Method	Description	Term	Subject of Protection
Patent	Serves as a contract between the government and an inventor whereby, in exchange for the inventor's complete disclosure of the invention, the government gives the inventor the right to exclude others from making, using, importing, or selling the invention	20 years from date of filing application	Process, machine, manufacture, composition of matter, original design, certain agricultural plants
Copyright	Provides exclusive right granted by the U.S. government to authors, composers, artists, or their assignees to copy, exhibit, distribute, or perform their works	Life of creator plus 70 years	Products of the mind that are produced in tangible expressions writings, paintings, movies, music, sculpture, computer software
Trade Secret	Provides the right to withhold any commercial formula, device, pattern, process, or information that affords a business person an advantage over others who do not know it	As long as secrecy is maintained	Any commercial formula, device, pattern, process, or information that is secret, substantial, or valuable
Trademark, Trade Name, Service Mark	Establishes the right to a unique expression that identifies goods or services for commercial purposes	As long as use is continuous	Word(s), name, symbol, device, numeral, picture, or any combination thereof

Appendix A

TECHNOLOGY TRANSFER LEGISLATION

Since 1980, Congress has enacted a series of laws to promote technology transfer and to provide technology transfer mechanisms and incentives. The intent of these laws and related Executive Orders is to encourage the pooling of resources—such as personnel, facilities, methods, expertise, and technical information—among federal laboratories, private industry, and academia in order to develop potential commercial technologies.

The following paragraphs provide a chronological outline of major technology transfer legislation and related Executive Orders, as well as other legislation with a less direct impact on the technology transfer effort.

Major Technology Transfer Legislation

- **Executive Order 10096 (1950)**—Executive Order 10096, Providing for a Uniform Patent Policy for the Government With Respect to Inventions Made by Government Employees and for the Administration of Such Policy, established federal policy that all rights to inventions made by government employees were assigned to the government if the invention was made within the scope of their employment; during working hours; or with a contribution by the government of facilities, equipment, materials, funds, information, or the time or services of other government employees on official duty. However, if the contribution of the government to the invention is insufficient to justify a requirement of assignment of the invention to the government of the entire right, title and interest to such invention, or if the government has insufficient interest in an invention, the employee retains title to the invention. In such cases, the government reserves a nonexclusive, irrevocable, royalty-free license in the invention with the power to grant licenses for all governmental purposes.
- **Stevenson-Wydler Technology Innovation Act of 1980 (P.L. 96-480)**—The Stevenson-Wydler Act of 1980 is the first of a series of laws to define and promote technology transfer. It made it easier for federal laboratories to transfer technology to nonfederal parties and provided outside organizations with a means to access federal laboratory developments. The primary focus of the Stevenson-Wydler Act concerned the dissemination of information from the federal government and getting federal laboratories more involved in the

technology transfer process. The law requires laboratories to take an active role in technical cooperation and to set apart a percentage of the laboratory budget specifically for technology transfer activities. The law also established an ORTA in each laboratory to coordinate and promote technology transfer.

- **Bayh-Dole Act of 1980 (P.L. 96-517)**—The Bayh-Dole Act of 1980, together with the Patent and Trademark Clarification Act of 1984 (P.L. 98-620), established more boundaries regarding patents and licenses for federally funded R&D. Small businesses, universities, and not-for-profit organizations were allowed to obtain title to inventions developed with federal funds. Government-owned and government-operated (GOGO) laboratories were permitted to grant exclusive patent licenses to commercial organizations.
- **Small Business Innovation Development Act of 1982 (P.L. 97-219)**—This act established the Small Business Innovation Research (SBIR) program, requiring agencies to provide special funds for small business R&D connected to the agencies' missions.
- **Federal Technology Transfer Act of 1986 (P.L. 99-502)**—Also known as the FTTA, this act was the second major piece of legislation to focus directly on technology transfer. All federal laboratory scientists and engineers are required to consider technology transfer an individual responsibility, and technology transfer activities are to be considered in employee performance evaluations. This 1986 law also established a charter and funding mechanism for the previously existing FLC. In addition, the law enabled GOGO laboratories to enter into CRADAs and to negotiate licensing arrangements for patented inventions made at the laboratories. It also required that government-employed inventors share in royalties from patent licenses. Further, the law provided for the exchange of personnel, services, and equipment among laboratories and nonfederal partners. Other specific requirements, incentives and authorities were added, including the ability of GOGO laboratories to grant or waive rights to laboratory inventions and intellectual property, and permission for current and former federal employees to participate in commercial development, to the extent that there is no conflict of interest.
- **Executive Order 12591 (1987)**—Executive Order 12591, Facilitating Access to Science and Technology, was written to require that federal laboratories and agencies assist universities and the private sector by transferring technical knowledge. It required agency and laboratory heads to identify and encourage individuals who would act as conduits of information among federal laboratories, universities, and the private sector. It also underscored the government's commitment to technology transfer and urged GOGOs to enter into cooperative agreements to the limits permitted by law.

It also promoted commercialization of federally funded inventions by requiring that, to the extent permitted by law, laboratories grant contractors the title to patents developed in whole or in part with federal funds, as long as the government is given a royalty-free license for use.

- **Omnibus Trade and Competitiveness Act of 1988 (P.L. 100-418)**—This legislation emphasized the need for public/private cooperation in realizing the benefits of R&D, established centers for transferring manufacturing technology, established Industrial Extension Services and an information clearinghouse on state and local technology programs, and extended royalty payment requirements to non-government employees of federal laboratories. It also changed the name of the National Bureau of Standards to the National Institute of Standards and Technology (NIST) and broadened its technology transfer role, including making NIST the FLC's host agency.
- **National Competitiveness Technology Transfer Act of 1989 (P.L. 101-189)**—This act provided additional guidelines and coverage for the use of CRADAs, extending to GOCOs essentially the same ability to enter into CRADAs that previously had been granted to GOGO laboratories by the Federal Technology Transfer Act of 1986. To protect the commercial nature of the agreements, the act allowed information and innovations that were created through a CRADA, or brought into a CRADA, to be protected from disclosure to third parties. The act also provided a technology transfer mission for the Department of Energy's (DOE) nuclear weapons laboratories.
- **American Technology Preeminence Act of 1991 (P.L. 102-245)**—The American Technology Preeminence Act of 1991 contained several provisions covering the FLC and the use of CRADAs. The mandate for the FLC was extended to 1996, the requirement that the FLC conduct a grant program was removed, and a requirement for an independent annual audit was added. With respect to CRADAs, the act included intellectual property as potential contributions under CRADAs. The exchanging of intellectual property among the parties to an agreement was allowed, as was laboratory directors giving excess equipment to educational institutions and nonprofit organizations as a gift.
- **Small Business Research and Development Enhancement Act of 1992 (P.L. 102-564)**—This act extended the SBIR program to 2000, increased the percentage of an agency's budget to be devoted to SBIR and similar programs, and increased the amount of the awards. It also established the Small Business Technology Transfer (STTR) program. (The STTR program is similar to the SBIR program.)

- **National Department of Defense Authorization Act for 1994 (P.L. 103-160)**—This act broadened the definition of a laboratory to include DOE weapons production facilities.
- **National Technology Transfer and Advancement Act of 1995 (P.L. 104-113)**—This law amended the Stevenson-Wydler Act to make CRADAs more attractive to both federal laboratories and scientists and to private industry. The law provides assurances to U.S. companies that they will be granted sufficient intellectual property rights to justify prompt commercialization of inventions arising from a CRADA with a federal laboratory, and gives the collaborating party in a CRADA the right to choose an exclusive or nonexclusive license for a prenegotiated field of use for an invention resulting from joint research under a CRADA. The CRADA partner may also retain title to an invention made solely by its employees in exchange for “normally” granting the government a worldwide license to use the invention. The law also revised the financial rewards for federal scientists who develop marketable technology under a CRADA—increasing the annual limit of payment of royalties to laboratories from \$100,000 per person to \$150,000. In addition, the act permanently provided the FLC with funding from federal agencies participating in R&D.
- **Technology Transfer Commercialization Act of 2000 (P.L. 106-404)**—This act recognizes the success of CRADAs for federal technology transfer and broadens the CRADA licensing authority to include preexisting government inventions. This change makes CRADAs more attractive to private industry and increases the possibilities for transfer of federal technology. The act permits federal laboratories to grant a license for a federally owned invention that was created prior to the signing of a CRADA. Under the law, an agency is required to provide a 15-day public notice before granting an exclusive or partially exclusive license. Licensees are required to provide a plan for development and/or marketing of the invention and to make a commitment to achieve a practical application of the invention within a reasonable period of time. The act exempts from these requirements the licensing of any inventions made under a CRADA. It also redefined what could be licensed and provided authority for government agencies to “in-license” in order to “bundle” inventions for licensing purposes.
- **United States Court of Appeals for the Federal Circuit (established 1982)**—Established in 1982 under Article III of the U.S. Constitution, the U.S. Court of Appeals for the Federal Circuit (CAFC) was formed by the merger of the U.S. Court of Customs and Patent Appeals and the appellate division of the U.S. Court of Claims. The CAFC has nationwide jurisdiction over a variety of

areas, including patents and trademarks. Appeals to the Court come from all federal district courts, as well as from the Board of Patent Appeals and Interferences and the Trademark Trial and Appeals Board. Appeals are heard by panels comprised of three judges randomly selected for assignment to the panels. Losing parties may seek review of a CAFC decision in the U.S. Supreme Court. The Court's opinions may be obtained on its home page at <www.fedcir.gov>.

Other Legislation

Other laws that are part of the technology transfer effort, although perhaps not quite as directly as the previously discussed legislation, include:

- **Trademark Clarification Act of 1984 (P.L. 98-620)**—Permitted patent license decisions to be made at the laboratory level in GOCO laboratories and contractors to receive patent royalties to support the R&D effort. Private companies were also permitted to obtain exclusive licenses.
- **National Institute of Standards and Technology Authorization Act for FY 1989 (P.L. 100-519)**—Permitted contractual consideration for intellectual property rights other than patents in CRADAs, and included software developers as eligible for technology transfer awards.
- **Defense Authorization Act for FY 1991 (P.L. 101-510)**—Established model programs for national defense laboratories to demonstrate successful relationships between the federal government, state and local governments, and small businesses, and permitted those laboratories to enter into a contract or a Memorandum of Understanding with an intermediary to perform services related to cooperative or joint activities with small businesses.
- **National Defense Authorization Act for FY 1993 (P.L. 102-484)**—Extended the potential for CRADAs to some DOD-funded Federally Funded Research and Development Centers (FFRDCs) not owned by the government.

United States Code

All of the preceding laws are embodied in the United States Code (USC), which provides a single source uniting the provisions of each law. The primary section of the USC covering technology transfer is Title 15 (Commerce and Trade), Chapter 63 (Technology Innovation). Other titles and chapters cover related topics, such as copyrights, patents and intellectual property rights.

- **15 USC 3701 through 3704** cover the findings of Congress, the purpose of the legislation, definitions, and the establishment of various offices to carry out the intent of the legislation.
- **15 USC 3705 through 3708** provide for the establishment of Cooperative Research Centers, grants and cooperative agreements. Affiliated with universities or nonprofit institutions, Cooperative Research Centers engage in research that supports technological innovation, and provide assistance and training to individuals and small businesses. The centers must also use the expertise of federal laboratories, where appropriate.
- **15 USC 3710 through 3710d** cover the establishment of ORTAs; the FLC; Cooperative Research and Development Agreements (CRADAs); cash awards for inventions, innovations, computer software, or other outstanding contributions; and the sharing of royalties or licensing fees with laboratory inventors.

