SEPTEMBER 1994

EG&G MOUND-12-01 - - - -9501050001

MOUND

ECONOMIC DEVELOPMENT PLAN

MOUND REUSE COMMITTEE • MIAMISBURG MOUND COMMUNITY IMPROVEMENT CORPORATION • CITY OF MIAMISBURG, OHIO

TABLE OF CONTENTS

EXECUTIVE SUMMARY i
PREFACE 2
ACKNOWLEDGEMENTS 3

PART I - INTRODUCTION 4
1.01 Site History and Background 5
1.02 Stakeholders 5
1.03 Socio-Economic Impact of Employment Reduction 6
1.04 Addressing the Impact 7
1.05 Mound Commercialization Strengths 7
1.06 Mound Commercialization Challenges 8
1.07 Other Challenges 8

PART II - ECONOMIC DEVELOPMENT ROLES AND STRATEGIES 9
2.01 Mound Vision Statement 10
2.02 Approach and Roles 10
2.03 Approaches to Transitioning Mound 11
2.04 Overview of Technologies at Mound 12
2.05 Marketing Strategies for Mound Technologies 12

PART III - IMPLEMENTATION FRAMEWORK 14
3.0 Overview 15
3.01 Mound Redevelopment Programs 15
3.011 Community Reuse Organization/Mound Reuse Committee 16
3.012 Infrastructure Integration 17
3.02 Business Development Programs 18
3.021 Community Improvement Corporation 18
3.022 User Center and Transition Work 19
3.023 Business Incubator 20
3.024 Marketing 22
3.025 Technology Transition 23
3.03 Business Assistance Programs 25
3.031 Financial Assistance 25
3.032 Facility and Site Improvements 28
3.04 Priorities and Scheduling of Implementation Framework by Program Year, 1995-1997 29
3.05 Leveraging of Other Resources 30
3.06 Impact of Implementation on Employment 31
3.07 Conclusion 33

ENDNOTES 35

APPENDICES
Transition efforts 1993-1994 ..... A
Process for Leasing Mound Facilities ..... B
Assessment of Mound Technologies C
Mound Reuse Committee Membership ..... D
Technology Transition Budget ..... E
Facility and Site Improvement Budget ..... F
Summary of Transition Grant Funds ..... G
Projected Job Opportunities in Vacated Mound Space ..... H

EG&G MOUND-950105000001

EXECUTIVE SUMMARY

This document, the Mound Economic Development Plan, responds to U.S. Department of Energy (DOE) policy guidance for converting DOE assets at the Mound Laboratory complex in Miamisburg, Ohio, to commercial use. Approved by the Mound Reuse Committee, Mound Community Improvement Corporation, and the local DOE office, the Plan defines goals, strategies, priorities, programs and funds necessary to support a locally-driven effort to implement DOE's objective of commercializing the facility. The City of Miamisburg, the Mound Reuse Committee and the Miamisburg Mound Community Improvement Corporation request DOE Secretary Hazel R. O'Leary, through the Task Force on Worker and Community Transition, to review and approve this plan and to provide funds to the community to carry it out.

In Part I, the plan discusses the background of the Mound site and details the efforts made by the Mound stakeholders, led by the City of Miamisburg, to respond to the loss of defense production. The socio-economic impact of the decommissioning of the facility is formidable, the plan notes. A study by the University of Dayton Center for Business and Economic Research concluded that the major economic impact on Miamisburg is the direct loss of Mound jobs and taxes. The report placed total City income tax revenue loss at $1.65 million per year. The total loss in employee earnings has been estimated at $94.4 million, $91.6 million of which is tied directly to Mound positions. Additionally, $13.1 million in employee-generated expenditures will result in an additional loss of $12.5 million to the Miamisburg economy.

In addition to the economic impact, the community faces a number of consequences if it does not address the challenge posed by the decommissioning. These include missed opportunities to:

- Champion the interests of the Mound work force so it can continue to make valuable contributions to the community and the nation.
- Influence the direction and pace of environmental restoration and waste management at the Mound site.
- Lead the nation by maximizing the investment that has been made in defense and establishing a model for defense conversion.

Based on an evaluation of Mound's strengths and challenges in Part I of the plan, Part II identifies alternative strategies and roles for the various key stakeholders. The plan also assesses 17 technologies found at Mound. It concludes that economic development efforts should concentrate on capitalizing on these technologies. Under this approach, the stakeholders view Mound as a critical combination of human and physical assets that collectively generates the potential for commercialization.

Mound's transition can occur in at least two ways. One is by marketing technologies to potential businesses that would locate at Mound. The other is to encourage Mound employees to grow their own businesses based on the existing technologies and their technological experience. Beyond technology applications, the physical assets of the facility also offer opportunities for successful commercialization.

Part III of the plan presents an integrated package of programs to carry out the economic development plan. These programs will: provide assistance to Mound employees in entrepreneurial roles; market existing technologies; provide financial assistance; enable the upgrading and leasing of

buildings and related facilities; and establish a window of opportunity to accomplish the transition. In addition to Federal support, the plan catalogues state and local resources that will be used in leveraging these programs.

Setting forth work programs and detailed cost estimates for each, the plan proposes the following activities be carried out in fiscal years 1994-1997.

Mound Redevelopment Programs:

Mound Reuse Committee (MRC) - Provides funding support for the administration of the MRC as detailed in the DOE policy guidance.

Infrastructure Integration - Conduct and implement studies addressing the integration of Mound infrastructure into systems of alternate providers to achieve cost savings. This infrastructure system includes ares of water, sewer, roadways, fire and police protection, and heating and cooling.

Business Development Programs:

Community Improvement Corporation (CIC) - Provide funding support for the Mound CIC which will serve as the administrative agency for economic development efforts at the Mound complex.

User Center and Transition Work - Currently, Mound capabilities are not available to support the transition effort. The User Center mechanism will allow the development of new business interest by allowing potential customers to test Mound capabilities on a short-term basis. Transition Work will permit Mound technologies to perform work necessary to promote economic development.

Business Incubator - Support a business incubator that will nurture and assist new businesses during critical start-up periods. The incubator would provide low-cost facilities, shared office and communications equipment, pooled administrative and clerical services and technical advice. However, over the three-year period, the support to the incubator would be reduced as businesses become independent.

Marketing - Develop and aggressively carry out a comprehensive marketing plan which identifies existing and potential businesses that could utilize Mound capabilities.

Technology Transition - Provide funds to support, for a limited period, the retention of technological specialists whose skills and knowledge are critical to attracting and establishing new businesses.

Business Assistance Programs:

Financial Assistance - Expand the pool of funds available for business development by leveraging private funding with loan guarantees and increase the capital available for businesses through a direct loan program. These programs would be administered by the Mound CIC and operated by County Corp Development.

