

Y-12

**OAK RIDGE
Y-12
PLANT**

MARTIN MARIETTA

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

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**Oak Ridge Defense Conversion
Translating Technology Into Economic
Growth**

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Technology Transfer

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Oak Ridge Defense Conversion--Translating Technology into Economic Growth

The Oak Ridge Y-12 Plant¹ has become a model for successful defense conversion. In two years the plant has been reconfigured to meet continuing defense missions while contributing to the economic revitalization of the country. Industry has cited \$150 million in benefits and an estimated 3,000 jobs have been either created or retained to date.

The plant is a major Department of Energy (DOE) manufacturing facility located in Oak Ridge, Tennessee. In late 1991, it was facing the sizable downsizing and redirection of mission that most of America's defense infrastructure has incurred in the last few years. At the same time, Y-12 was required to maintain the ability to make components and store enriched uranium to support national defense needs. The DOE and its managing contractor, Martin Marietta Energy Systems (MMES), in recognition of the impending changes, put in place an aggressive mitigation plan.

Y-12's primary historic mission was production of components in support of the country's nuclear weapons program. With the end of the Cold War, production of new weapons stockpile was rapidly curtailed and the need for certain skills and programs declined. DOE's Defense Programs Office in Oak Ridge recognized that major changes were imminent and that immediate actions were needed. DOE and Martin Marietta management jointly developed a plan to maintain and protect Y-12's production

¹Managed by Martin Marietta Energy Systems, Inc. for the U. S. Department of Energy under contract DE-AC05-84OR21400.

capability, reduce production capacity, and facilitate a transition to new or redefined missions.

In 1992, the Y-12 situation was significantly different than that of communities faced with either announced Department of Defense base closings or planned DOE facility closures. Y-12 is known as the "Fort Knox" of uranium. As a result, operational activities associated with enriched uranium are and will be a continuing mission, ensuring continuing need for major portions of the plant for the foreseeable future. Y-12's problem in 1992 was not one of total closure. Y-12's problem was a combination of minimizing the effects of required downsizing due to lost production, establishment of new missions within the DOE where possible, reduction of the effects of downsizing on the community and region, and maintenance of the value of its capital assets to the maximum advantage of taxpayers---all of which had to be done while providing support of continuing defense missions.

Y-12's response to the challenge started in the early spring of 1992. The immediate strategy was to develop and expand the Oak Ridge Office of Technology Transfer's on-going program in licensing and cooperative research and development, to enhance access to the Y-12 Plant for private sector industry, to develop strategic partnerships with key local, state, and federal government agencies, and to develop a community-based economic development plan for the region that included utilizing available Y-12 assets.

In April 1992, goals of this effort were announced to the plant's population. Bill Bibb, Manager for DOE'S Oak Ridge Defense Programs, stated at the initial meeting announcing the plan, "The taxpayers have an investment worth hundreds of millions of

dollars that is in danger of no longer being used. Trained and experienced craftsmen and engineers are facing a very uncertain future and the 50 years of cutting edge manufacturing experience we have developed is in danger of going away. But, these are assets we can use to provide a future vision for the Plant. We must maintain the capability to make product in a national emergency, but we can not continue to support all the capacity here today. If we are to survive we have to take advantage of the emerging missions for technology transfer and dismantlement of returned stockpile to maintain our core capabilities. We have to define a future or else there is a good possibility there won't be one."

The local community and the State of Tennessee enthusiastically agreed to help plan and execute a major ceremony called "Beyond the Fence" in June 1992, celebrating and announcing these fundamental changes to the public. Over three hundred guests watched as then Tennessee Senator Jim Sasser, now-retired Congresswoman Marilyn Lloyd, and former Tennessee Commissioner of Economic and Community Development, Johnny Hayes, symbolically removed part of the security fences surrounding major portions of this once totally secret plant. From these beginnings a program was built around the principles of community involvement and accessibility for industry to work on its problems as it defined them. At the same time a commitment was made to provide dual benefit to the plant's defense commitments, retrain workers to meet the new missions and needs, and cross train affected personnel to meet industry's needs. In every case, activity was driven to generate maximum short term benefits to industry while creating success stories upon which to build additional support.

Indicators of the success of implementing these strategies include the following:

Enhanced Facility Access:

- A large portion of Y-12 was declassified and opened to the public in June 1992. This was followed by organizing the Oak Ridge Centers for Manufacturing Technology (ORCMT) in January 1993, to serve as the focus for industrial access to Y-12 and its available expertise.
- The ORCMT facilities were approved as a DOE Deployment User Facility June 1993, verifying their status as a national manufacturing resource.

Securing Community Involvement:

- State of Tennessee and Oak Ridge City officials participated in planning and conduct of a "Beyond the Fence" ceremony in June 1992. A committee of key local officials was established which provided strategic input for the event and the State Department of Economic and Community Development invited and ensured participation of key regional industries.
- A Memorandum of Agreement between the Tennessee Valley Authority (TVA) and DOE plus a Memorandum of Understanding between Martin Marietta and the TVA was signed in January 1993 to jointly leverage resources to provide support to the Tennessee Valley region served by TVA which consists of seven states and 200 counties.