For the complete text of these USC sections and other technology transfer legislation and executive orders, please consult the FLC's publication, *Federal Technology Transfer Legislation and Policy* (the "Green Book"),⁵ available from the FLC website at <www.federallabs.org>.

Regulations governing the licensing of government-owned inventions, including those made under CRADAs, are found in the Code of Federal Regulations (CFR)⁶ at 37 CFR 404. Regulations governing the rights to inventions made by nonprofit organizations and small businesses, when such inventions were the result of federal funding, are found at 37 CFR 401.

Summary of Technology Transfer Legislation

In summary, technology transfer legislation:

- Made technology transfer a responsibility of all federal laboratory scientists and engineers.
- Mandated that technology transfer responsibility be considered in employee performance evaluations.
- Established the principle of royalty sharing for federal inventors (15 percent minimum) and set up a reward system for other innovators.
- Created a charter for the FLC and provided a funding mechanism for that organization to carry out its work.
- Provided specific requirements, incentives, and authorities for federal laboratories.

⁵ *Federal Technology Transfer Legislation and Policy*, Federal Laboratory Consortium for Technology Transfer, 2005.

⁶ The CFR may be accessed on the Internet at <www.gpoaccess.gov/cfr/index.html>.

- Empowered each agency to give the director of GOGO and GOCO laboratories authority to enter into CRADAs and negotiate licensing agreements with streamlined headquarters review.
- Allowed laboratories to make advance agreements with large and small companies on title and license to inventions resulting from CRADAs.
- Allowed directors of GOGO and GOCO laboratories to negotiate licensing agreements for inventions developed at their laboratories.
- Provided for exchanging GOGO and GOCO laboratory personnel, services, and equipment with their CRADA partners.
- Made it possible to grant and waive rights to GOGO and GOCO laboratory inventions and intellectual property.
- Allowed current and former federal employees to participate in commercial development to the extent no conflict of interest exists.

Appendix B

GENERIC MODEL CRADA FOR GOVERNMENT-OWNED, GOVERNMENT-OPERATED (GOGO) LABORATORIES

Preface to the Generic Model GOGO Laboratory CRADA

The model CRADA that is provided in this appendix is generic and is provided for information purposes only. The model CRADA contains standard text that is used in many existing CRADAs developed by GOGO laboratories. However, please keep in mind that each agency is permitted to provide guidelines to its respective laboratories regarding specific clauses to be used or omitted from the agency's CRADAs. Therefore, ORTA personnel should ensure that the CRADA documents they prepare utilize the format/verbiage available for use by their laboratory or agency. You must check with legal counsel for your agency to determine what your agency requires as part of its CRADA content and format.

**COOPERATIVE RESEARCH AND DEVELOPMENT
AGREEMENT**

00-0000

FOR

INSERT TITLE OF PROJECT

BETWEEN

INSERT FEDERAL LABORATORY NAME AND ADDRESS

AND

INSERT COMPANY NAME AND ADDRESS

*INSERT COMPANY NAME AND COMPANY CONTACT
INFORMATION (PI)*

*INSERT LABORATORY NAME AND CONTACT INFORMATION (PI,
ORTA, AND LEGAL COUNSEL)*

The purpose of this Agreement is to establish a cooperative effort
between LABORATORY and

COMPANY in order to develop

Insert short description of the technology

This work falls within the mission of *LABORATORY*.

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COOPERATIVE RESEARCH AND DEVELOPMENT AGREEMENT

This Cooperative Research and Development Agreement (“Agreement”), dated as of the effective date of this Agreement, was authorized and encouraged by the Federal Technology Transfer Act of 1986 (P.L. 99-502) and implemented by Executive Order 12591 (10 April 1987). The parties to this Agreement are

Insert COMPANY

(“Company”), of the State of

Insert state name, and the LABORATORY.

A. Whereas, the Congress in enacting the Federal Technology Transfer Act of 1986, Public Law No. 99-502, October 20, 1986, has found that federal laboratories’ developments should be made accessible to private industry, state and local Governments, and other, and has declared that one of the purposes of that Act is to improve the economic, environmental, and social well-being of the United States by stimulating the utilization of federally-funded technology developments by such parties; and

B. Whereas, the Federal Technology Transfer Act of 1986, among other technology transfer improvements, has given each federal agency the authority to permit the Director of Government operated Federal laboratories to enter into Cooperative Research and Development Agreements (CRADAs) with federal or non-federal entities, including private firms and organizations, for the purpose of providing to collaborating parties personnel, services, property, facilities, equipment or other resources (EXCEPT FUNDS), or obtaining from collaborating parties personnel, services, property, facilities, equipment or other resources (INCLUDING FUNDS) which may include the disposition of patent rights in the inventions that may result from such collaboration; and

C. Whereas, LABORATORY has performed substantial research and development with respect to

Insert here the laboratory’s expertise relevant to this CRADA, for example: radionuclides from rare earth elements with cancer therapy potential and has substantial expertise in the generation and characterization of monoclonal antibodies and their in-vivo binding abilities

, hereinafter referred to as “the Technology”; and

D. Whereas, LABORATORY possesses

Insert here relevant advanced scientific skills, facilities, special equipment, information, computer software, and know-how

pertaining to the Technology; and

E. Whereas, LABORATORY desires to pursue the development of the Technology with the objective of developing

Insert the objective, for example, cancer therapeutic reagents consisting of specific monoclonal antibodies coupled to specific radionuclides with cell killing potential

; and

F. Whereas, LABORATORY is interested in the utilization of this Technology by the private and public sectors; and

G. Whereas, COMPANY has invested substantial sums of its own private funds in and has performed substantial research and development of

Insert here the partner's specific technology

and desires to provide resources for LABORATORY's further development of the Technology; and

H. Whereas, COMPANY possesses

Insert here the partner's relevant equipment, facilities, unique capabilities

; and

I. Whereas, COMPANY is interested in the further development of the technology and applications of its

Insert here the specifics.

NOW, THEREFORE, THE PARTIES HERETO AGREE AS FOLLOWS:

Article 1. Definitions

As used in this Agreement, the following terms shall have the following meanings and such meanings should be equally applicable to both the singular and plural forms of the terms defined.

1.1 “Agreement” means this Cooperative Research and Development Agreement.

1.2 “Invention” means any invention or discovery which is or may be patentable under Title 35 of the United States Code or any novel variety of plant which is or may be protected under the Plant Variety Protection Act (7 USC 7321 *et seq.*).

1.3 “Made” in relation to any invention means the conception or first actual reduction to practice of such invention.

1.4 “Proprietary Information” means information that embodies trade secrets developed at private expense or information which is confidential business or financial information provided that such information:

(i) is not generally known or available from other sources without obligations concerning its confidentiality;

(ii) has not been made available by the owners to others without obligation concerning its confidentiality; and

(iii) is not already available to the Government without obligation concerning its confidentiality; and

(iv) was not received by the Government longer than 5 years previously.

1.5 “Subject Data” means all recorded information first produced in the performance of this Agreement.

1.6 “Subject Invention” means any invention made in the performance of work under this Agreement.

1.7 “Subject Software” means all software, software databases, or software documentation first produced in the performance of this Agreement.

1.8 “Subject Improvement” means any improvement first produced in the performance of this Agreement.

1.9 “Final Products” means any product produced for sale by COMPANY or any other duly authorized third party which embodies Subject Data or a Subject Invention as defined in 1.6 above or Government-owned patent(s) which are licensed to COMPANY by the Government.

Article 2. Cooperative Research

2.1 Statement of Work. Cooperative research performed under

this Agreement shall be performed in accordance with the Statement of Work (“SOW”) attached hereto as Appendix A. Each party agrees to participate in the cooperative research and to utilize such personnel, resources, facilities, equipment, skills, know-how, and information as it considers necessary, consistent with its own policies, missions and requirements.

2.2 Review of Work. Periodic conferences shall be held between LABORATORY and COMPANY to review the progress of work. It is understood that the nature of this cooperative research is such that completion within the period of performance specified, or within the limits of financial support allocated, cannot be guaranteed. Accordingly, it is agreed that all cooperative research is to be performed on a best-efforts basis.

2.3 Principal Investigation. The work will be performed under the supervision of

insert name of PI

as principal investigator, who has the responsibility for the scientific and technical conduct of this project at LABORATORY. The principal investigator for COMPANY is

Insert name

who has the responsibility for the scientific and technical conduct of this project at COMPANY.

2.4 Scope Change. If at any time either principal investigator determines that the research data dictate a substantial change in the direction of the work, the party shall promptly notify the other party and the parties shall make a good faith effort to agree on any necessary change to the SOW.

2.5 R&D Team. To the extent that the conduct of sponsored research requires a joint technical effort of COMPANY and LABORATORY, the parties agree to establish a joint research and development team (the “Team”), which shall conduct cooperative research in accordance with the SOW. Each party shall make available to the Team such resources, facilities, equipment, skills, know-how and information as it considers necessary and appropriate. Both parties pledge to support the Team in a mutually cooperative manner, on a best-effort basis, consistent with their respective policies, missions and requirements. Either party may support changes to the SOW or to the scope and direction of the effort which, if agreed to by the other party, such changes shall first be made to the Statement of Work, and then implemented by the Team. While

assigned to the Team, members shall continue to remain employed by their respective employers with full benefits and salary.

Article 3. Reports

3.1 Annual Reports. Commencing six months after this Agreement enters into force, LABORATORY and COMPANY shall submit annual written reports to each other during the term of this Agreement on the progress of their work and the results being obtained and shall make available, to the extent reasonably requested, other project information in sufficient detail to explain the progress of the work.

3.2 Final Report. LABORATORY and COMPANY shall prepare a written report within three (3) months after expiration of this Agreement. This report shall set forth the technical progress made, identifying such problems as may have been encountered and establishing goals and objectives that require further effort. The ultimate responsibility for timely completion of said reports shall be LABORATORY's principal investigator. In addition, a portion of the results, not including proprietary information, may be prepared for publication in a journal or conference, as appropriate, by COMPANY or LABORATORY with co-authorship, as appropriate. Financial information shall also included (see paragraph 4.4).

Article 4. Financial Obligation

4.1 Payment Options.

4.1.1 Advance Payment Option. The performance of research by LABORATORY under this agreement is conditioned upon the advance payment by COMPANY of LABORATORY's full cost for the performance of such research. Sufficient advance funds shall be obtained to maintain a 30-day advance of funds during the entire period of work covered under this agreement and provided by the company. No work will begin before the receipt of a sum certain.

4.1.2 Cost Reimbursement Option.

4.1.2. Salary and Travel. The COMPANY shall reimburse LABORATORY for all actual direct and indirect costs including, but not limited to, materials, material overhead, direct labor, fringe benefits, labor overhead, travel and per diem, and general and administrative expenses incurred in the performance of services authorized by task assignment under this Agreement. The costs an individual party shall reimburse shall include any and all costs associated with LABORATORY's handling, storage and disposal of toxic, regulated or waste materials for which LABORATORY is responsible pursuant to

Article 5, paragraph 5.2 of this AGREEMENT. In no event, however, shall the COMPANY be obligated to reimburse LABORATORY for expenditures in excess of the total amount authorized for each task assignment.