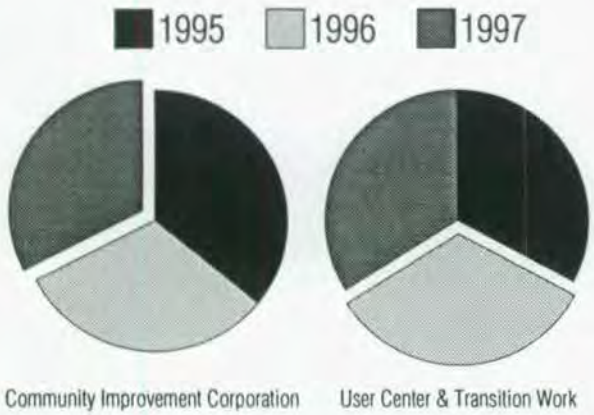
Facility Improvements - Establish a capital improvement program to make building, site and leasehold improvements for new tenants. The intent is to bring facilities up to current code and commercial standards.

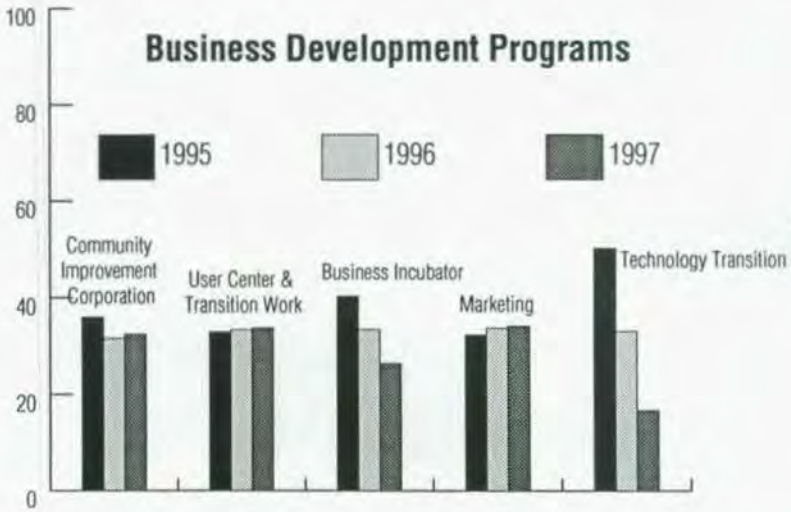
The plan recommends the funding of these programs at the following levels:

3.04 Scheduling of Implementation Framework by Program Year, 1995-97

Implementation Framework for Mound Economic Development Plan Activity	1995	1996	1997	Total
Mound Redevelopment Programs				
Mound Reuse Committee	*95,527	97,748	100,058	293,333
Infrastructure Integration	183,540	34,882	36,277	254,699
Business Development Programs				
Community Improvement Corporation	*274,625	240,610	246,835	762,070
User Center & Transition Work	115,010	116,531	118,111	*349,652
Business Incubator	504,519	417,180	330,187	1,251,886
Marketing	318,570	322,513	326,613	967,696
Technology Transition	4,351,092	2,863,598	1,453,647	8,668,339
Business Assistance Programs				
Financial Assistance	*2,059,316	2,060,888	2,062,524	6,182,728
Facility Improvements	*4,706,974	1,647,665	3,648,898	10,003,537
TOTAL	**12,609,173**	**7,801,615**	**8,323,150**	**28,733,938**

* The Department of Energy Economic Development grant has provided partial funding of this program.





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If the plan's implementation program is approved and funded at the level proposed, the community believes the commercialization effort could be self-sustaining within a period as short as three years. **It is currently anticipated that no additional DOE funds will be necessary beyond those defined in the plan.**

Based on an analysis by technology group, the impact of the plan's execution would be the creation or retention of 656 Mound technology-related jobs. It is anticipated that an additional 439 jobs will be created as a result of existing facilities available at the Mound site. Together, a total of 1,095 jobs will be created or retained at Mound.

Existing opportunities to commercialize Mound assets include several businesses which are proposed by Mound employees. In total, existing opportunities to commercialize Mound-based assets would create or retain from 78 to 243 technical jobs, occupy 130,000 - 182,000 square feet of space and result in hundreds of thousands of dollars in investment. These interests have reinforced the community's belief in the potential of its vision for Mound and the need for timely support from DOE to successfully fulfill the plan.

PREFACE

This document, *Mound Economic Development Plan*, responds to U.S. Department of Energy (DOE) policy guidance for converting DOE assets at the Mound Laboratory complex in Miamisburg, Ohio to commercial use. Approved by the Mound Reuse Committee, Mound Community Improvement Corporation, and the local DOE office, the plan defines goals, strategies, priorities, programs and funds necessary to support a locally-driven effort to implement the DOE's objective of commercializing the facility. The City of Miamisburg, the Mound Reuse Committee and the Miamisburg Mound Community Improvement Corporation requests DOE Secretary Hazel R. O'Leary, through the Task Force on Worker and Community Transition, to review and approve this plan and to provide requested funds to the community for implementation of the plan.

ACKNOWLEDGEMENTS

The City of Miamisburg, the Mound Reuse Committee and the Mound Community Improvement Corporation wish to thank, for their contributions to this document, the following individuals and organizations:

Robert DeGrasse, Jr., Kitty Gandee and staff of the Task Force on Worker and Community Transition; Victor Reis and staff of the Office of Defense Programs, including Tom D'Agostino and Walt Lips; Thomas Grumbly and staff of the Office of Environmental Management, Dr. Willis Bixby and staff of the Office of Facility Transition; Bruce Twining and staff of the Albuquerque Operations Office; J. Phil Hamric and staff of the Ohio Field Office; Larry Kirkman and staff of the DOE's Miamisburg Area Office; and Jack Clark and staff of EG & G Mound Applied Technologies, Inc.

This document was prepared by the Miamisburg office of Mound Transition.

PART I
INTRODUCTION

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INTRODUCTION I

1.01 Site History and Background

In December 1991, the U.S. Department of Energy (DOE) announced that it planned to consolidate its nuclear weapons production facilities and end defense programs at the Mound plant located in Miamisburg, Ohio. The Mound plant, which became operational in 1948, was one of the nation's first permanent atomic energy facilities. Mound evolved into an integrated production, development and research site performing work in support of DOE weapons and energy related programs. The Mound facility includes approximately 306 acres with 100 buildings totaling approximately 1.3 million square feet of floor space.

Mound manufactured chemical explosive detonators and timers, explosive-actuated transducers, explosive switches, heat sources for space missions, calorimeters, and tritium reservoirs; conducted quality assurance testing of small explosive and electrical components and tritium containing components for nuclear weapons. Mound continues to assemble and test thermoelectric generators fueled by radioisotopes. It is also responsible for the separation, purification and commercial sale of a variety of isotopes and tritium.

Historically, Mound has been operated by a contractor for the U.S. Government. For 45 years, the Monsanto Company managed the facility. More recently, the site contractor has been EG & G Mound Applied Technologies. In addition to M&O contract employees, the site has been the location of the Department of Energy's Dayton Area Office. As of December 31, 1993, 35 DOE employees comprised the local area office and oversaw operations at the facility. The remaining Mound workforce was made up of 1652 EG & G employees, many of whom hold Ph.D's or are trained in highly technical areas. Additionally, some 21 percent of the EG & G Mound employees are represented by labor unions.[1]

The announcement of the end of defense production work at Mound in December 1991 prompted the formation of a coalition of concerned citizens, community leaders and Mound employees. Led by the City of Miamisburg, this coalition prevailed upon DOE to review and scrutinize its original decision to decommission the site. An independent three-member panel commissioned by Secretary Hazel O'Leary conducted the review; in May 1993, the panel confirmed the original decision to decommission the facility and end defense-related programs. The announcement was accompanied by a showing of support from the Secretary for an effort to transition the facility to what has been termed, "productive peacetime purposes."

