WESTINGHOUSE IDAHO NUCLEAR COMPANY TECHNOLOGY TRANSFER PROGRAM

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ABSTRACT

WINCO has implemented a very aggressive technology transfer program using a number of innovative approaches. This paper describes the progress to date in implementing the program, including the necessary contract changes, approach during 1993 and some of the initial successes. The lessons learned and planned future direction in developing additional innovative approaches to technology transfer are also presented.

INTRODUCTION

Westinghouse Idaho Nuclear Company (WINCO) manages the Idaho Chemical Processing Plant (ICPP) and performs other functions as a Management and Operating Contractor for the U.S. Department of Energy (DOE). Between 1953 and 1992, uranium-235 and krypton-85 were recovered from spent nuclear fuel at the ICPP. In April 1992, DOE announced that spent fuel would no longer be reprocessed at the ICPP, thereby changing the mission of the ICPP from a production facility primarily supporting the DOE Defense Programs to research and development on spent fuel/waste management. This R&D program will identify acceptable options for disposing of sodium-bearing liquid radioactive waste, radioactive calcine, and irradiated spent fuel stored at the INEL.

As part of the new mission, WINCO has implemented a very aggressive technology transfer program. This paper describes the progress to date in implementing the program, including the necessary contract changes, approach during 1993 and some of the initial successes. The lessons learned and planned future direction in developing new and innovative approaches to technology transfer are also presented.

CONTRACT CHANGES

In August 1993, WINCO and DOE agreed on a contract modification to expedite technology transfer with industry. The contract modification establishes WINCO as a "Laboratory" as defined in technology transfer legislation and requires WINCO to have a Technology Transfer Office. The changes enable WINCO to file for patents and assert copyrights on intellectual property, license the property to private industry, and enter into Cooperative Research and Development Agreements with private industry for joint development of new technologies. WINCO's Center for Research and Technology Commercialization was established on September 17, 1993 following the contract change.

Because of the desire to implement a program before the contractual change, WINCO utilized some innovative approaches to technology transfer. For instance, collaborative agreements were used in lieu of CRADAs. Additional methods used include work for others, procurement and cost shared contracts, technical assistance, university exploratory research and development contracts, personnel exchanges, and technical information exchanges.

APPROACH DURING 1993

At the beginning of 1993, WINCO began a focused effort to make technology transfer a reality. Technology transfer programs at Hanford, Savannah River, Sandia, Oak Ridge and EG&G Idaho were benchmarked, the pool of existing technologies was reviewed for potential commercial interest, and beginning in February 1993, advertisements were placed in the Commerce Business Daily. Inquiries into advertised technologies were responded to in writing, and followed up with telephone calls.

The approach taken for establishing the Technology Transfer program included using a systems analysis approach to identify program needs and strategic issues. By using systems analysis tools it was possible to see how the pieces of technology transfer fit together so they could be integrated and the big picture kept in mind.

The Technology Transfer program was integrated with other programs, such as the Laboratory Directed Research and Development, University Exploratory Research and Development, and Office of Technology Development programs, as well as Regional Economic Development, and patent committee (Intellectual Property Office) efforts. This enabled these efforts to be coordinated by a single group, resulting in a unified R&D program with an emphasis on technology transfer.

Another thrust was to establish the program at the grassroots level, using a limited number of personnel involved full-time and leveraging the entire organization. This was accomplished by matrixing with organizations, such as Legal, Procurement, Applied Technology, and Human Resources. For instance, Human Resources developed and implemented a communications plan that has resulted in journal and magazine articles, newspaper articles, television spots, a radio show interview, and a presentation at the National Contract Management Association Technology Transfer workshop.

An underlying philosophy of the WINCO program is to change the company's culture. This is being accomplished in a variety of ways. A series of training workshops are being conducted to train champions in all parts of the company. The workshops provide the basics of private industry's interest in INEL technologies, a basic understanding of intellectual property, and understanding of many of the available mechanisms for technology transfer. Key to the workshops are an interactive session for each person to identify ways that they can become involved in Technology Transfer, make commitments for specific actions, and be motivated using the group process. Other mechanisms for culture change also being utilized include meetings with small groups, intellectual property seminars, individual support, improved incentives for participation, as well as increased awareness through company publications and media articles.

WINCO has included technology transfer in its company vision statement, making technology transfer a part of everyone's work, and has included four technology transfer measures in its 1994 Total Quality Plan. The measures include increasing patent disclosures, developing initiatives in each Department to contribute to technology transfer, conducting technology transfer workshops, and having a high percentage

of workshop attendees actively participate in technology transfer initiatives. Additional goals that parallel the DOE technology partnership strategic plan have also been established for the WINCO Technology Transfer Office.

Through the Westinghouse Government Owned Contractor Operated (GOCO) Technology Transfer Committee, which includes representatives from WINCO as well as the Waste Isolation Pilot Plant, West Valley, Hanford, and Savannah River sites, a significant amount of sharing has taken place. WINCO has been able to learn from and quickly come up to speed with technology transfer efforts at these sites, and has been able to share advances in its program in return. For instance, training material developed for the WINCO workshops has been shared with each of these locations.

INITIAL SUCCESSES

Specific progress in transferring technologies to industry has been made in the following areas:

Optical Modem: A patented, optical modem was originally developed to protect very low level data signals from harsh environments. The modem transforms analog signals from an instrument into digital form and then to pulses of light that are not subject to interference from plant equipment, motors, generators and other electrical devices. A group of private companies has entered into an agreement with WINCO to use this technology in upcoming computer products.