4.1.2.2 Payment. Payment shall be made within thirty (30) days of receipt and acceptance by the COMPANY of the LABORATORY invoice. Invoices must clearly identify the Agreement number, itemized costs incurred during the invoice period by task assignment, and such other information or documentation as an individual party may reasonably request. Invoices shall not be submitted more often than monthly and are to be addressed to the COMPANY issuing the task assignment.

4.1.3 No-Cost Option. The performance of research by LABORATORY under this agreement is not conditioned on the payment of a sum certain by the COMPANY.

4.2 Payment. Payable to, with the use of funds specified on check:

Laboratory Finance/Accounting Department and Address

4.3 Insufficient and Excess Funds. LABORATORY shall not be required to continue its research and development activities under this Agreement if the funds provided by COMPANY are insufficient to cover LABORATORY's full cost for such continued activities. Funds not expended by LABORATORY shall be returned to COMPANY upon LABORATORY's submission of a final fiscal report to COMPANY.

4.4 Accounting Records. LABORATORY shall maintain separate and distinct current accounts, records, and other evidence supporting all of its expenditures under this Agreement. LABORATORY shall provide COMPANY a final fiscal report with the final report, as specified in paragraph 3.2, within months after completing the SOW or ending its research activities under this Agreement and the completion of the research work.

Article 5. Title to Property

5.1 Equipment. All equipment acquired under this Agreement and all Government Furnished Equipment (GFE), if any, shall be the property of LABORATORY, except that title to items of equipment developed or purchased by COMPANY, provided to LABORATORY by COMPANY, or developed or acquired by LABORATORY with funds supplied by COMPANY shall remain or vest in COMPANY. Co-developed equipment shall be owned by COMPANY. Any GFE shall be used solely for the performance of the effort contemplated by this Agreement. Upon completion of research under this agreement, COMPANY shall be

responsible for all costs attendant to the maintenance, removal, storage, and shipping of its equipment to COMPANY.

5.2 Disposal of Toxic or Other Waste. The responsibility for proper disposal at the completion or termination of this Agreement of any equipment or materials that an originating party transfers to the facilities of a receiving party and which constitute hazardous, toxic or other waste shall remain with the originating party.

5.3 Software.

5.3.1 COMPANY Employee Software. Title to any copyright in software written by COMPANY employees in the course of performance of this agreement shall be held by COMPANY. COMPANY agrees to grant to the U.S. Government a nonexclusive, irrevocable, paid-up license to use or have used, throughout the world, by or on behalf of the U.S. Government, the copyright covering said software.

5.3.2 Joint Employee Software. Title to any copyright in software written jointly by COMPANY and LABORATORY employees in the course of performance of this Agreement shall be held by COMPANY. COMPANY agrees to grant to the U.S. Government a nonexclusive, irrevocable, paid-up license to use or have used, throughout the world, by or on behalf of the U.S. Government, the copyright covering said software.

5.3.3 LABORATORY Employee Software. LABORATORY Employee Software, software written by LABORATORY employees in the course of performance of this Agreement, is considered to be the property of LABORATORY. LABORATORY agrees to grant to COMPANY a nonexclusive, irrevocable, paid-up license to use said software. LABORATORY, however, places the following restrictions on use by COMPANY of said software:

a. COMPANY shall not copy said LABORATORY employee software without the prior written approval of the LABORATORY Director or his designee;

b. COMPANY shall not distribute, license or sublicense said LABORATORY employee software to third parties; and

c. Upon written request, COMPANY may obtain additional copies of said LABORATORY employee software.

5.3.4 Limited Scope. COMPANY shall retain ownership in any software or algorithms to which collaborating party has title prior to this agreement.

Article 6. Inventions and Patents

6.1 Prior Patents. The parties hereto agree that neither party shall have rights in any invention patented by the other before the date of this AGREEMENT, except for those rights provided by law or under specific agreement.

6.2 Reporting. LABORATORY shall promptly report to COMPANY each Subject Invention reported to LABORATORY by its employees. COMPANY shall promptly report to LABORATORY each Subject Invention reported to COMPANY by any of its employees.

6.3 COMPANY Employee Inventions. LABORATORY, on behalf of the U.S. Government, agrees that COMPANY shall retain title to any COMPANY employee Subject Invention. COMPANY agrees to file in a timely manner patent applications on such Subject Inventions at its own expense. COMPANY further agrees to grant to the U.S. Government a nonexclusive, irrevocable, paid-up license to practice or have practiced, throughout the world, by or on behalf of the U.S. Government, the Subject Inventions which are covered by said patents. Such nonexclusive license shall be evidenced by a confirmatory license agreement prepared by COMPANY in a form satisfactory to LABORATORY. COMPANY may release the rights provided for by this paragraph to employee inventors subject to a license in the U.S. Government.

6.4 LABORATORY Employee Inventions. LABORATORY, on behalf of the U.S. Government, shall have the initial option to retain title to each Subject Invention made by its employees. LABORATORY shall notify COMPANY promptly upon making this election. In the event that LABORATORY retains title to said Subject Inventions, LABORATORY agrees to timely file patent applications thereon at its own expense. LABORATORY agrees to grant to COMPANY a nonexclusive, irrevocable paid-up license or at LABORATORY's option, if requested by COMPANY, an exclusive license for the Subject Inventions made.

6.5 Joint Employee Inventions. LABORATORY, on behalf of the U.S. Government, shall have the initial option to retain title to each Subject Invention made jointly by COMPANY and LABORATORY employees. In the event that the LABORATORY informs COMPANY that it elects to retain title to such joint Subject Invention, COMPANY agrees to assign to LABORATORY whatever right, title and interest COMPANY has in and to such joint Subject Invention. LABORATORY agrees to file in a timely manner patent applications on such Subject Invention at its own expense. LABORATORY agrees to grant to COMPANY a nonexclusive license for the Subject Invention made. The grant to COMPANY of an exclusive license shall be subject to reasonable royalty terms to be negotiated in accordance with paragraph 6.8.2.

6.6 Filing of Patent Applications. The party having the right to retain title and file patent applications on a specific Subject Invention may elect to file patent applications thereon provided it so advises the other party within 90 days from the date it reports the Subject Invention to the other party. In the event that the party having the right to retain title and file patent applications fails to advise the other party within 90 days from the date it reports the Subject Invention of its intent to file a patent application, the other party may elect to file patent applications on such Subject Invention. If the other party elects to file patent applications, the party initially reporting such Subject Invention agrees to assign its rights, title and interest in such Subject Invention to the other party and to cooperate with such other party in the preparation and filing of patent applications thereon. The assignment of the entire right, title and interest to the other party pursuant to this paragraph shall be subject to the retention by the party assigning title of a nonexclusive, irrevocable, paid-up license to practice, or have practiced, the Subject Invention throughout the world. In the event neither of the parties to this Agreement elects to file a patent application on Subject Invention, either or both (if a joint invention) may, at their sole discretion and subject to reasonable condition, release the right to file to the inventor(s), with a license in each party of the same scope as set forth in the immediate preceding sentence.

6.7 Patent Expenses. The expenses attendant to the filing of patent applications, as specified in 6.4 above, shall be borne by the party filing the patent application. Each party shall provide the other party with copies of the patent applications it files on any Subject Invention, along with the power to inspect and make copies of all documents retained in the official patent application files by the applicable patent office.

6.8 Maintenance Fees. The fees payable to the U.S. Patent and Trademark Office in order to maintain the patent's enforcement will be payable by the owner of the patent, at that party's option. In the event that LABORATORY is the owner of the patent and COMPANY holds an exclusive license to said patent, COMPANY shall pay all maintenance fees for said patent. If COMPANY elects not to pay the maintenance fee, COMPANY must relinquish its exclusive license rights in said patent and must give LABORATORY reasonable notification so as to permit LABORATORY the option of paying said fee. In the event that COMPANY elects not to pay the maintenance fee and LABORATORY elects to exercise its option to pay said fee, COMPANY will retain a nonexclusive, irrevocable, paid-up license for said patent.

6.9 Royalty Rate Determination. The reasonable royalty rate for each exclusive license shall be based on a portion of the selling price of the item attributable to the presence of claimed subject matter where such item is a machine, article of manufacture, product made by a

process, or composition of matter as defined by the claims of the patent. Where the claimed subject matter relates to a process or method to be practiced under the claims of the patent, the royalty will be based upon the net savings attributable to the implementation of said process or method.

6.10 Exclusive License.

6.10.1 Grants. LABORATORY, on behalf of the Government, may at its own option, if requested by COMPANY, grant to COMPANY an exclusive license in each U.S. patent application and patents issued thereon covering a Subject Invention, which is filed by LABORATORY on behalf of the U.S. Government.

6.10.2 Exclusive License. Upon filing of a patent application on a Subject Invention by LABORATORY, LABORATORY shall have the option of permitting COMPANY, upon COMPANY'S request, to acquire a limited term exclusive license in the resulting patents at reasonable royalty rates or a one-time lump sum fee upon the execution of an exclusive license agreement containing the terms and conditions as agreed to by the parties. The specific royalty rate or lump sum fee and term of exclusivity shall be negotiated in good faith promptly after the Subject Invention is filed in the U.S. Patent and Trademark Office. COMPANY'S interest in obtaining a limited term exclusive license must be communicated by written notice to LABORATORY within six (6) months from the date the U.S. patent application is so filed. LABORATORY shall notify COMPANY of the filing date within 30 days of filing the patent application.

6.10.3 Extension of Exclusive Licenses. Requests by COMPANY for extensions of a limited term exclusive license may be filed at any time prior to the expiration of the limited term exclusive license already in existence.

6.10.4 Royalty Rate Disputes. If the parties cannot mutually agree on what shall be a reasonable royalty rate on an exclusive license based on a patent resulting from any Subject Invention, LABORATORY shall have the right to convert the exclusive license grant given to COMPANY in paragraphs 6.8.1, 6.8.2, and 6.8.3 to nonexclusive status and thereafter grant other nonexclusive licenses on the patent resulting from any Subject Invention to third parties.

6.11 Nonexclusive Licenses. LABORATORY agrees that COMPANY shall be entitled to a nonexclusive, irrevocable, paid-up license to practice or have practiced, throughout the world, by or on behalf of COMPANY, the patents covering such Subject Inventions

made by LABORATORY employees. Such nonexclusive license shall be evidenced by a confirmatory license agreement.

Article 7. Data and Publication

7.1 Right of Access. LABORATORY and COMPANY agree to exchange all Subject Data produced in the course of research under this Agreement, whether developed solely by LABORATORY, jointly, or solely by COMPANY. The exchange of Subject Data is subject to the provisions set forth in paragraph 7.2 below. Subject to the provisions of paragraph 7.3, Subject Data that are required to be delivered to COMPANY under this AGREEMENT shall be the property of COMPANY, subject however, to a nonexclusive, royalty-free license on the U.S. Government to use the Subject Data on behalf of the U.S. Government's requirements. COMPANY shall, upon request, have the right to review all Subject Data first produced under this Agreement that are not in the possession of COMPANY or that have not been delivered to COMPANY, except to the extent that such Subject Data are subject to a claim of confidence or privilege by a third party.