1.02 Stakeholders

When DOE announced its final decision, the City of Miamisburg refocused its efforts in order to deal with the conversion process. On August 12, 1993, numerous area organizations including local governments, area schools, business and community groups confirmed their support for the City to act as the lead agency for economic development. Miamisburg accepted this leadership role and announced its plan to create the Office of Mound Transition. Thus, this enabled Mound "stakeholders" to speak with one voice concerning the transition.
(see listing on the follwing page)

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MOUND STAKEHOLDERS PRESENT AT THE AUGUST 12, 1993, PRESS CONFERENCE

Local communities

City of Miamisburg
Beavercreek
Bellbrook
Brookville
Carlisle
Centerville
Dayton
Fairborn
Farmersville
Franklin
Germantown
Huber Heights
Kettering
Oakwood
Phillipsburg
Springboro
Trotwood
Miamisburg City Schools
Vandalia
West Carrollton
Xenia

Montgomery County
Miami Township
State of Ohio

Workforce

EG&G Mound
U.S. Department of Energy
Mound Citizens Action Group
Oil, Chemical & Atomic Workers
United Plant Guard Workers of America

Business & Special Interest

Dayton Area Chamber of Commerce
Miamisburg Environmental Safety & Health
I 70/75 Economic Development Group

The charge of the Mound Transition Office's was to formulate implementation strategies designed to carry out local stakeholder objectives including collecting, coordinating and processing stakeholder views and shaping them into an economic development/reuse plan. This plan was to be designed so as to mitigate the impact that decommissioning would have upon the community.

(The major efforts and accomplishments of the Office of Mound Transition are summarized in Appendix A—Transition Efforts.)

1.03 Socio-Economic Impact of Employment Reduction

The City of Miamisburg contracted with the University of Dayton Center for Business and Economic Research (CBER) to conduct a quantitative and qualitative assessment of the impact decommissioning of the Mound facility would have on Miamisburg and the surrounding area.[2] That report was based on primary data collection which included a July 1993 mail survey of Mound employees and early retirees (January 1992-June 1993).

The CBER assessment concluded that the major economic consequence having a direct impact on Miamisburg was the loss of Mound jobs and taxes. The report placed annual total income tax revenue lost to the City at $1.65 million. The total loss in employee earnings was estimated at $94.3 million, $91.6 million of that tied directly to Mound positions. Additionally, the Miamisburg economy will lose $13.1 million in employee-generated expenditures.

The CBER report characterized Mound employees as members of stable, married-couple households with a mean household income ($56,000) of almost twice the metropolitan average. For early retirees and current employees, an estimated 1,066 (50.9 percent) are very likely and an additional 423 (20.2 percent) are somewhat likely to stay in the area after defense programs have been transferred to other facilities. Of the Miamisburg residents from the same group, an estimated 117 (45.7 percent) are very likely and another 63 are somewhat likely to remain in the area after defense programs have been transferred. "This lack of interest in outmigration," the CBER assessment stated, "is not dependent on continued work at Mound.[3]

1.04 Addressing the Impact

By accepting the significant challenge of transitioning Mound, the community can:

- Mitigate the potential job and income loss resulting from decommissioning by capitalizing on existing human and physical assets found at Mound.
- Champion the interests of the Mound work force so it can continue to make a valuable contribution to the community and the nation.
- Influence the direction and the pace of environmental restoration and waste management work at the Mound site.
- Lead the nation by utilizing its investment in defense and establishing a model for defense conversion.

By responding to these challenges, the community and its stakeholders will be able to take positive steps to transition the facility and effectively marshal its human and physical resources for productive peacetime purposes.

In August 1993, a Human Resources Working Group was established to deal with the impact of the reduction in force caused by the decommissioning of the Mound facility. The group focused upon identifying employee needs and developing a Workforce Restructuring Plan. During the Fall of 1993, initial economic development efforts began. These efforts focused upon establishing a coalition of economic development resource organizations which now include the State of Ohio, the Small Business Development Center, the Dayton Area Chamber of Commerce, County Corp, the Minority Business Development Center, the University of Dayton, the National Center for Industrial Competitiveness, and the Southern Ohio Area Manufacturing Small Business Development Center. Each plays a supporting role in the transition efforts. Additionally, an evaluation of the technological opportunities present at Mound was initiated; it is discussed in the following sections.

1.05 Mound Commercialization Strengths

In February 1994, the University of Dayton Research Institute and the Center for Business and Economic Research completed a Commercialization Study of the Mound Facility.4 The study was prepared for Miamisburg, Montgomery County and the State of Ohio. The study identified several Mound strengths which are summarized as follows:

1. Many of the technologies are supported by personnel with graduate degrees in engineering and highly trained technicians.[5]
2. In a number of areas, the new and state-of-the-art equipment will enhance the ability of a business to be competitive.[6]
3. Mound has an overall competitive advantage in areas where high quality, dependability, and precision are important.
4. Mound has the ability to satisfy niche markets where high value added products, specialty services, research and development, and analysis are the market characteristics.[7]
5. The Mound site's synergy of technology and personnel gives it the ability to bring research and development concepts to application.

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1.06 Mound Site Commercialization Challenges

Mound also has characteristics that present challenges to commercialization which are summarized as follows:

1. Continuing missions of DOE require a higher level of security than commercial enterprises traditionally experience. This higher level of security inhibits free and open access to the site.
2. The production facilities at Mound are limited to low volume.
3. The Mound complex was constructed as a single self-sustaining facility which impedes the community's ability to establish independent, stand-alone, on-site businesses.
4. Portions of the Mound site are contaminated and will need clean-up and disposal.
5. Certain of the site's facilities and infrastructures do not meet accepted commercial and industrial standards.
6. Access to the site from major thoroughfares is a challenge.

1.07 Other Challenges

Apart from the characteristics of the site, the Mound transition effort has been presented with other challenges, which are summarized as follows:

1. Cessation of defense production may mean a permanent loss of human assets, (the personnel whose knowledge contributes to the facility's technological edge), and the loss of the opportunity to convert DOE work to Mound-based business.
2. Reconfiguration, competing DOE interests and Federal property management policies have jeopardized the availability of critical equipment otherwise necessary to the success of economic development.
3. The current Mound culture operates in a no-risk environment.
4. With regard to land use, DOE has several initiatives which may conflict with the established authority of the local community. This will add time to the process and divert resources from successful economic development efforts. (These include the Site Specific Advisory Boards and DOE's internal National Environmental Policy Act (NEPA) review process.)
5. There are no mechanisms in place that would make Mound's capabilities readily available to perform transitional work in support of commercialization.

