

Y-12

**OAK RIDGE
Y-12
PLANT**

LOCKHEED MARTIN 

**MANAGED BY
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
FOR THE UNITED STATES
DEPARTMENT OF ENERGY**

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**Final CRADA Report
for**

CRADA Number Y-1294-0294

**A. A. Barnes
Lockheed Martin Energy Systems, Inc.**

and

The State of Tennessee

March 14, 1997

MASTER

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**Prepared by the
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for the
U.S. DEPARTMENT OF ENERGY
under contract DE-AC05-84OR21400**

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1. ABSTRACT

The purpose of this CRADA was to provide a mechanism whereby private sector companies within the State of Tennessee could access the vast technological resources available at the Lockheed Martin Energy Systems, Inc., facilities in Oak Ridge, Tennessee. This assistance was focused on assisting companies within the State to become more globally competitive.

The State of Tennessee Department of Economic and Community Development through the University of Tennessee Center for Industrial Services and Lockheed Martin Energy Systems, Inc., (LMES), provided companies within the state of Tennessee up to four days of technical assistance at no charge. As a result of those interactions, there has been an economic impact of \$19.2 million dollars reported over the life of the CRADA. This has been the most successful of all the technical assistance CRADAs.

2. INTRODUCTION

This report contains a review of the objectives of this CRADA, and the status of each objectives. It also contains information on how the work performed under this CRADA benefitted the sponsor in pursuing its mission. Details of private sector impact and how it was measured and collected are discussed. The reader should bear in mind that this is a final report written for a CRADA which provides technology transfer and technical assistance on a broad scale. Because there is no one specific research and development project, the content of this report will be slightly different from that normally associated with CRADAs. The life of this CRADA was 12/07/1994 - 12/07/1996.

LMES was funded to establish a regional assistance program with the mission of transferring manufacturing technologies developed by the Defense Programs complex to United States industry, and to cooperatively develop manufacturing technologies of mutual benefit and interest. The initial focus of this program was on precision flexible manufacturing systems which sought to transfer the technological achievements which resulted from the DOE's drive for the highest possible precision at the lowest cost. Over the course of this program, that focus was broadened to include all facets of the manufacturing process. This program involved the deployment of standard manufacturing technology practices as well as advanced systems development and transfer.

The State of Tennessee has approximately 7,000 manufacturers, with approximately 90% with 49 or fewer employees. Although this program could not feasibly reach every company, it did offer a realistic opportunity for each manufacturer to participate and benefit from available expertise.

The skills and expertise of a limited number of technical resources, combined with aggressive coordination, resulted in a tremendously beneficial program to many Tennessee manufacturers.

3. OBJECTIVES

The objectives of this CRADA in order of priority are:

- > Maximize the private sector utilization of U.S. Government developed technical expertise by providing technical problem solving services to regional manufacturers.
- > Maximize the benefits to the U.S. economy by enhancing regional manufacturer's competitive advantages.
- > Contribute further to the Company's technology transfer mission by creating opportunities and generating regional industry interest in Work for Others (WFO), and Cooperative Research and Development Agreements.
- > Demonstrate to the public and private sector the value of DOE developed technology.

The methodology applied in order to meet the above objectives follows:

- > Utilizing the existing infrastructure of the State of Tennessee Department of Economic and Community Development and LMES Oak Ridge, this program was promoted by the field engineers in their respective regions. This was accomplished by informational meetings with regional businesses, distribution of literature, and on site visits to private sector companies.
- > Correctly defining the problem and providing solutions that fit the cost restraints common to most small manufacturers.
- > Successfully transition customers into other technology transfer mechanisms within ORCMT, such as Work for Others, and Small Business CRADAs.

4. SPONSOR BENEFITS

During the course of this CRADA, the focus of technology transfer shifted from total private sector benefit and broadened to encompass benefits for the DOE. These benefits had been accruing although they were not contained within the original CRADA objectives. One of the more important benefits was the support of core competency and maintaining a viable work force. The problems presented from the private sector were often challenging enough to require much thought and analysis by LMES technical resources.

The cycle time required in working with the private sector was somewhat more urgent than LMES was accustomed to prior to this CRADA. This increased urgency has resulted in the streamlining of internal technology transfer operations in core areas.

5. ACCOMPLISHMENTS

In order to measure the success of the program and provide a feedback mechanism for programmatic improvements, the development of a comprehensive customer survey was necessary. This survey covered such topics as productivity, quality, sales, employment, cost avoidance, environmental benefits, waste reduction, and projected monetary benefits over a two year period.

Based upon the feedback received from these surveys, interactions between the private sector and LMES have resulted in a tremendous return on investment. During the period covered by this CRADA, 117 requests for technical assistance were received. The technical assistance provided resulted in private sector impact of \$19.2 million during the life of the CRADA.

Using selected projects, a Success Story booklet with testimonials from customers have been compiled and distributed. These have been made available to the public through the distribution of information packages at several gatherings of groups such as Chambers of Commerce and professional organizations. Several of the participating companies have provided samples of their product for display at tours of the ORCMT.

No inventions were made or reported by LMES personnel as a direct result of this CRADA. This was to be expected, as one of the constraints of the CRADA was that the funding would not be used to create intellectual property or inventions. Because of this, there was nothing generated that could be commercialized by LMES or DOE.

6. Conclusion

Utilization of the resources available at LMES has had a remarkable impact on the private sector. Although we have similar CRADAs with other States offering the same technical assistance program, the Tennessee CRADA has been the most successful.

The stand-down at the Y-12 Plant caused a few minor delays, but with alternate resources available at the Oak Ridge National Laboratory, this turned out to be much less of a problem than expected. Since the resolution of this event, the number of requests being received has returned to their former levels. But, efforts to reverse this trend have been underway since the end of FY'94, and are continuing. These efforts have included contacts with state agencies where meetings and discussions were held.

This CRADA has been very beneficial to both Tennessee manufacturers and the DOE. We should continue to nurture this and other partnerships.

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