7.2 Proprietary Information. (i) COMPANY shall place a Proprietary Legend on all information that it developed prior to or independent of this Agreement that it provides to LABORATORY under this Agreement and that it asserts is proprietary. The Proprietary Legend shall explicitly identify which information is proprietary and which information is not proprietary on pages asserted to contain proprietary information, and the legend shall be in the following form "COMPANY PROPRIETARY." LABORATORY agrees that any such marked proprietary information furnished by COMPANY to LABORATORY under this Agreement, or in contemplation of this Agreement, shall be used by LABORATORY only for the purpose of carrying out this Agreement. Such marked Proprietary Information shall not be disclosed, copied, reproduced or otherwise made available outside the Government in any form whatsoever without the consent of COMPANY, except as such information may be subject to disclosure under the Freedom of Information Act (5 USC 552). LABORATORY agrees to use best efforts to protect from unauthorized disclosure said information designated and marked as proprietary.

(ii) For a period of up to five (5) years after development of information that results from research and development activities conducted under this Agreement ("Subject Data") and that would be a trade secret or commercial or financial information that is privileged or confidential if the information had been obtained from a non-federal party participating in a CRADA, LABORATORY may provide appropriate protection against the dissemination of such information, including

exemption from Subchapter II of Chapter 5 of Title 5 (see 15 USC 3710a(c) (7) (B)). Such protection will be provided upon written request by COMPANY provided that the information has not entered the public domain. Such information, however, may be used for Government purposes and may be disclosed for competitive procurement purposes at any time.

7.3 Release Restrictions. The parties shall have the right to use all Subject Data, except Proprietary Information, for any Government or COMPANY purpose.

(i) LABORATORY, in reporting on the results of sponsored research, may publish Subject Data in technical articles and other documents to the extent it determines to be appropriate, subject to the restrictions in paragraph 7.2 and 7.4; and

(ii) LABORATORY may release such Subject Data where such release is required pursuant to a request under the Freedom of Information Act (5 USC 552) provided, however, that such data will not be released to the public if a patent application is to be filed (35 USC Section 205) until the party having the right to file has had a reasonable time to file. Neither party shall make any disclosure which may adversely affect the other party's rights in such data.

7.4 Publication. LABORATORY and COMPANY agree that both parties shall have the right to publish Subject Data in either a report and/or in open literature. Any publication in a report and/or open literature will be co-authored by both parties, with the decision concerning the principal author dependent on the content of the proposed publication. Any publication(s) in a report and/or open literature will require consultation of the parties prior to the publication of Subject Data in order to jointly assure that no Proprietary Information is released and that patent rights are not jeopardized. Prior to submitting for review a manuscript that contains the Subject Data, or prior to publication if no such review is made, each party shall be offered an ample opportunity to review such proposed publication and to file patent applications in a timely manner, if it is so entitled under this Agreement.

7.5 Marking of Data. COMPANY shall place a Government Purpose License Rights (GPLR) notice on all information it delivers to the U.S. Government developed under this Agreement. Information designated as GPLR shall not be disclosed, copied, reproduced or otherwise made available in any form whatsoever to any other person, firm, corporation, partnership, association or other entity without the consent of COMPANY except as permitted by paragraph 7.1 herein, and except as such information may be subject to disclosure under FOIA (5 USC 552). The U.S. Government agrees to use its best efforts to

protect information designated as GPLR from unauthorized disclosure. The COMPANY agrees that the U.S. Government is not liable for the disclosure of information designated as GPLR which, after notice to and consultation with the COMPANY, the U.S. Government determines may not lawfully be withheld under the FOIA or which a court of competent jurisdiction requires disclosed.

Article 8. Representations and Warranties

8.1 Representations and Warranties of LABORATORY. LABORATORY hereby represents and warrants to COMPANY as follows:

8.1.1 Organization. LABORATORY is a federal laboratory of the AGENCY NAME and is an Agency of the Government of the United States whose substantial purpose is the performance of research, development, or engineering.

8.1.2 Mission. The performance of the activities specified by this Agreement are consistent with the mission of LABORATORY.

8.1.3 Authority. Reviews and approvals required by regulations or law have been obtained by LABORATORY prior to the execution of this Agreement. The LABORATORY official executing this Agreement has the requisite authority to do so. The Secretary of the AGENCY NAME has reserved to the Assistant Secretary* of the AGENCY NAME the opportunity provided by 15 USC 3710 (c) (5) (A) to disapprove or require the modification of this Agreement within thirty (30) days of the date it is presented to him after the Agreement's execution by the designated LABORATORY official.

**Note: This is usually the head of R&D.*

8.1.4 Statutory Compliance. LABORATORY's Technical Director, prior to entering into this Agreement, has given special consideration to the entering into CRADAs with small business firms and consortia involving small business firms.

Note: The following sections may be modified in accordance with the partner's instructions.

8.2 COMPANY. COMPANY hereby represents and warrants to LABORATORY as follows:

8.2.1 Corporate Organization. COMPANY, as of the date hereof, is a corporation duly organized, validly existing and in good standing under the laws of the State of

Insert state name

8.2.2 Power and Authority. COMPANY has the requisite power and authority to enter into this Agreement and to perform according to the terms thereof.

8.2.3 Due Authorization. COMPANY has taken all actions required to be taken by law, its Certificate or Articles of Incorporation, its bylaws or otherwise, to authorize the execution and delivery of this Agreement.

8.2.4 No Violation. The execution and delivery of this Agreement does not contravene any material provision of, or constitute a material default under any material agreement binding on COMPANY or any valid order of any court, or any regulatory agency or other body having authority to which COMPANY is subject.

Article 9. Termination

9.1 Termination by Mutual Consent. COMPANY and LABORATORY may elect to terminate this Agreement, or portions thereof, at any time by mutual consent. In such an event, the parties shall specify the disposition of all property, patents, any other results of work accomplished or in progress, performed under this Agreement when such disposition is not otherwise specified in this Agreement. Upon a termination by mutual consent, the parties shall not make any new commitments and shall, to the extent feasible, cancel all outstanding commitments that relate to this Agreement or portions thereof mutually terminated, by the termination date, or as soon thereafter as feasible.

9.2 Termination by Unilateral Action. Either party may unilaterally terminate this entire Agreement at any time by giving the other party written notice not less than 30 days prior to the desired termination date. If COMPANY unilaterally terminates this Agreement, any exclusive license entered into by the parties shall be simultaneously terminated unless the parties agree to retain such exclusive license.

9.2.1 New Commitments. LABORATORY shall make no new commitments after receipt of a written termination notice from COMPANY and shall, to the extent feasible, cancel all outstanding commitments and contracts by the termination date.

9.3 Obligations. All obligations to protect Proprietary Information from unauthorized use or disclosure shall survive any termination or expiration of this Agreement.

Article 10. Disputes

10.1 Settlement. COMPANY and LABORATORY recognize that disputes arising under this Agreement are best resolved at the local working level by the parties directly involved. Both parties are encouraged to be imaginative in designing mechanisms and procedures to resolve disputes at this level. Any dispute arising under this Agreement which is not disposed of by agreement of the parties at the working level shall be submitted jointly to the then head of the LABORATORY or his designee and the head of COMPANY or his designee for resolution.

10.2 Continuation of Work. Pending the resolution of any dispute or claim pursuant to this Article, the parties agree that performance of all obligations shall be pursued diligently in accordance with the SOW.

Article 11. Liability

11.1 Property. Bailment agreements shall be written as required for the transfer of property from one party to another. The U. S. Government shall not be responsible for damages to any property of COMPANY provided to LABORATORY or acquired by COMPANY pursuant to this Agreement.

11.2 Sponsor's Employees. COMPANY agrees to indemnify and hold harmless the U.S. Government for any loss, claim, damage, or liability of any kind involving an employee of COMPANY arising in connection with this Agreement, except to the extent that such loss, claim, damage or liability arises from the negligence of LABORATORY or its employees. The U. S. Government shall be solely responsible for the payment of all claims for the loss of property, personal injury or death, or otherwise arising out of any negligent act or omission of its employees in connection with the performance of work under this Agreement, as specified in the provisions of the Federal Tort Claims Act.

11.3 No Warranty. Except as specifically stated in Article 8, LABORATORY and COMPANY make no express or implied warranty as to any matter whatsoever, including the conditions of the research or any invention or product or data exchanged, whether tangible or intangible, without limitation, made, or developed under this Agreement, or the ownership, merchantability, or fitness for a particular purpose of the research or any invention or product. A clause to this effect shall be included in any reports generated under this Agreement.

11.4 Force Majeure. Neither party shall be liable for any unforeseeable event beyond its reasonable control not caused by the fault or negligence of such party, which causes such party to be unable to perform its obligations under this Agreement and which it has been unable

to overcome by the exercise of due diligence including, but not limited to, flood, drought, earthquake, storm, fire, pestilence, lightning and other natural catastrophes, epidemic, war, riot, civil disturbance or disobedience, strikes, labor dispute, or failure, threat of failure, or sabotage of facilities, or any order or injunction made by a court or public agency. In the event of the occurrence of such force majeure event, the party unable to perform shall promptly notify the other party. It shall further use its best efforts to resume performance as quickly as possible and shall suspend performance only for such period of time as is necessary as a result of the force majeure event.

11.5 Indemnification. COMPANY holds the U.S. Government harmless and indemnifies the Government for all liabilities, demands, damages, expenses and losses arising out of the use by COMPANY, or any party acting on its behalf or under its authorization, of LABORATORY's research and technical developments or out of any use, sale or other disposition by COMPANY, or others acting on its behalf or with its authorization, of products made by the use of LABORATORY's technical developments. This provision shall survive termination of this Agreement.

Article 12. Miscellaneous

12.1 No Benefits. No member of or delegate to the United States Congress, or resident commissioner, shall be admitted to any share or part of this Agreement, nor to any benefit that may arise therefrom; but this provision shall not be construed to extend to this Agreement if made with a corporation for its general benefit.

12.2 Governing Law. The construction validity, performance and effect of this Agreement for all purposes shall be governed by the laws applicable to the Government of the United States.

12.3 Entire Agreement. This Agreement constitutes the entire Agreement between the parties concerning the subject matter hereof and supersedes any prior understanding or written or oral agreement relative to said matter.

12.4 Headings. Titles and headings of the Sections and Subsections of this Agreement are for the convenience of references only and do not form a part of this Agreement and shall in no way affect the interpretation thereof.

12.5 Waivers. None of the provisions of this Agreement shall be considered waived by any party hereto unless such waiver is given in writing to all other parties. The failure of any party to insist upon strict performance of any of the terms and conditions hereof, or failure

or delay to exercise any rights provided herein or by law, shall not be deemed a waiver of any rights of any party hereto.

12.6 Severability. The illegality or invalidity of any provisions of this Agreement shall not impair, affect or invalidate the other provisions of this Agreement.

12.7 Amendments. If either party desires a modification to this Agreement, the parties shall, upon reasonable notice of the proposed modification by the party desiring the change, confer in good faith to determine the desirability of such modification. Such modification shall not be effective until a written amendment is signed by all the parties hereto by their representatives duly authorized to execute such amendment.

12.8 Assignment. Neither this Agreement nor any rights or obligations of any party hereunder shall be assigned or otherwise transferred by either party without the prior written consent of the other party, except that COMPANY may assign this Agreement to the successors or assignees of a substantial portion of COMPANY's business interests to which this Agreement directly pertains.