As the community attempts to commercialize the site, overcoming these challenges will require creativity, flexibility and persistence, both locally and on the part of DOE, in order to establish an environment which permits economic development to occur. A close working relationship with clearly defined roles has evolved between DOE and the community, with each accepting responsibility for a shared vision.

PART II
ECONOMIC DEVELOPMENT ROLES & STRATEGIES

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ECONOMIC DEVELOPMENT ROLES & STRATEGIES II

2.01 Mound Vision Statement

The Mound vision statement was formulated early in the Mound transition process. It is the product of many stakeholders working to develop a common understanding of the direction and end result of the transition effort. This vision drives the day-to-day activities as well as longer-range planning for the commercialization of the site. It reads:

> Mound will remain a valuable contributor to the technological, economic, educational and social well-being of the Miami Valley and the Midwest. The site will represent a governmental presence and a vibrant partnership, working in concert to promote energy, environment, manufacturing, research and technological competitiveness for the commercial marketplace.

MOUND ADVANCED TECHNOLOGY CENTER

This vision statement manifests itself in the Mound Advanced Technology Center. This future Mound campus will be comprised of multiple commercial businesses based upon technology brought together by synergy and contributing to the economic health of the community.

2.02 Approach and Roles

To make the vision statement a reality, roles were initially established for each member of the partnership at DOE, EG& G Mound Applied Technologies and the City of Miamisburg. The following describes the current situation in view of the introduction of the Mound Reuse Committee, the Mound Community Improvement Corporation, and the Department of Energy's Ohio Field Office.

City of Miamisburg

As the lead transition entity and in order to provide for widespread public involvement accompanied by strong economic development leadership, the City of Miamisburg has established two organizations:

1. The Mound Reuse Committee has been established for fair and open input by the stakeholders in order to develop a consensus on issues related to reuse and redevelopment of the site.
2. The Mound Community Improvement Corporation has been established to administer and implement the economic development activities, programs, and plans of the transition effort.

The Mound Reuse Committee (MRC)

The MRC will protect the long-term interests of the community and the region. It will:

- Establish a policy framework for the reuse of Mound facilities and assets.
- Monitor the environmental cleanup efforts.
- Support activities designed to enhance a viable economic base and maximize the future opportunities available to the work force.

The Mound Community Improvement Corporation (MCIC)

In striving to commercialize the site, the MCIC will:

- Market Mound assets to the private and public sectors.
- Negotiate and execute business agreements with the private and public sectors to reuse and redirect Mound assets.
- Maximize the human, technological and research opportunities that exist at Mound.

The U.S. Department of Energy (DOE) (includes activities of EG&G Mound Applied Technologies)

DOE will:

- Complete any assigned classified or special nuclear materials work.
- Continue to execute a program focused toward environmental cleanup.
- Facilitate economic development of the site by maximizing opportunities for the private and public sectors.
- Promote the timely conversion of assets to the Mound Community Improvement Corporation for commercial use.

2.03 Approaches to Transitioning Mound

There are several approaches which the community could take in addressing the transition of Mound. Some of the potential approaches are presented below:

1. Leave the facility idle approach. In this approach, (which is a form of liquidation or severe retrenchment,) Mound facilities are allowed to stand idle until such time as the process of mobilizing the physical assets has been clearly established by the Department of Energy.
2. Real estate approach. Under this approach, a mechanism for leasing facilities and equipment is established and Mound is viewed as a real estate opportunity.
3. Technology approach. Under this approach, an attempt is made to capitalize on technologies with a high degree of commercial potential. Here, Mound is viewed as a critical combination of human and physical assets, generating the potential for commercializing various technologies.

Based upon the assessment of strengths, and challenges of Mound, the community has elected to concentrate its efforts on capitalizing on technologies at the complex. This occurs in two ways. One is by marketing technologies to potential businesses that would locate at Mound. The other is to encourage Mound employees to grow their own businesses based on the technologies. Beyond technological applications, the physical assets of the facility offer opportunities to attract businesses unrelated to existing technologies.

The availability of Mound physical assets for economic development is key to the reuse of the facility. Two means to access these assets were initially considered. They include the transfer of title and the leasing of assets. The Federal government's process for transfer of title to property would have required a significant investment of time and held a high potential that the property might not remain in the local community once transfer occurred. Hence, leasing of these assets was chosen as the preferred approach for Mound because it allowed nearly immediate use of the assets as well as the ability to retain the property in the local community under local DOE control. As a result, the community pursued, through its congressional delegation, legislation to enable the DOE to conduct such transactions. Having positioned itself to control these assets and in order to ensure fairness of opportunity and timeliness in use of the assets, a leasing process has been established . This process has been endorsed by DOE, the MCIC, and is attached as Appendix B—Process for Leasing Mound Facilities.

2.04 Overview of Technologies at Mound

The Commercialization Study completed by the University of Dayton Research Institute and the Center for Business and Economic Research grouped the Mound technology areas into 17 categories (see box). Each category was then evaluated on a technical and commercial market basis. The criteria included the capacity and quality of Mound capability, the current existence of similar activities in the commercial sector, and the ease of conversion in the short run. The result was an organization of those technologies into three groups.

MOUND TECHNOLOGIES

Group One Technologies

Ceramics

Flexible Circuits

Machining

Testing- Non-Destructive ,Destructive and Surface Analysis

Group Two Technologies

Adhesives

Cleaning and Contamination Control

Encapsulation and Foams

Explosives

Isotope Separation

Laser Detonators

Tritium Processing

Welding and Joining

Group Three

Film Deposition, Surface Finishing and Plating

Lasers

Metal Hydrides

Plastics

Thermites

Group One technologies are those with the strongest, most immediate potential for commercialization. Group Two technologies are considered to have somewhat lesser commercial potential and Group Three technologies had a still lower order of potential for short-term conversion because of lack of stand-alone capability, unique qualities, capacity, or limited market. The UD report did caution that no Mound capabilities should be abandoned at this time because relative rankings can change suddenly as a result of identifying a new market opportunity or due to the sudden appearance of a company interested in operating a commercial venture.[8]

These technologies and their market potential are detailed in Appendix C —Assessment of Mound Technologies.

2.05 Marketing Strategies for Mound Technologies

In addition to the various transition approaches, there are specific strategies that may be appropriate for marketing Mound technologies. They include:

1. Niche markets. Under the niche strategy, businesses that are without sufficient strength to survive in highly competitive industries elect to become niche players. For a company to succeed in a niche, three conditions must be met:

   a. The niche must have a different basis of competition from the industry at large (the term "basis of competition" refers to a short list of attributes that provide a distinctive advantage to one company versus another in the same industry).

   b. The niche must be large enough to support profitable growth, but small enough to escape the interest of full-line, full-industry competitors; and

   c. The business must be competitive.[9]

2. Joint ventures. Under this strategy, businesses with limited experience or capability join with another business to offer a product or service.[10] As applied to Mound, business units could be formed to pursue ventures with existing companies that have complimentary goals.

3 Mergers. Here, a business formally joins with another business in an attempt to broaden its base of services, reduce administrative overhead, combine complementary strengths and offset weaknesses.[11] As applied to Mound, business units could be formed that would merge with existing companies.