- An Adjustment Assistance Coordinating Council (AACC) was established to focus on the effects of downsizing and work force restructuring June 1992. The council ties together the efforts of DOE, Y-12 management, local union officials, and both local and regional stakeholders to address concerns due to downsizing.
- A plan, titled "East Tennessee Technopolis," for enhanced development of the region's high technology resources was funded by DOE in September 1994. Management of the plan was delegated to Tennessee's Resource Valley, a regional nonprofit organization of representatives from 15 East Tennessee counties, which is facilitating implementation.
- Technology 2020, a computing and telecommunications demonstration facility, was established by a joint partnership of public and private sector firms to leverage the technology strengths of the entire DOE Oak Ridge complex and surrounding technical community. This facility is considered a vital link to the information highway so critical to future economic growth.
- A strategic plan leveraging the DOE-Y-12 resources for regional economic development, the "East Tennessee 2000 Economic Development Plan," was prepared by the East Tennessee Economic Council, Tennessee's Resource Valley,

DOE, and Y-12 Management. Funding for the community development portion of the plan is being managed by The East Tennessee Economic Council, a partnership of the key economic development officials from counties surrounding Y-12.

Work Force Retraining and Developing Qualified Trainers:

- A survey of regional industry for training needs was completed in the summer of 1993. The results were used to define the curricula for the Skills Campus training center at Y-12.
- Funds from the National Defense Authorization Act were provided to retrain the Y-12 work force for skills which were affected by downsizing. Through October 1994, forty trainers had been qualified to train skills required in the downsized plant. These trainers have now trained over 800 people to perform activities required for retained jobs. Local educational resources Pellissippi State and Roane State community colleges were utilized where possible to leverage available resources by providing available courses through the Skills Campus training center.

Identifying and Exploiting New Missions for Y-12:

- The Y-12 Plant was one of four laboratories designated to participate in DOE's Defense Programs technology transfer

mission. In the spring of 1992, a focused program development team was established to secure a major Y-12 role in this initiative. Through October 1994, over \$88 million in DOE funds have been competitively awarded to Y-12 from this program.

- The National Institute of Standards and Technology (NIST) has validated the Y-12 Metrology Center to perform calibrations on certain length standards, the first non-NIST lab ever to be so designated. Additionally, the Advanced Research Projects Agency awarded a grant to Y-12, NIST, Pennsylvania State University, the American Gear Manufacturers Association and the American Society of Mechanical Engineers to establish a Gear Metrology Center at Y-12 to utilize this core Y-12 competency.
- Six programs were competitively awarded to Y-12 for support of the Congressionally sponsored defense conversion Technology Reinvestment Project (TRP).

Maximizing Private Sector Benefits

- Technology problem solving with a distinct focus on small businesses has been a cornerstone of the efforts to deploy the unique Y-12 manufacturing technologies. Over 1200 firms have been helped since initiation of the effort. Greater than 60% of these firms reported direct monetary benefit to their

companies as a result of the assistance. The total reported value of the benefits from these 1200 firms is greater than \$150 million and includes either creation or retention of approximately 3,000 jobs. The Tennessee Department of Economic and Community Development and the University of Tennessee Center for Industrial Services are major partners in this effort and have identified more than 450 technology problems in regional companies for which Y-12 has provided solutions.

- Through 1994, 82 cooperative research and development agreements (CRADAs) have been negotiated with private sector partners on a cost shared basis. Industry partners have committed greater than \$90 million of their resources to support these projects. Partners range from industrial giants such as General Motors or Detroit Diesel to small minority businesses such as Standard Technologies Inc. of Dallas, Texas. Almost all of these projects use the joint strengths provided by the broad scientific expertise of the Oak Ridge National Laboratory together and the manufacturing knowledge of Y-12 to provide unique solutions to industrial needs. This ability to combine a national lab's science base and a proven manufacturing expertise simultaneously is available no where else in the country.

- Through 1994, over a dozen companies have committed to either startup or expand operations in the East Tennessee region. Three examples are Sotoworks, Inc., a startup company that will market, produce and distribute lightweight wheelchairs made from carbon fiber materials; Frametech, Inc., a startup company that will manufacture high quality titanium bicycle frames and other consumer products; and RIS Corporation which was founded to design, fabricate and market radiation detection equipment. All cite the ability to access user facilities, the possibility of joint development via CRADAs, and licensing opportunities as key reasons for choosing to locate in the region.

Summary In 1992 there were over 6,000 employees involved in defense related activities at the Y-12 Plant. By late 1994 the plant had undergone a dramatic change in operations including a reduction of the work force to less than 4,000 employees. That this major downsizing was accomplished without a layoff is a tribute to the combined efforts of the Y-12 employees, union leadership, the DOE, Martin Marietta and local and state governments.

The keys to the success are:

1. The end of the Cold War and the potential impact was recognized early and a plan of action was developed and implemented. The plan was based on a total reorientation of the historical role and mode of operation of the plant.
2. Everyone who had an interest in the outcome was invited to join in the planning.

3. The plan was developed and implemented as if no barriers to success existed.
4. Opening about one-third of the classified portion of the Y-12 Plant as the initial activity was critical to the success of the plan. The historical opening of the gates was a major factor in convincing employees and a skeptical public that change could and would occur.

As the debate on the future of the DOE weapons complex evolves it is clear that the Y-12 Plant will be a major contributor to improving productivity and the competitiveness of current and future industry in Tennessee and the country while continuing to provide unique expertise to support the nation's nuclear weapons program.