12.9 Notices. All notices pertaining to or required by this Agreement shall be in writing and shall be signed by an authorized representative and shall be delivered by hand or sent by certified mail, return receipt requested, with postage prepaid, or by private overnight delivery service addressed as follows:

If to COMPANY:

Insert appropriate person and address

If to LABORATORY:

Technical Director

LABORATORY NAME AND ADDRESS

Any party may change such address by notice given to the other party in the manner set forth above.

12.10 Independent Contractors. The relationship of the parties to this Agreement is that of independent contractors and not as agents of each other or as joint venturers or partners. Each party shall maintain sole and exclusive control over its personnel and operations.

12.11 Use of Name or Endorsements. (a) Neither party shall use the name of the other party on any product or service which is directly or

indirectly related to either this Agreement or any patent license or assignment agreement which implements this Agreement without the prior approval of the other party.

(b) By entering into this Agreement, neither party directly nor indirectly endorses any product or service provided, or to be provided, by the other party, its successors, assignees, or licensees. Neither party shall in any way imply that this Agreement is an endorsement by the other party of any such product or service.

Article 13. Duration of Agreement and Effective Date

13.1 Duration of Agreement. It is mutually recognized that the development program cannot be rigidly defined in advance and that the contemplated time periods for completion of each phase are good faith guidelines, subject to adjustment by mutual agreement, to fit circumstances as the development program proceeds. In no case will this Agreement extend beyond

Insert number of years

YEAR(S) from the date of this Agreement, unless it is revised in accordance with Article 12 of this Agreement.

The provisions of Article 3, “Reports”; Article 5, “Title to Property”; Article 6, “Inventions and Patents”; Article 7, “Data and Publications”; Article 11.5, “Indemnification”; and Article 12.11, “Use of Name or Endorsements” shall survive the termination of this Agreement.

13.2 Effective Date. The effective date of this Agreement shall be the latest date of execution below. Said date is subject to the authority reserved to the Assistant Secretary• of the AGENCY NAME provided by 15 U.S.C. 3710a (c) (5) (A) to disapprove or require the modification of this Agreement within thirty (30) days of the date it is presented to him or her by LABORATORY.

•Note: *This is usually the head of R&D.*

Article 14. Ratification

In the event that the Assistant Secretary• of the AGENCY exercises the authority reserved by paragraph 8.1.3., COMPANY shall have 30 days from notification of the required modifications to ratify the modifications or terminate the Agreement.

•Note: This is usually the head of R&D.

IN WITNESS WHEREOF, the parties have caused this AGREEMENT to be executed by their duly authorized representatives as follows:

For COMPANY

Insert appropriate information below

By:

Title:

Address:

I certify that of COMPANY named above, who signed this AGREEMENT on behalf of said Company, was then of said Company, and that this AGREEMENT was duly signed for and on behalf of said Company by authority of its governing body and is within the scope of Corporate powers.

Witnessed by hand and seal of said Company the day of , 2006.

Seal of Corporation

For LABORATORY:

By:

NAME, Technical Director

LABORATORY NAME AND ADDRESS

This document is hereby submitted for review as required by the policy set forth in the above paragraph. If no notice of disapproval or required modification is received from the reviewing authority prior to this day of , 2006, this Agreement shall enter into force as of the date of the signature of the representative of LABORATORY, who will be the last to sign.

Submitted for review this day of , 2006.

Appendix C

GENERIC MODEL CRADA FOR GOVERNMENT-OWNED, CONTRACTOR-OPERATED (GOCO) LABORATORIES

Preface to the Generic Model GOCO Laboratory CRADA

The model Department of Energy (DOE) CRADA that is provided in this appendix is intended to be generic and is provided for information purposes only. The model CRADA contains standard text that is used in many existing CRADAs developed by GOCO laboratories. However, please keep in mind that each agency is permitted to provide guidelines to its respective laboratories regarding specific clauses to be used or omitted from the agency's CRADAs. Therefore, ORTA personnel should ensure that the CRADA documents they prepare utilize the format/verbiage available for use by their laboratory or agency. You must check with legal counsel for your agency to determine what your agency requires as part of its CRADA content and format.

(Sample)

DOE MODULAR CRADA
STEVENSON-WYDLER (15 USC 3710)
COOPERATIVE RESEARCH AND DEVELOPMENT
AGREEMENT

(hereinafter “CRADA”) No. _____

Title: “ _____ ”

between

THE () LABORATORY

under its U.S. Department of Energy Contract

No. _____ (hereinafter “LABORATORY”)

and

_____ (hereinafter “Participant”)

both being hereinafter jointly referred to as the “Parties”

ARTICLE I: DEFINITIONS

- A. “Government” means the Federal Government of the United States of America and agencies thereof.
- B. “DOE” means the Department of Energy, an agency of the Federal Government.
- C. “Contracting Officer” means the DOE employee with the authority to administer the Laboratory’s DOE contract.
- D. “Generated Information” means information produced in the performance of this CRADA.
- E. “Proprietary Information” means information which embodies (i) trade secrets or (ii) commercial or financial information which is privileged or confidential under the Freedom of Information Act (5 U.S.C. 552 (b)(4)), either of which is developed at private expense outside of this CRADA and which is marked as Proprietary Information.

- F. “Protected CRADA Information” means Generated Information which is marked as being Protected CRADA Information by a Party to this CRADA and which would have been Proprietary Information had it been obtained from a non-Federal entity.
- G. “Subject Invention” means any invention of the Laboratory or Participant conceived or first actually reduced to practice in the performance of work under this CRADA.
- H. “Intellectual Property” means Patents, Trademarks, Copyrights, Mask Works, and other forms of comparable property rights protected by Federal law and foreign counterparts, except trade secrets.
- I. “Trademark” means a distinctive mark, symbol, or emblem used in commerce by a producer or manufacturer to identify and distinguish its goods or services from those of others.
- J. “Service Mark” means a distinctive word, slogan, design, picture, symbol, or any combination thereof, used in commerce by a person to identify and distinguish its services from those of others.
- K. “Mask Work” means a series of related images, however fixed or encoded, having or representing the predetermined, three-dimensional pattern of metallic, insulating, or semiconductor material present or removed from the layers of a semiconductor chip product and in which series the relation of the images to one another is that each image has the pattern of the surface of one form of the semiconductor chip product.
- L. “Background Intellectual Property” means the Intellectual Property identified by the Parties in Appendix C, Background Intellectual Property, which was in existence prior to or is first produced outside of this CRADA, except that in the case of inventions in those identified items, the inventions must have been conceived outside of this CRADA and not first actually reduced to practice under this CRADA to qualify as Background Intellectual Property.
- M. “Foreign Interest” (RESERVED)
- N. “Foreign Ownership, Control, or Influence (FOCI)” (RESERVED)

[Use Definitions M. and N. below when the need for a foreign ownership, control or influence (FOCI) review has been determined to exist and where Article X Export Control, has been appropriately modified.]

M. “Foreign Interest” is defined as any of the following:

- (1) A foreign government or foreign government agency;

- (2) Any form of business enterprise organized under the laws of any country other than the United States or its possessions;
Any form of business enterprise organized or incorporated under the laws of the United States, or a State or other jurisdiction within the United States, which is owned, controlled, or influenced by a foreign government, agency, firm, corporation or person; or
- (4) Any person who is not a U. S. citizen.
- N. Foreign ownership, control, or influence (FOCI) means the situation where the degree of ownership, control, or influence over a participant by a foreign interest is such that a reasonable basis exists for concluding that compromise of classified information or special nuclear material, as defined in 10 CFR Part 710, may result.

ARTICLE II: STATEMENT OF WORK

Appendix A, Statement of Work, is an integral part of this CRADA.

ARTICLE III: TERM, FUNDING AND COSTS

- A. The effective date of this CRADA shall be the latter date of (1) the date on which it is signed by the last of the Parties or (2) the date on which it is approved by DOE. The work to be performed under this CRADA shall be completed within _____ months/years from the effective date. The term of this CRADA may be extended by mutual, written agreement of the Parties. A copy of this time-only extension, signed by both Parties, shall be provided to DOE by the Laboratory.
- B. The estimated contribution by the Participant and the Government for this cooperative research project shall be as set forth in Appendix A Section E. Term, Funding and Costs under this CRADA, subject to available funding.
- C. Neither Party shall have an obligation to continue or complete performance of its work at a contribution in excess of its estimated contribution as contained in Appendix A., Section E. Term, Funding and Costs, including any subsequent amendment.
- D. Each Party agrees to provide at least _____ () days notice to the other Party if the actual cost to complete performance will exceed its estimated cost.
- E. [For CRADAs which include (non-Federal) funding on a funds-in basis, an advance payment provision will be negotiated consistent with current DOE policy.]

OR [FUNDS-IN ONLY]

- E. [The Participant shall provide the Laboratory sufficient advance funds to maintain approximately a 90-day advance of funds during the entire period of work. No work will begin before the receipt of a cash advance. Failure of Participant to provide the necessary advance funding is cause for termination of the CRADA.]

ARTICLE IV: PERSONAL PROPERTY

All tangible personal property produced or acquired under this CRADA shall become the property of the Participant or the Government, depending upon whose funds were used to obtain it. Such property is identified in Appendix A, Statement of Work. Personal property shall be disposed of as directed by the owner at the owner's expense. All jointly funded property shall be owned by the Government.

ARTICLE V: DISCLAIMER

THE GOVERNMENT, THE PARTICIPANT, AND THE LABORATORY MAKE NO EXPRESS OR IMPLIED WARRANTY AS TO THE CONDITIONS OF THE RESEARCH OR ANY INTELLECTUAL PROPERTY, GENERATED INFORMATION, OR PRODUCT MADE OR DEVELOPED UNDER THIS CRADA, OR THE OWNERSHIP, MERCHANTABILITY, OR FITNESS FOR A PARTICULAR PURPOSE OF THE RESEARCH OR RESULTING PRODUCT. NEITHER THE GOVERNMENT, THE PARTICIPANT, NOR THE LABORATORY SHALL BE LIABLE FOR SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES ATTRIBUTED TO SUCH RESEARCH OR RESULTING PRODUCT, INTELLECTUAL PROPERTY, GENERATED INFORMATION, OR PRODUCT MADE OR DEVELOPED UNDER THIS CRADA.

ARTICLE VI: PRODUCT LIABILITY

Except for any liability resulting from any negligent acts or omissions of the Laboratory, the Participant indemnifies the Government and the Laboratory for all damages, costs, and expenses, including attorney's fees, arising from personal injury or property damage occurring as a result of the making, using, or selling of a product, process, or service by or on behalf of the Participant, its assignees, or licensees, which was derived from the work performed under this CRADA. In respect to this article, neither the Government nor the Laboratory shall be considered assignees or licensees of the Participant, as a result of reserved Government and Laboratory rights. The indemnity set forth in this paragraph shall apply only if the Participant shall have been informed as soon and as completely as practical by the Laboratory and/or the Government of the action alleging such claim and shall have been given

an opportunity, to the maximum extent afforded by applicable laws, rules, or regulations, to participate in and control its defense, and the Laboratory and/or the Government shall have provided all reasonably available information and reasonable

assistance requested by the Participant. No settlement for which the Participant would be responsible shall be made without the Participant's consent unless required by final decree of a court of competent jurisdiction.