Because of the mix of technologies and the varying capabilities, capacities and synergies of the technology of Mound, no single, narrowly defined strategy will work. The MCIC will instead employ a strategy that combines elements of the above, in whole or in part, to market Mound's technologies.

PART III
IMPLEMENTATION FRAMEWORK

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IMPLEMENTATION FRAMEWORK III

3.0 Overview

The following sections define implementation programs and funds necessary to accomplish economic development work activities at Mound. These programs will: provide aid to Mound employees in new entrepreneurship roles; capitalize on existing technologies; enable the leasing of buildings and related facilities at Mound that have been identified as having potential for economic development; provide financial assistance to Mound businesses; and establish a window of opportunity to accomplish the transition. The programs have been designed to address the weaknesses and challenges facing the transition efforts, while leveraging Mound strengths utilizing the approach and strategies discussed earlier.

The Mound Economic Development Plan presents programs divided into three broad categories: Mound Redevelopment, Business Development, and Business Assistance.

The first category, Mound Redevelopment, refers to those prerequisites to economic development that are specific to the Mound site rather than typical to conventional economic development processes. This category includes the creation of a Community Reuse Organization and the analysis of how the Mound's utility infrastructure could be integrated with similar services already being provided for conventional business users.

The second category, Business Development, includes programs designed to foster new businesses at Mound. Business Development, programs include: the creation of a Community Improvement Corporation, which provides the infrastructure for administering the economic development effort; marketing for both long-term and short-term business activity; a business incubator to help new businesses get started; and technology transition, a program designed to maintain certain technological expertise at the site in the wake of the end of defense production at Mound.

The final category, Business Assistance, refers to those programs that would provide assistance to businesses prepared to make a commitment to Mound. Financial help would be provided through guaranteed and direct loans to business ventures. Facility improvements would provide for the modifications necessary to make the Mound site a functional place for business.

Budget tables for each program break down costs into the following categories.

1. Personnel Resources (including personnel and fringe benefits).
2. Contractual (including contractual or support services/consultants).
3. Purchases and other direct charges (including travel, equipment and supplies).
4. Construction.
5. Other (miscellaneous charges).

In the following budgets, personnel resources and purchases and other direct charges are assumed to increase at 4 percent per year.

3.01 Mound Redevelopment Programs

These programs focus on stakeholder involvement in the redevelopment and reuse of the Mound site as well as defining a means for integrating Mound's infrastructure into the community.

IMPLEMENTATION FRAMEWORK

Mound Redevelopment Programs

Mound Reuse Committee
Infrastructure Integration

Business Development Programs

Community Improvement Corporation
User Center and Transition Work
Business Incubator
Marketing
Technology Transition

Business Assistance Programs

Financial Assistance
Facility and Site Improvements

III

3.011 Mound Reuse Committee

(A) Description

The Mound Reuse Committee (MRC) will provide recommendations and advice concerning policy issues to the Mound Community Improvement Corporation, the City of Miamisburg and other governmental entities related to Mound transition activities. The Committee's major focus will be on efforts to reuse, redevelop and commercialize the facility's buildings, equipment and property while protecting the natural environment and maximizing the human, technological and research opportunities that exist at Mound. The MRC is intended to ensure meaningful, timely and effective involvement of key stakeholders in decisions regarding the future of the Mound.

The MRC is modeled after the guidelines presented in DOE's "interim guidance" on stakeholder involvement. A complete list of individuals and organizations represented on the MRC is included as Appendix D—Mound Reuse Committee Membership.

(B) Work Program

1. Provide staff support to MRC including: preparing agendas, minutes, and reports; providing recommendations concerning issues; conveying MRC policies to the Mound Community Improvement Corporation, the Miamisburg City Council, and other governmental entities as appropriate.

2. Acquire outside technical support and advice when necessary in the areas of land use, the environment, and facility reuse.

(C) Costs

Category	1995	1996	1997
Personnel Resources	$40,230	$41,839	$43,513
Contractual	40,000	40,000	40,000
Purchases and Other Direct Charges	15,297	15,909	16,545
TOTAL	$95,527	$97,748	$102,058

3.012 Infrastructure Integration

(A) Description

The Mound complex has been operated virtually as a self-sufficient community providing its own water, sewer, fire and police/security services. Further, the complex has been operating heating, cooling and on-site utilities in a centralized manner. Given commercialization and the elimination of the need to maintain total control over the site, it is no longer necessary for the DOE to be the sole provider of these services. Economies of scale, specialization of service and changes of service levels to conventional business standards are but a few of the means by which these types of overhead costs could be reduced for businesses and the DOE itself.

One utility that has already received attention in this area is sewer and water. As a provider of these services, the community has begun a study to view the potential benefit of transferring the Mound's sewer and water systems to an alternative service provider. This study will consider the functional and financial ramifications associated with such a change and how a transition of these services might be achieved. The City of Miamisburg has matched a $21,000 grant from Montgomery County to undertake this study. Other studies evaluating infrastructure condition and cost of integration are necessary.

(B) Work Program

1. Conduct studies of integrating operation and maintenance of Mound facilities into alternate provider systems in the following areas:
   - Water
   - Sewer
   - Roadways
   - Fire protection
   - Police protection
   - Heating and cooling
   - Electric
2. Review plans to determine feasibility and most cost-effective alternatives and identify available resources for implementation.
3. Negotiate agreements with potential service providers and DOE.
4. Implement the most cost-effective viable approach.

(C) Costs

Note: Actual improvements are funded under Section 3.032, Facility and Site Improvements.

Category	1995	1996	1997
Personnel Resources	$24,300	$25,272	$26,283
Contractual	150,000	0	0
Purchases and Other Direct Charges	9,240	9,610	9,994
TOTAL	$183,540	$34,882	$36,277

3.02 Business Development Programs

Several new business development programs are proposed to strengthen marketing capabilities and foster new businesses at Mound. These are discussed below.

3.021 Community Improvement Corporation

(A) Description

Under Ohio law, a city may create a community improvement corporation to act in economic development-related matters. This organization, the Mound Community Improvement Corporation (MCIC), will serve as the administrative agency for economic development activities in the Mound transition. The Miamisburg City Council has adopted legislation formally creating the MCIC. The articles of incorporation state:

> The sole purpose for which the Corporation is formed is to advance, encourage and promote the industrial, economic, commercial and civic development of that area of the City of Miamisburg, Ohio, known as the Mound Facility.

By creating the MCIC, the City puts itself at arm's length from Mound's economic development funds and business liability. Also, the organization has greater flexibility to assume financial risk and maintain confidentiality when necessary.

The MCIC will work cooperatively with DOE as necessary when a business elects to locate at Mound. It will also be the point of contact to the business customer, thereby eliminating exposure to internal Mound processes.

(B) Work Program

1. Administer the programs proposed in this document.
2. Coordinate transition activities related to site and business development, including logistical issues such as space and equipment allocation, parking, utilities, and maintenance.
3. Provide a technical interface to the business community.
4. Conduct lease negotiations with potential tenants of Mound facilities.
5. Conduct business plan reviews for compatibility with Mound transition objectives and long-term organization and financial stability.
6. Oversee federal and state grant application and submission process for compliance with appropriate regulations and program objectives.
7. Submit periodic progress and completion reports.
8. Prepare and present annual reports to City Council, Mound Reuse Committee, and DOE as needed.
9. Evaluate and revise the Mound Economic Development Plan as necessary in conjunction with the Mound Reuse Committee and the City of Miamisburg.