Cryogenic Sampler: A passive cryogenic environmental sampler had been developed for obtaining large whole air samples at remote locations. The sampler requires no power, is light weight, and collects whole air samples in a small volume. A private company has paid for demonstration of the sampler to assist in evaluation of the market for the device. Two companies are pursuing licensing agreements and another is interested in the manufacture of the sampler.

Spectrum Analysis Software: A spectrum analysis software package, NETSPEC, is a unique software package that runs up to 32 alpha spectrometers and eight photon spectrometers using a SUN work station. Spectral manipulation and data reduction, trend analysis and library matching can be performed interactively with the operation in near real time. This software has recently been copyrighted, for the first WINCO software copyright, and several companies have shown interest in its use.

Contaminated Metal Recycle: WINCO is coordinating Metal Recycle program activities concerning the beneficial recycling of radioactive scrap metal (RSM) throughput the DOE complex. WINCO is actively pursuing agreements with private industry and nuclear power utilities to recycle the stockpile of radioactive scrap metal into potentially useful products such as spent fuel containers for on-site dry storage and ceramic/glass storage containers for high-level radioactive waste. A preliminary survey revealed the current stockpile of DOE contaminated scrap metal to be approximately 1.5 million tons, with an estimated annual generation rate over 20 years of 15,000 to 90,000 tons per year. Commercial nuclear utilities currently have a need to disposition 10,000 tons of RSM with a projected annual generation rate of 4,900 tons per year. Current burial costs range from $10 to $300 per cubic foot. Significant savings can be achieved with minimum waste volume by developing a successful RSM recycle program. Two CRADAs are in the final stages of negotiation, and cost shared contracts are also being negotiated.

Robotics/Laboratory Automation: One CRADA negotiated by EG&G Idaho has been completed with ABC Laboratories on laboratory automation in the Contaminant Analysis Automation (CAA) Program. WINCO is currently working on a CRADA and licensing agreements for development of standard laboratory modules in the CAA Program, and is assisting the effort to establish a cooperative agreement between DOE-HQ, several DOE sites, Hewlett-Packard, and Lockheed in this area. We are also pursuing several collaborative agreements in the area of system health monitoring.

Numerous other efforts are underway to license technologies or jointly develop technologies with industry. These include licensing of an improved valve packing, cost shared contracts for decontamination equipment development, and cooperative development of liquid waste treatment technologies. In addition, a Technical Assistance program has been established with the State of Idaho, a User Facility proposal has been drafted, consortia have been identified and proposals developed for joint work, and regional development programs are being actively supported.

In the area of cultural change, over 100 employees have attended technology transfer workshops, with approximately 50% now actively involved in technology transfer initiatives, and the number of invention disclosures has increased significantly, rising from 19 in CY-92 to 50 in CY-93. The rate of disclosure submittals is currently over twice that in CY-93.

LESSONS LEARNED

Establishing a technology transfer program has been a learning experience for all involved. Getting people involved is the key to success. By providing technology transfer workshop training to a wide base of employees it is possible to quickly change the culture and generate numerous technology transfer initiatives. Training tends to generate interest and ideas from technical personnel, but crafts and operations should not be overlooked because they have many practical ideas.

It is possible to do technology transfer without contract changes. Technology transfer mechanisms that get the most attention, such as CRADAs, are often not the most appropriate or quickest method to use. Industry appreciates dealing with people that are open to alternatives for technology transfer. By taking the WIN-WIN approach, both industry and the DOE can save money while advancing their interests.

It is possible, advantageous, and cost effective to have a small Technology Transfer group by leveraging the organization. Consolidating programs helps keep efforts coordinated and widens the outlook toward Technology Transfer. Cost reduction efforts help further the cause by providing an additional incentive for working with industry. Efforts to save a percentage of funds are more likely to succeed when the funds are in hand than if they are just desired.

Use of programmatic funds for CRADAs, rather than relying on funds specifically earmarked for CRADAs, enables mission activities to be completed with industry, with all parties benefiting and without having to worry about a source of funds not materializing.

Performance indicators initially should be focused on achievable near term successes and not items that will take a long period of time to achieve. For example, a new program has difficulty in measuring some of the things, such as royalties, that an established program measures.

DEVELOPMENT OF ADDITIONAL INNOVATIVE APPROACHES

The WINCO Technology Transfer program continues to develop and change as new needs arise. We are continuing to look into the technology transfer programs of other DOE contractors so we can benefit from their experience. During the coming year we intend to develop computer based training on detailed Technology Transfer processes and initiate training of company-wide personnel. We will further integrate research and development efforts into the Technology Transfer program. We are assisting in the formation of consortia involving technologies developed by WINCO personnel. WINCO is also working closely with local and regional officials in transferring technology and supporting regional economic development. We will further our efforts to integrate media coverage in our program, and plan to take a systematic approach to marketing.

CONCLUSIONS

WINCO is implementing a Technology Transfer Program that: 1) takes advantage of the best practices of other organizations, 2) integrates innovative and traditional methods for the transfer of technology, 3) is changing the culture throughout the organization, 4) is structured as coordinated R&D/Technology Transfer program, 5) is dealing with industry with flexible, WIN-WIN approach, 6) is striving to support DOE interests and objectives, and 7) continues to be strengthened. Through these efforts we feel that WINCO is on its way toward becoming a model for technology transfer.