ARTICLE VII: OBLIGATIONS AS TO PROPRIETARY INFORMATION

- A. Each Party agrees to not disclose Proprietary Information provided by another Party to anyone other than the CRADA Participant and Laboratory without written approval of the providing Party, except to Government employees who are subject to the statutory provisions against disclosure of confidential information set forth in the Trade Secrets Act (18 U.S.C. 1905).
- B. If Proprietary Information is orally disclosed to a Party, it shall be identified as such, orally, at the time of disclosure and confirmed in a written summary thereof, appropriately marked by the disclosing Party, within _____ days as being Proprietary Information.
- C. Proprietary Information shall be returned to the provider thereof at the conclusion of this CRADA at the provider's expense.
- D. All information marked as Proprietary Information shall be protected by the recipient as Proprietary Information for a period of ___ years from the effective date of this CRADA, unless, as shown by the recipient, such Proprietary Information becomes publicly known without the fault of the recipient, comes into recipient's possession from a third party without an obligation of confidentiality on the recipient, is independently developed by recipient's employees who did not have access to such Proprietary Information, is released by the disclosing Party to a third party without restriction, or is released for disclosure with the written consent of the disclosing Party.

ARTICLE VIII: OBLIGATIONS AS TO PROTECTED CRADA INFORMATION

- A. Each Party may designate as Protected CRADA Information, any Generated Information produced by its employees which meets the definition of Article I.F, and with the written agreement of the other Party, so designate any Generated Information produced by the other Party's employees which meets the definition of Article I.F.

All such designated Protected CRADA Information shall be appropriately marked.

- B. For a period of _____ () [not to exceed five] years from the date Protected CRADA Information is produced, the Parties agree not to further disclose such information except:
- (1) as necessary to perform this CRADA;
 - (2) as provided in Article XI [REPORTS AND ABSTRACTS];
 - (3) as requested by the DOE Contracting Officer to be provided to other DOE facilities for use only at those DOE facilities with the same protection in place;
 - (4) to existing or potential licensees, affiliates, customers, or suppliers of the Parties in support of commercialization of the technology with the same protection in place. Disclosure of the Participant's Protected CRADA Information under this subparagraph shall only be done with the Participant's consent; or
 - (5) as mutually agreed by the Parties in advance.
- C. The obligations of Paragraph B above shall end sooner for any Protected CRADA Information which shall become publicly known without fault of either Party, shall come into a Party's possession without breach by that Party of the obligations of Paragraph B above, or shall be independently developed by a Party's employees who did not have access to the Protected CRADA Information.

ARTICLE IX: RIGHTS IN GENERATED INFORMATION

The Parties agree that they shall have no obligations of nondisclosure or limitations on their use of, and the Government shall have unlimited rights in, all Generated Information produced and information provided by the Parties under this CRADA, except for (a) information which is marked as being Copyrighted (subject to Article XIII) or as Protected CRADA Information (subject to Article VIII B) or as Proprietary Information (subject to Article VII B), or (b) information that discloses an invention which may later be the subject of a U.S. or foreign Patent application.

ARTICLE X: EXPORT CONTROL

THE PARTIES UNDERSTAND THAT MATERIALS AND INFORMATION USED IN AND/OR RESULTING FROM THE PERFORMANCE OF THIS CRADA ARE SUBJECT TO EXPORT CONTROL LAWS AND THAT EACH PARTY IS RESPONSIBLE FOR ITS OWN COMPLIANCE WITH SUCH LAWS. FAILURE TO OBTAIN AN EXPORT CONTROL LICENSE OR OTHER AUTHORITY FROM THE U.S. GOVERNMENT MAY RESULT IN CRIMINAL LIABILITY UNDER THE U.S. LAWS.

ARTICLE X.1.: NOTIFICATION REGARDING CHANGE IN FOREIGN OWNERSHIP AND CONTROL

Participant agrees to notify the Laboratory when the Participant becomes any of the following:

- (1) any form of business enterprise organized under the laws of any country other than the United States or its possessions; or
- (2) any form of business enterprise organized or incorporated under the laws of the United States, or a state or other jurisdiction within the United States, which is owned or controlled by a foreign government, agency, firm, corporation, or person.

ARTICLE XI: REPORTS AND ABSTRACTS

A. The Parties agree to produce the following deliverables:

- (1) an initial abstract suitable for public release at the time the CRADA is approved by DOE (see Appendix A);
- (2) other abstracts (final when work is complete, and others as substantial changes in scope and dollars occur);
- (3) a final report, upon completion or termination of this CRADA, to include a list of subject inventions;
- (4) other topical/periodic reports, when the nature of research and magnitude of dollars justify; and
- (5) computer software in source and executable object code format as defined within the Statement of Work or elsewhere within the CRADA documentation.

B. The Parties acknowledge that the Laboratory has the responsibility to provide the above information at the time of its completion to the DOE Office of Scientific and Technical Information.

C. The Participant agrees to provide the above information to the Laboratory to enable full compliance with Paragraph B of this article.

D. The Parties acknowledge that the Laboratory and DOE have a need to document the long-term economic benefit of the cooperative research under this CRADA. Therefore, the Participant shall respond to the Laboratory's reasonable requests, during the term of this CRADA and for a period of ____ () years [2 to 5 years would be reasonable] thereafter for pertinent information.

ARTICLE XII: PRE-PUBLICATION REVIEW

A. The Parties agree to secure pre-publication approval from each other which shall not be unreasonably withheld or denied beyond ____ () days.

- B. The Parties agree that neither will use the name of the other Party or its employees in any promotional activity, such as advertisements, with reference to any product or service resulting from this CRADA, without prior written approval of the other Party.

ARTICLE XIII: COPYRIGHTS

- A. The Parties may assert Copyright in any of their Generated Information. Assertion of Copyright generally means to enforce or give an indication of an intent or right to enforce such as by marking or securing Federal registration.
- B. Each Party shall have the first option to assert copyright in works authored by its employees. Copyrights in works that are co-authored by employees of the Parties shall be held jointly, and use by either Party shall be without accounting. A Party electing not to assert copyright in a work authored by its employees agrees to assign such copyright to the other Party upon the request of, and at the expense of, the other Party.
- C. For Generated Information, the Parties acknowledge that the Government has for itself and others acting on its behalf, a royalty-free, nontransferable, nonexclusive, irrevocable worldwide Copyright license to reproduce, prepare derivative works, distribute copies to the public, and perform publicly and display publicly, by or on behalf of the Government, all Copyrightable works produced in the performance of this CRADA, subject to the restrictions this CRADA places on publication of Proprietary Information and Protected CRADA Information.
- D. For all Copyrighted computer software produced in the performance of this CRADA, the Party owning the Copyright will provide the source code, an expanded abstract as described in Appendix B, the executable object code and the minimum support documentation needed by a competent user to understand and use the software to DOE's Energy Science and Technology Software Center, P.O. Box 1020, Oak Ridge, TN 37831. The expanded abstract will be treated in the same manner as Generated Information in Paragraph C of this article.
- E. The Laboratory and the Participant agree that, with respect to any Copyrighted computer software produced in the performance of this CRADA, DOE has the right, at the end of the period set forth in paragraph B of Article VIII hereof and at the end of each two-year interval thereafter, to request the Laboratory and the Participant and any assignee or exclusive licensee of the Copyrighted software to grant a nonexclusive, partially exclusive, or exclusive license to a responsible applicant upon terms that are reasonable under the circumstances, provided such grant does not cause a termination of any

licensee's right to use the Copyrighted computer software. If the Laboratory or the Participant or any assignee or exclusive licensee refuses such request, the Laboratory and the Participant agree that DOE has the right to grant the license if DOE determines that the Laboratory, the Participant, assignee, or licensee has not made a satisfactory demonstration that it is actively pursuing commercialization of the Copyrighted computer software.

Before requiring licensing under this paragraph E, DOE shall furnish the Laboratory/Participant written notice of its intentions to require the Laboratory/Participant to grant the stated license, and the Laboratory/Participant shall be allowed thirty (30) days (or such longer period as may be authorized by the cognizant DOE Contracting Officer for good cause shown in writing by the Laboratory/Participant) after such notice to show cause why the license should not be required to be granted.

The Laboratory/Participant shall have the right to appeal the decision by the DOE to the grant of the stated license to the Invention Licensing Appeal Board as set forth in paragraphs (b)-(g) of 10 CFR 781.65, "Appeals."

- F. The Parties agree to place Copyright and other notices, as appropriate for the protection of Copyright, in human-readable form onto all physical media, and in digitally encoded form in the header of machine-readable information recorded on such media such that the notice will appear in human-readable form when the digital data are off loaded or the data are accessed for display or printout.

ARTICLE XIV: REPORTING SUBJECT INVENTIONS

- A. The Parties agree to disclose to each other each Subject Invention which may be patentable or otherwise protectable under the Patent Act. The Parties agree that the Laboratory and Participant will disclose their respective Subject Inventions to the DOE and each other within two (2) months after the inventor first discloses the Subject Invention in writing to the person(s) responsible for Patent matters of the disclosing Party.
- B. These disclosures should be in sufficiently complete technical detail to convey a clear understanding, to the extent known at the time of the disclosure, of the nature, purpose, and operation of the Subject Invention. The disclosure shall also identify any known actual or potential statutory bars; i.e., printed publications describing the Subject Invention or the public use or "on sale" of the Subject Invention in this United States. The Parties further agree to disclose to each other and DOE any subsequently known actual or potential statutory bar that occurs for a Subject Invention disclosed but for

which a Patent application has not been filed. All Subject Invention disclosures shall be marked as confidential under 35 U.S.C. 205.

ARTICLE XV: TITLE TO SUBJECT INVENTIONS

Wherein DOE has granted the Participant and the Laboratory the right to elect to retain title to their respective Subject Inventions, and wherein the Participant has the option to choose an exclusive license, for the reasonable compensation, for the pre-negotiated field of use to the Laboratory's Subject Invention.

- A. For purposes of this article, "Inventing Party" means a Party whose employees conceived or first actually reduced to practice a Subject Invention. Each Inventing Party shall have the first option to elect to retain title to its Subject Invention(s) and that election shall be made: (1) for the electing Participant within twelve (12) months of disclosure of the Subject Invention to DOE or (2) for the Laboratory within the time period specified in its prime contract for electing to retain title to the Subject Invention. Title to Subject Inventions that are jointly made by employees of the Parties shall be jointly owned by the Parties. If an inventing Party elects not to retain title to its Subject Invention(s), then the other Party shall have the second option, during the term of this CRADA and for a period of Six (6) months after the termination of the first option, to request to obtain title to such Subject Invention(s) under this CRADA. DOE shall take title to any Subject Invention that is not retained or obtained by any Party, and, where applicable, each non-electing Party shall assist DOE in perfecting title to its Subject Invention(s). Each Inventing Party agrees to notify the other Party if it decides not to retain ownership of any Subject Invention(s). Such notification must occur at least ninety (90) days prior to the end of the one-year statutory period initiated by any publication, "on sale", or public use. If no Party elects title, then DOE must be notified at least sixty (60) days prior to the end of that period.
- B. The Parties acknowledge that the DOE may obtain title to each Subject Invention reported under Article XIV for which a Patent application or applications are not filed pursuant to Article XVI and for which any issued Patents are not maintained by any Party to this CRADA.
- C. The Parties acknowledge that the Government retains a nonexclusive, nontransferable, irrevocable, paid-up license to practice or to have practiced for or on behalf of the United States every Subject Invention under this CRADA throughout the world.