(C) Costs

Note: For 1995, Purchases and Other Direct Charges includes initial office equipment.

Category	1995	1996	1997
Personnel Resources	$108,405	$112,741	$117,251
Contractual	60,000	60,000	60,000
Purchases and Other Direct Charges	81,220	42,869	44,584
Other: Special Printing	25,000	25,000	25,000
TOTAL	$274,625	$240,610	$246,835

3.022 User Center and Transition Work

(A) Description

The User Center and Transition Work programs have been proposed to provide new work for Mound employees as a temporary replacement for the diminishing defense workload. These programs are a "bridge" to long-term business commitments and a means of maintaining the optimum window of opportunity related to the human assets at Mound. At the same time, the programs permits the use of Mound resources and capabilities while efforts to attract businesses continue.

Both programs would be guided by teams of three people including a representative from DOE, from the City and a program or unit manager from EG&G. The teams would be responsible for the success of the program and approval of all projects.

The User Center would allow Mound capabilities to be "test driven" by potential host businesses. Under specific circumstances, Mound employee-based enterprises would also be permitted to pursue business opportunities utilizing Mound facilities. Additionally, this program would allow Mound workers to perform work for transition-based efforts and private industry in order to develop a business portfolio.

Transition Work has been designed to permit two activities to occur. First, the program would allow Mound technology units to offer their products and services on the open market in a limited fashion. It would permit a customer to place an order for a product that is unique to Mound's capabilities or for which the customer has insufficient production capacity. By introducing new work to the site, the program would offset a portion of the defense production work lost to other DOE sites.

The program will make available Mound resources to the transition effort. Currently, the Mound contractor has not been funded to perform work to assist attempts to transition Mound. This program would provide the contractor with an account to charge for services provided to transition initiatives. Specific service requests would have to be made by the Community Improvement Corporation for these services. Charges would be based upon DOE requirements.

(B) Work Program

User Facility Program:

1. Allow potential customers to test Mound capabilities on a short-term basis or request technical assistance on a process or product.
2. Market the short-term use of Mound technologies.
3. Through the site contractor, invoice customer for services provided or facilities used.

Transition Work:

1. Tap Mound technologies to perform commercial work.
2. Procure services from the site contractor to promote economic development.
3. Develop a portfolio of business within Mound technologies.
4. Evaluate the market niche which Mound technologies should pursue based upon demand.

(C) Costs

Category	1995	1996	1997
Personnel Resources	$27,540	$28,642	$29,787
Contractual: Site Contractor Administration	77,000	77,000	77,000
Purchases and Other Direct Charges	10,470	10,889	11,324
TOTAL	$115,010	$116,531	$118,111

3.023 Business Incubator

(A) Description

The Mound business incubator will nurture and otherwise assist new small businesses during critical start-up periods. It will provide low-cost facilities, shared office and communications equipment, pooled administrative/clerical services and technical advice. Ultimately, these businesses will be encouraged to be independent entities operating at the Mound. Although Mound employees will be given the first opportunity to use the incubator, outside businesses will also be invited to use the program as capacity permits.

The preliminary steps in developing the incubator were taken by surveying Mound employees who participated in the business development classes and others who have expressed interest in starting a business at Mound. Respondents have identified the desired support and technical services, facilities and equipment for the program.

As currently planned, the organizational structure of the incubator would begin with the MCIC in an oversight role, with an on-site manager and administrative assistant who would perform secretarial and organizational duties. The short-term objective is to satisfy the demand created by the employee business opportunities of the Mound. In the long term, the incubator is expected to operate in concert with an incubator in downtown Dayton, Ohio, offering users a full scope of services. The City will seek support from the State of Ohio to satisfy any longer-term incubator interests that exist in the Dayton area. The market for this long term need is currently being studied by the University of Dayton.

One element of the business incubator is the business development program which is a continuation of an effort to provide education and technical assistance in support of employee-based businesses, both from Mound and from the Miami Valley Region. To date, some 15-20 new Mound employee-based business have been spawned by this process.

The COS Building on the Mound campus has been identified as an ideal site for the incubator. A four-floor building readily adaptable to private business, it contains office and laboratory facilities which will require alterations.

(B) Work Program

1. Identify employee-based new businesses and develop an incubator program to support new business needs.

2. Develop the organization framework to support the incubator.

3. Identify, design and implement a facility plan to accommodate the needs of employee-based new business.

4. Conduct a market study to determine whether any long term demand exists in the area for a technical incubator.

5. Develop policy and operation guidelines for the incubator.

6. Provide technical and administrative support for new businesses.

7. Establish relationships with local business and economic development resources to support and nurture new business expansion in the community.

(C) Costs

Note: Incubator costs are reduced over three years to eliminate DOE program support.

Category	1995	1996	1997
Personnel Resources	$63,145	$169,671	$169,671
Purchases and Other Direct Charges	59,649	62,035	64,516
Other: Incubator Support Charges	288,000	192,000	96,000
TOTAL	$504,519	$417,180	$330,187

3.024 Marketing

(A) Description

The Marketing program will identify markets which present the greatest commercial potential for business units at Mound. The program will also create an awareness of the facility's capabilities among the business community to generate new business and attract "host businesses" to the site.

The MCIC will serve as the conduit to market the opportunities that Mound offers. The marketing of Mound has become a task requiring initiatives in two distinct areas. First, there is the marketing of Mound capabilities to obtain new "host businesses." This effort will be approached in a variety of ways, including: direct marketing, mailings, advertising and public relations. The second marketing initiative would involve the selling of Mound capabilities to perform certain kinds of services and produce products. This aspect of the effort would involve the use of Transition Work, User Facility or the Technology Transition programs as appropriate. The establishment of a portfolio of business/work is an essential element in attracting host businesses to Mound. These efforts will portray the strengths of Mound and its image as a high technology campus. The Mound Advanced Technology Center is the future of this site.

(B) Work Program

Host Marketing:

1. Attract to the site new businesses which will invest in, become a part of, and support the Mound Advanced Technology Center.

2. Develop comprehensive marketing plan which identifies existing and potential businesses that could utilize the Mound capabilities as a part of their corporate structure.

3. Develop marketing materials, including a technological capabilities and facilities brochure, an incentives and program package, and a response package for direct mailing and distribution (e.g., sales calls, trade shows, etc.)

4. Conduct public relations efforts, including the placement of technical articles in trade publications and popular articles concerning the transition effort in local and national media.

Business/Sales Marketing:

1. Develop a portfolio of business clients for whom Mound can perform work.

2. Conduct direct marketing efforts to attract host businesses.

3. Administer contractual arrangements with specialty firms (e.g., manufacturer's representatives), when appropriate to specific efforts.

(C) Costs

Category			
Personnel Resources	**$71,415**	**$74,272**	**$77,242**
Contractual	**200,000**	**200,000**	**200,000**
Purchases and Other Direct Charges	**27,155**	**28,241**	**29,371**
Other: Special Printing	**20,000**	**20,000**	**20,000**
TOTAL	**$318,570**	**$322,513**	**$326,613**

3.025 Technology Transition

(A) Description

Technology Transition is intended to maintain the mix of technology specialists ("technologists") whose skills and knowledge about Mound are critical to attracting and establishing new businesses. This program is the result of the immediate reduction in Mound workforce and the end of defense production at the site. Under current plans, EG&G Mound must reduce overall employment by a cost equivalent of approximately 350 positions by September 30, 1994, and an additional 150 positions by September 30, 1995.12 Additional reductions may occur beyond that date.

An essential element to the successful commercialization effort of Mound are the technologies that provide the greatest opportunity to commercial markets. Each of these technologies contain certain unique capabilities which must be preserved in order to market their value. The positions that make up these unique capabilities are considered technology "gatekeepers." This means they possess an unparalleled understanding of Mound technologies, their applications, equipment and facilities. This knowledge is critical to potential new businesses considering Mound.

As defense production activity winds down, these technologists and the equipment they use will be forced to leave Mound, creating a "technology capability drain." The loss of this expertise is a serious detriment to economic development activities at the site as the "Approach to Transitioning Mound" has been to focus on the technological capabilities the site possess.

DOE funds are requested to support these capabilities, as well as for maintenance of associated equipment. Under this proposal, the technology would be preserved at the Mound for a given period of time. The program size would be reduced over time as technologies are absorbed by new commercial enterprises.

The technology resources maintained under this program would assist the transition effort by:

- Sustaining critical capabilities for a short period of time.
- Providing technical assistance to the marketing of Mound technologies.
- Assisting proposers in realizing the full potential of Mound capabilities.
- Submitting proposals for various types of work.
- Assisting in market development.

An increasing portion of the cost to maintain these technologists will be provided by the commercial work that is attracted to Mound. This "book of business" will, in turn, make various segments of Mound more attractive to potential new businesses who are considering becoming a "host business". This Program would be so designed to require these business units to perform by acquiring market share over a given period of time. If these efforts do not meet anticipated results, the unit would be dissolved. It is anticipated that a new organization to oversee these technologies would be contracted to perform the management function needed for the success of the program.

(B) Work Program

1. Develop a system for tracking resources ("gatekeeper" personnel) in support of maintaining those technologies having the greatest potential for commercialization to ensure that those personnel are available for support to the transition effort.
2. Provide technical marketing support for Mound technologies that will include assistance, as well as a technical interface with potential new business customers.
3. Assist in reviewing the technical merit of proposals and business plans as required.
4. Integrate technical resources, technical marketing and proposed business plans to maximize commercialization opportunities at Mound.
5. Perform work brought to the Mound site as a result of marketing efforts.
6. Develop customer base, leading to establishment of commercial business.

(C) Costs

Note: The category of Other: Capability Maintenance contains equipment, personnel and facility costs for continuation of the technological capability. Contractual charges constitute a fee for management oversight of the Technology Transition effort.

Appendix E -Technology Transition Budget provides additional detail concerning capability maintenance costs.

Category	1995	1996	1997
Personnel Resources	$27,540	$28,641	$29,787
Contractual	365,000	273,000	137,000
Purchases and Other Direct Charges	10,472	10,890	11,326
Other: Capability Maintenance	3,948,080	2,551,067	1,275,534
Total	$4,351,092	$2,863,598	$1,453,647

3.03 Business Assistance Programs

The following business assistance programs are proposed to fund business start-ups and improve facilities.

3.031 Financial Assistance

(A) Description

The proposed financial programs will expand the pool of funds available for business development at the Mound by leveraging private funding with loan guarantees and increase the capital available for new businesses through a direct loan program.

Two loan programs to assist businesses at the Mound have been proposed: the Loan Guarantee Program and the Direct Loan Program. In both cases, guidelines have been developed in concert with the Minority Finance Council, a consortium of eight local lending institutions, the Minority and Women's Business Development Center and County Corp Development (CCD), a local not for profit financing organization which administers Small Business Administration programs.

As currently contemplated, both programs would be promoted and administered by the MCIC and operated by CCD because it already has in place the expertise and structures to carry out these functions.

1 Loan Guarantee Program. The Loan Guarantee Program will be operated by CCD using procedures already in place for similar programs, such as Small Business Administration and Community Development Block Grant. CCD will handle all applications, reviews and negotiations with lending institutions and applicant's with the approval of the MCIC. The program will target an 80 percent guarantee level. Loan packages will pass through the CCD Board of Trustees and on to the Mound Community Improvement Corporation in the form of a recommendation.

CCD currently packages similar loan guarantees for the Small Business Administration's 7a guarantee program and when appropriate, will access these funds to maximize MCIC resources.

2 Direct Loan Program. Through this program, funds will become available for direct infusion of capital to bring a new technology to market or to bring a new company to existence. CCD will try to interest a private lender in the projects as a means of leveraging the funds available. The program will target a minimum investment of $25,000 and the maximum $200,000.

This program will be administered by CCD with approval procedures similar to those for the Loan Guarantee Program.

(B) Work Program

Loan Guarantee and Direct Loan Programs

1. Accept, review and perform due diligence on loan applications to assess risk associated with loan requests.
2. Provide recommendations on and structure of loan packages, given local programs as well as other public and private resources.
3. Complete loan closings, including completion of all necessary documentation required by private lenders to protect MCIC interests.
4. Provide oversight and monitoring of active loans.
5. Complete required reports to public and private agencies, as necessary.
6. Provide financial leveraging and assistance to businesses in order to establish and maximize viable opportunities to commercialize Mound.

(C) Costs

Category	1995	1996	1997
Personnel Resources	$28,485	$29,624	$30,809
Contractual	20,000	20,000	20,000
Purchases and Other Direct Charges	10,831	11,264	11,715
Other: Business Loans	2,000,000	2,000,000	2,000,000
TOTAL	$2,059,316	$2,060,888	$2,062,524

(D) Three Year Financial Plan for Recouping Loans

The following table shows an initial plan for the use of monies for direct loans and loan guarantees. In preparing the plan, the following assumptions were used:

1. The interest rate will be 5 percent.
2. The $2.0 million will be committed annually and will be split equally between direct loans and loan guarantees.
3. Average direct loan or loan guarantee will be $100,000.
4. Typical payback period will be 5 years.
5. The default rate will be five percent, starting in the second year. This will reduce the cumulative interest recouped.

Mound Financing Projections

Type of Financing	1995	1996	1997
Loans (10/yr.)	$1,000,000	$1,000,000	$1,000,000
Loan Guarantees (10/yr.)	1,000,000	1,000,000	1,000,000
Total	2,000,000	2,000,000	2,000,000
Beginning Balance	0	86,000	300,000
Interest	18,000	18,000	18,000
Cumulative Interest	0	33,000	57,000
Principal Repayment	68,000	163,000	263,000
Ending Balance	$86,000	$300,000	$638,000

3.032 Facility and Site Improvements

(A) Description

Mound buildings range in age from 10 to 40 years, and a variety of problems exist, including outdated air handling units and electrical systems. Many buildings do not comply with the Americans with Disabilities Act requirements and need modifications. Some of the facilities will need further repairs as identified in building surveys performed for the Mound Community Improvement Corporation.