ARTICLE XV.1: SPECIAL LICENSE TERMS AND CONDITIONS

As noted in Article XV, the Participant has the option to choose an exclusive license, for reasonable compensation, for a pre-negotiated field of use to the Laboratory's Subject Inventions. Accordingly, the Parties agree to enter into a separate Option Agreement with mutually agreed terms and conditions.

The Parties understand that rights in Intellectual Property generated under subcontracts for tasks under this CRADA are treated in accordance with the terms of the subcontracts. Accordingly, neither Party will enter into any subcontract for tasks under this CRADA without the prior written approval of the other Party.

ARTICLE XVI: FILING PATENT APPLICATIONS

- A. The Parties agree that the Party initially indicated as having an ownership interest in any Subject Inventions ("Inventing Party") shall have the first opportunity to file U.S. and foreign Patent applications. If the Participant does not file such applications within one year after election, or if the Laboratory does not file such applications within the filing time specified in its prime contract, the other Party to this CRADA exercising an option to elect to retain title pursuant to Article XV may file Patent applications on such Subject Inventions. If a Patent application is filed by the other Party ("Filing Party"), the Inventing Party shall reasonably cooperate and assist the Filing Party, at the Filing Party's expense, in executing a written assignment of the Subject Invention to the Filing Party and in otherwise perfecting the Patent application, and the Filing Party shall have the right to control the prosecution of the Patent application. The Parties shall agree between themselves as to who will file Patent applications on any joint Subject Invention.
- B. The Parties agree that DOE has the right to file Patent applications in any country if neither Party desires to file a Patent application for any Subject Invention. Notification of such negative intent shall be made in writing to the DOE Contracting Officer within three (3) months of the decision of the non-Inventing Party to not file a Patent application for the Subject Invention pursuant to Article XV or not later than 60 days prior to the time when any statutory bar might foreclose filing of a U.S. Patent application.
- C. The Parties agree to include within the beginning of the specification of any U.S. Patent applications and any Patent issuing thereon (including foreign Patents where permitted) covering a Subject Invention, the following statement: "This invention was made under a CRADA (identify CRADA number) between (name the

participant) and (name the laboratory) operated for the United States Department of Energy. The Government has certain rights in this invention”

- D. A Party electing title or filing a Patent application in the United States or in any foreign country shall advise the other Party and DOE if it no longer desires to continue prosecution, pay maintenance fees, or retain title in the United States or any foreign country. The other Party and then DOE will be afforded the opportunity to take a title and retain the Patent rights in the United States or in any such foreign country.

ARTICLE XVII: TRADEMARKS

The Parties may seek to obtain Trademark/Service Mark protection on products or services generated under this CRADA in the United States or foreign countries. The ownership and other rights relating to this trademark shall be as mutually agreed to in writing by the Parties. The Parties hereby acknowledge that the Government shall have the right to indicate on any similar goods or services produced by or for the Government that such goods or services were derived from and are a DOE version of the goods or services protected by such Trademark/Service Mark, with the Trademark and the owner thereof being specifically identified. In addition, the Government shall have the right to use such Trademark/Service Mark in print or communications media.

ARTICLE XVIII: MASK WORKS

The Parties may seek to obtain legal protection for Mask Works fixed in semiconductor products generated under this agreement as provided by Chapter 9 of Title 17 of the United States Code. The rights to any Mask Work covered by this provision shall be as mutually agreed to in writing by the Parties. The Parties hereby acknowledge that the Government or others acting on its behalf shall retain a nonexclusive, paid-up, worldwide, irrevocable, nontransferable license to reproduce, import, or distribute the covered semiconductor product by or on behalf of the Government, and to reproduce and use the Mask Work by or on behalf of the Government.

ARTICLE XIX: COST OF INTELLECTUAL PROPERTY PROTECTION

Each Party shall be responsible for payment of all costs relating to Copyright, Trademark, and Mask Work filing; U.S. and foreign Patent application filing and prosecution; and all costs relating to maintenance fees for U.S. and foreign Patents hereunder which are filed or registered by that Party. Government/DOE/ NNSA laboratory funds contributed

as DOE's cost share to a CRADA cannot be given to the Participant for payment of the Participant's costs of filing and maintaining Patents or filing for Copyrights, Trademarks, or Mask Works.

ARTICLE XX: REPORTS OF INTELLECTUAL PROPERTY USE

The Participant agrees to submit, for a period of ____ () years from the date of termination or completion of this CRADA and upon request of DOE, a nonproprietary report no more frequently than annually on efforts to utilize any Intellectual Property arising under the CRADA.

ARTICLE XXI: DOE MARCH-IN RIGHTS

The Parties acknowledge that the DOE has certain march-in rights to any Subject Inventions in accordance with 48 CFR 27.304-1(g) and 15 U.S.C. 3710a(b)(1)(B) and (C).

ARTICLE XXII: U.S. COMPETITIVENESS

The Parties agree that a purpose of this CRADA is to provide substantial benefit to the U.S. economy.

- A. In exchange for the benefits received under this CRADA, the Participant therefore agrees to the following:
1. Products embodying Intellectual Property developed under this CRADA shall be substantially manufactured in the United States, and
 2. Processes, services, and improvements thereof which are covered by Intellectual Property developed under this CRADA shall be incorporated into the Participant's manufacturing facilities in the United States either prior to or simultaneously with implementation outside the United States. Such processes, services, and improvements, when implemented outside the United States, shall not result in reduction of the use of the same processes, services, or improvements in the United States.
- B. The Laboratory agrees to a U.S. Industrial Competitiveness clause in accordance with its prime contract with respect to any licensing and assignments of its intellectual property arising from this CRADA, except that any licensing or assignment of its intellectual property rights to the Participant shall be in accordance with the terms of Paragraph A. of this article.

ARTICLE XXIII: ASSIGNMENT OF PERSONNEL

- A. Each Party may assign personnel to the other Party's facility as

part of this CRADA to participate in or observe the research to be performed under this CRADA. Such personnel assigned by the assigning Party shall not during the period of such assignments be considered employees of the receiving Party for any purpose.

- B. The receiving Party shall have the right to exercise routine administrative and technical supervisory control of the occupational activities of such personnel during the assignment period and shall have the right to approve the assignment of such personnel and/or to later request their removal by the assigning Party.
- C. The assigning Party shall bear any and all costs and expenses with regard to its personnel assigned to the receiving Party's facilities under this CRADA. The receiving Party shall bear facility costs of such assignments.

ARTICLE XXIV: FORCE MAJEURE

No failure or omission by the Laboratory or the Participant in the performance of any obligation under this CRADA shall be deemed a breach of this CRADA or create any liability if the same shall arise from any cause or causes beyond the control of the Laboratory or the Participant, including but not limited to the following, which, for the purpose of this CRADA, shall be regarded as beyond the control of the Party in question: Acts of God, acts or omissions of any government or agency thereof, compliance with requirements, rules, regulations, or orders of any governmental authority or any office, department, agency, or instrumentality thereof, fire, storm, flood, earthquake, accident, acts of the public enemy, war, rebellion, insurrection, riot, sabotage, invasion, quarantine, restriction, transportation embargoes, or failures or delays in transportation.

ARTICLE XXV: ADMINISTRATION OF THE CRADA

The Laboratory enters into this CRADA under the authority of its prime contract with DOE. The Laboratory is authorized to and will administer this CRADA in all respects unless otherwise specifically provided for herein. Administration of this CRADA may be transferred from the Laboratory to DOE or its designee with notice of such transfer to the Participant, and the Laboratory shall have no further responsibilities except for the confidentiality, use and/or nondisclosure obligations of this CRADA.

ARTICLE XXVI: RECORDS AND ACCOUNTING FOR GOVERNMENT PROPERTY

The Participant shall maintain records of receipts, expenditures, and the disposition of all Government property in its custody related to the CRADA.

ARTICLE XXVII: NOTICES

A. Any communications required by this CRADA, if given by postage prepaid first class U.S. Mail or other verifiable means addressed to the Party to receive the communication, shall be deemed made as of the day of receipt of such communication by the addressee, or on the date given if by verified facsimile. Address changes shall be given in accordance with this article and shall be effective thereafter. All such communications, to be considered effective, shall include the number of this CRADA.

B. The addresses, telephone numbers, and facsimile numbers for the Parties are as follows:

1. For the Laboratory:

a. FORMAL NOTICES AND COMMUNICATIONS

<Technology Transfer Division Staff Member>

Telephone: <Phone Number>

Facsimile: <Phone Number>

For Fed. Ex., UPS, Freight:

Laboratory

Address

For U.S. Mail Only:

Laboratory

Address

b. TECHNICAL CONTACT, REPORTS, AND COPIES OF FORMAL NOTICES AND COMMUNICATIONS

<Principal Investigator>

Telephone: <Phone Number>

Facsimile: <Phone Number>

For Fed. Ex., UPS, Freight:

Laboratory

Address

For U.S. Mail Only:

Laboratory

Address

2. For <Participant Industry Name>

a. FORMAL NOTICES AND COMMUNICATIONS

<Participant Business Contact Name>

Telephone: <Phone Number>

Facsimile: <Phone Number>

For Fed. Ex., UPS, Freight:

<Participant Company Name>

<Address>

<City, State, Zip>

For U.S. Mail Only:

<Participant Company Name>

<Address>

<City, State, Zip>

b. TECHNICAL CONTACT, REPORTS, AND COPIES OF FORMAL NOTICES AND COMMUNICATIONS

<Participant Technical Contact Name>

Telephone: <Phone Number>

Facsimile: <Phone Number>

For Fed. Ex., UPS, Freight:

<Participant Company Name>

<Address>

<City, State, Zip>

For U.S. Mail Only:

<Participant Company Name>

<Address>

<City, State, Zip>

ARTICLE XXVIII: DISPUTES

In the event of any controversy or claim arising under this CRADA, the Parties shall attempt to resolve the dispute through good faith negotiations. If the dispute cannot be resolved within thirty (30) days,

the Parties agree to submit the dispute to mediation by a trained, experienced mediator mutually selected by the Parties. The Parties agree to attempt to make such selection within thirty (30) days after the dispute arises (the DOE Office of Disputes Resolution (GC-12) is available to assist with such selection).

The mediation shall commence within thirty (30) days of selection of the mediator and shall be held in a mutually convenient location. The mediator's role shall be to facilitate an agreement between the Parties, based on their mutual interests. In the event that the Parties are unable to reach a resolution in mediation and they wish the mediator to proffer a nonbinding evaluation or a binding resolution, they must jointly request it in writing. Should the Parties select a binding resolution by the mediator, the maximum dollar value of the award, whether in money, property, or services, must be agreed to by the Parties and approved by the cognizant DOE Contracting Officer. The Parties agree to share the costs of mediation equally.

Neither Party will be prevented from resorting to a judicial proceeding if (1) good faith efforts to resolve the dispute have been unsuccessful or (2) interim relief from a court is necessary to prevent serious injury. To the extent that there is no applicable U.S. Federal law, this CRADA and performance thereunder shall be governed by the law of the State of _____.

ARTICLE XXIX: ENTIRE CRADA AND MODIFICATIONS

- A. This CRADA with its appendixes contains the entire agreement between the Parties with respect to the subject matter hereof, all prior representations or agreements relating hereto have been merged into this document and are thus superseded in totality by this CRADA. This CRADA shall not be effective until approved by DOE.
- B. Any agreement to materially change any terms or conditions of this CRADA or the appendixes shall be valid only if the change is made in writing, executed by the Parties hereto, and approved by DOE.

ARTICLE XXX: TERMINATION

This CRADA may be terminated by either Party upon _____ () days written notice to the other Party. This CRADA may also be terminated by the Laboratory in the event of failure by the Participant to provide the necessary advance funding, as agreed in Article III.

In the event of termination by either Party, each Party shall be responsible for its share of the costs incurred through the effective date of

termination, as well as its share of the costs incurred after the effective date of termination, and which are related to the termination. The confidentiality, use and/or nondisclosure obligations of this CRADA shall survive any termination of this CRADA.

I hereby represent that I have the requisite authority to sign this instrument on behalf of:

THE LABORATORY:

Signature: _____

Name: _____

Title: _____

Date: _____

PARTICIPANT:

Signature: _____

Name: _____

(Typed or Printed)

Title: _____

Date: _____

APPENDIX A

STATEMENT OF WORK

A. NON-PROPRIETARY ABSTRACT

(Please provide a brief non-proprietary, non-sensitive description of work to be performed under this CRADA for reporting to OSTI. This should not exceed 800 characters.)

B. PURPOSE

(A one or two sentence statement of project purpose.)

Reasons for Cooperation:

(Briefly describe each party's interests and strengths and how they are complementary with respect to developing the CRADA technology.)

C. SCOPE OF WORK**Technical Objective:**

(Describe the technical goals of the project.)

Phases/Tasks of the Project, Duration, and Responsible Parties:

(Describe the phases/tasks of the project, if appropriate. Identify the individual tasks within each phase (if applicable) in table format. Subtasks may also be included. Subtasks should provide enough detail so that progress can be easily tracked. (See suggested table layout below.) The duration and responsible party for each task/subtask should be listed. In the section following the table, provide a discussion of the objective of the task and the deliverable that will be produced as a result of the task.)

Phase No.	Task No.	Task Name	Duration (Months) (Start) (Finish)		Responsible Party

Task Descriptions and Deliverables:

Task 1:

Discussion:

Deliverables:

Duration of Entire Project:

(Express, in months, the proposed length of the project from start to finish.)

D. PROPERTY

List any tangible property to be produced or purchased, who will pay for it and who will own it as requested under Article IV of the CRADA.

LAB:

Participant:

Note: If any materials or equipment will be transferred out from LAB to the Participant, a list of all equipment, identify piece, and identifying numbers (serial, etc.) must be identified in the Statement of Work.

E. TERM, FUNDING AND COSTS

The Participant's estimated contribution is \$ _____. The Government's estimated contribution, which is provided through the Laboratory's contract with DOE, is \$ _____, subject to available funding. The total value of this CRADA is estimated to be \$ _____.

OR

The Participant's estimated total contribution is \$ _____ and includes \$ _____ In-Kind and \$ _____ Funds-In and \$ _____ in Federal Administrative charges. The Government's estimated total contribution, which is provided through the Laboratory's contract with DOE is \$ _____, subject to available funding. The total value of this CRADA is estimated to be \$ _____.

F. FUNDING TABLE (all \$ in K)**Base CRADA**

Funding	Project Year 1	Project Year 2	Project Year 3	Project Year 4	Project Year 5	TOTALS
Government						
DOE						
Other						
Total Govt.						
Participant						
In-Kind						
Funds-In						
FAC						
Total Participant						
TOTAL CRADA Value						

Amendment 1**FUNDING TABLE (All money in \$K):**

Funding	Project Year 1	Project Year 2	Project Year 3	Project Year 4	Project Year 5	TOTALS
Government						
DOE						
Other						
Total Govt.						
Participant						
In-Kind						
Funds-In						
FAC						
Total Participant						
TOTAL CRADA Value						

AMENDMENT FUNDING SUMMARY TABLE (All money in \$K):

CRADA Amend.	DOE NNSA Contrib	Other Govt. Contr.		Participant Funds-In	Participant In-Kind	Participant FAC	Subtotals
Original			Original				
Amend 1			Amend 1				
Amend 2			Amend 2				
Amend 3			Amend 3				
Amend 4			Amend 4				
Amend 5			Amend 5				
Cum. Government Totals			Cum. Participant Totals				

G. ESTIMATED TOTAL PROGRAM COST

(For use in multi-laboratory CRADAs and others as warranted.)

H. MANAGEMENT STRUCTURE

(For use in multi-laboratory CRADA and others as warranted.)

APPENDIX B

DESCRIPTION OF EXPANDED ABSTRACT OF COPYRIGHTED COMPUTER SOFTWARE

Energy Science and Technology Software Center

(Note: The abstract submittal requirement will be in accordance with the current requirements and guidelines of the Energy Science and Technology Software Center. The following is the current abstract format.)

Abstract Format Description

(Character limit for any one field: 2,000)

(Character limit for all information: 9,000)

Text only, no diagrams or flowcharts

Due to the differences in size and complexity among software packages and the corresponding differences in their respective documentation requirements, a specific form for the required Abstract document has not been provided. Instead, this Abstract Format Description contains a listing of the data elements required for the Abstract and a brief description of each data element. Please note that each of the listed data elements is **REQUIRED**, and a response for each data element **MUST** be included in the completed abstract document.

- 1. Identification.** Provide the following two fields to be used to uniquely identify the software. The software acronym plus the short or KWIC (keywords in context) title will be combined to be used as the identification of the software.

Software Acronym (limit 20 characters). The name given to the main or major segment of module packaged usually becomes the name of the code package. If an appropriate name is not obvious, invent one which is related to the contents.

Short or KWIC title (limit 80 characters). This title should tell something of the nature of the code system: calculational method, geometry, or any feature that distinguishes this code package from another. It should be telegraphic in style, with no extraneous descriptions, but rather a string of keywords and phases. The word “code” (alone) and “program” do not belong in a description of a code “package.”

- 2. Author Name(s) and Affiliations.** List author(s) or contributor(s) names followed by the organizational affiliation. If more than one affiliation is applicable, please pair authors with their affiliations.

3. **Software Completion Date.** List approximate date(s) that the version of the executable module(s), which will be created by the submitted program modules, was first used in an application environment.
4. **Brief Description.** Briefly describe the purpose of the computer program, state the problem being solved, and summarize the program functions and capabilities. This will be the primary field used for announcement purposes.
5. **Method of Solution.** Provide a short summary of the mathematical methods, engineering principles, numerical algorithms, and procedures incorporated into the software.
6. **Computer(s) for which software is written.** List the computer(s), i.e., IBM3033, VAX6220, VAX, IBM PC, on which this submittal package will run.
7. **Operating System.** Indicate the operating system used, release number, and any deviations or exceptions, i.e., is the operating system “off the shelf” with no modifications, or has the operating system been modified/customized. If modified, note modifications in field 11.
8. **Programming Language(s) Used.** Indicate the programming language(s) in which the software is written along with the approximate percentage (in parentheses) of each used. For example, Fortran IV (95%); Assembler (5%).
9. **Software Limitations.** Provide a short paragraph on any restrictions implied by storage allocation, such as the maximum number of energy groups and mesh points, as well as those due to approximations used, such as implied argument-range limitations. Also to be used to indicate the maximum number of users, etc., or other limitations.
10. **Unique Features of the Software.** Highlight the advantages, distinguishing features, or special capabilities which may influence the user to select this package over a number of similar packages.
11. **Related and Auxiliary Software.** If the software supersedes or is an extension of earlier software, identify the original software here. Identify any programs not considered an integral part of this software but used in conjunction with it (e.g., for preparing input data, plotting results, or coupled through use of external data files). Note similar library software, when known.
12. **Other Programming or Operating Information Restrictions.** Indicate file naming conventions used, e.g., (filename).DOC (DOC is a filename extension normally used to indicate a documentation file), additional subroutines, function libraries, installation support software, or any special routines required for operation of this

package other than the operating system and programming language requirements listed in other fields. If proprietary software is required, this should also be indicated.

- 13. Hardware Requirements.** List hardware and installation environment requirements necessary for full utilization of the software. Include memory and RAM requirements, in addition to any nonstandard features.
- 14. Time Requirements.** Include any timing requirements estimations, both wall clock and computer clock, necessary for the execution of the package. Give enough detail to enable the potential user to estimate the execution time for a given choice of program parameters (e.g., 5-10 min.).
- 15. References.** List citations of pertinent publications. List (by author, title, report number, bar code or order number if available, and date). References are to be broken down into two groupings: Reference documents that are provided with the submittal package.

Any additional background reference materials generally available.

16. Categorization and Keywords.

- a) **Subject Classification Code** - Chosen from the Subject Classification Guide (Appendix E of ESTSC--1), this one-letter code designation is to be supplied by the submitter.
 - b) **Keywords** - Submitters should include keywords as taken from the ESTSC thesaurus listing (Appendix F of ESTSC--1). Keywords chosen that are not on the list will be subject to ESTSC approval before being added to the thesaurus. Subsequent revision lists will be available. ESTSC may also add additional keywords to aid in the indexing of the materials.
 - *c) **EDB Subject Categories** - Energy-related categories (6 digit) to be assigned by ESTSC per the Energy Science and Technology Database (EDB) schema for a further breakdown of subject area.
- ***17. Sponsor.** This field, input by ESTSC from information provided on the Primary Submittal Form, represents the program office or division responsible for funding the software.
- ***18. Material Available.** This field, input by ESTSC, is taken from information provided on the submittal forms. It will be composed of:
- a) Contents of the package available for distribution.
 - b) Computer media quantity.
- ***19. Status.** This field, input by ESTSC for submittals other than from SIACs, consist of a dialog of information concerning: when the

package was announced; subsequent versions and dates; what level of testing has been performed at NESC, SIACs, or ESTSC, etc.

Note: The areas above indicated by asterisk (*) are data elements that will be determined by ESTSC, consisting of data extracted from other information provided within the submittal package.

APPENDIX C

BACKGROUND INTELLECTUAL PROPERTY (BIP)

Relevant BIP to this CRADA includes but is not limited to the following listing, is subject to change, and includes Intellectual Property developed or owned by the Laboratory and Intellectual Property developed or owned by the CRADA Participant. The LAB BIP listed below does not guarantee either an implied or an express license or option for the CRADA Participants. Licensing of BIP, if agreed to by the Participants, shall be the subject of separate licensing agreements between the Laboratory and CRADA Participant. CRADA Participants are cautioned that rights to the BIP may be limited by existing encumbrances.

LAB:

LAB's final BIP review from the IPM/BIP Team is entered here.

PARTICIPANT:

If the CRADA Participant wishes to identify any BIP it should be listed here.

APPENDIX D

NET BENEFIT

If the Participant is unable to meet the requirements of A and B of Article XXII U.S. Competitiveness, the Participant must provide an explanation of the net benefit to the U.S. economy as an Appendix D to the CRADA. If Participant is able to meet the requirements of A and B, Appendix D is deleted.

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