This program will provide resources to bring Mound buildings slated for economic development purposes up to current code, commercial standards, and fund improvements required by new tenants. Appendix F—Facility & Site Improvement Budget summarizes the needed improvements to the Mound buildings for corrective actions and improvements that tenants may require.

As the Mound Community Improvement Corporation acquires office, lab and industrial space during the coming years, funding will be needed to upgrade facilities to cover regulatory code deficiencies, building maintenance, mechanical systems, site improvements, and improvements necessary to complete lease agreements with Mound tenants.

(B) Work Program

1. Continue to identify and evaluate facilities for structural, environmental and code deficiencies.
2. Identify and negotiate with potential tenants alterations required for occupancy.
3. Prepare engineering and architectural specifications for building improvements and alterations.
4. Bid, award and oversee proposed improvements and alterations.
5. Implement site infrastructure improvements resulting from Infrastructure Integration Program (see Section 3.012), as necessary.

(C) Costs

Note: Contractual costs are assumed to be 7 percent for architectural and engineering services. Construction of infrastructure improvements are estimates which will be refined upon further study and negotiation.

Category	1995	1996	1997
Personnel Resources	$21,465	$22,324	$23,217
Contractual	305,995	105,775	105,775
Purchases and Other Direct Charges	8,162	8,488	8,828
Construction: Infrastructure Improvements	0	0	2,000,000

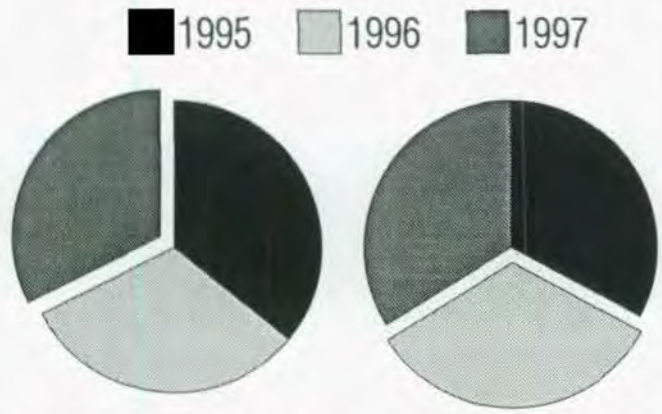
Leasehold Improvement s	**2,355,600**	**601,400**	**601,400**
Construction: Capital Facility Improvements	**2,015,752**	**909,678**	**909,678**
TOTAL	**$4,706,974**	**$1,647,665**	**$3,648,898**

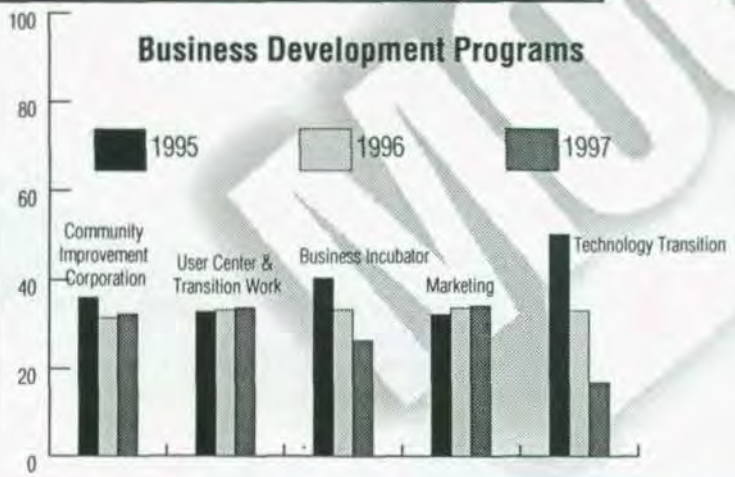
3.04 Scheduling of Implementation Framework by Program Year, 1995-97

Implementation Framework for Mound Economic Development Plan

Activity	1995	1996	1997	Total
Mound Redevelopment Programs				
Mound Reuse Committee	*95,527	97,748	100,058	293,333
Infrastructure Integration	183,540	34,882	36,277	254,699
Business Development Programs				
Community Improvement Corporation	*274,625	240,610	246,835	762,070
User Center & Transition Work	115,010	116,531	118,111	*349,652
Business Incubator	504,519	417,180	330,187	1,251,886
Marketing	318,570	322,513	326,613	967,696
Technology Transition	4,351,092	2,863,598	1,453,647	8,668,339
Business Assistance Programs				
Financial Assistance	*2,059,316	2,060,888	2,062,524	6,182,728
Facility Improvements	*4,706,974	1,647,665	3,648,898	10,003,537
TOTAL	**12,609,173**	**7,801,615**	**8,323,150**	**28,733,938**

* The Department of Energy Economic Development grant has provided partial funding of this program.





3.05 Leveraging of Other Resources

In addition to Federal resources (see endnote),13 the Economic Development Plan anticipates tapping state and local resources, beyond those already acquired (see Appendix G summary of Grants received for Mound Transition) as they become available. These include the National Center for Industrial Competitiveness (NCIC), the State of Ohio's Defense Conversion Fund, the Montgomery County ED/GE program, the Community Development Block Grant program, and local efforts. These are described below:

1 NCIC.

The Dayton Area Chamber of Commerce initiated the NCIC in 1992 to provide the Dayton region with a national resource center and new economic funds to promote job growth through advanced technology and defense conversion. Through state and federal advocacy efforts, the Chamber was able to gain a commitment from the State of Ohio and Federal government to provide $20 million to finance the start of this initiative over the next two years. This will be accomplished through a matching cooperative agreement between the Ohio Department of Development and Wright Patterson Air Force Base with NCIC.

The NCIC business plan, completed in April 1994, calls for NCIC to serve as a funding source, information clearinghouse and technical assistance hub for business and industry in the region to foster the creation of new jobs. NCIC has been set up to help finance industrial expansions and start ups with a focus on dual use technology. It will also provide incentives and build tools to integrate and expand existing technology, business development, training and public financial service providers into a common industrial outreach and delivery network.

Both WPAFB and the State of Ohio have reviewed the NCIC business plan. Cooperative agreements have been finalized by both entities and are awaiting signatures. The U.S. Congress has appropriated $7 million through the Wright Laboratory in FY 1994, which runs through September 30, 1994. An additional $3 million is included in the FY 95 defense budget proposal current before Congress. The State of Ohio has authorized matching funding through the ODOD under a new defense conversion account in FY 1995 which runs through June 30, 1995. Under this account, $5 million have been earmarked for NCIC and the Dayton area along with a $2 million loan guarantee for NCIC industrial projects. The balance of the State's $10 million commitment will be included in the next budget proposal.

NCIC, which has been incorporated as a 501(C)6 not-for-profit corporation, opened an office in July. Its first year's work plan includes hiring a commercial contractor to support its operations, initiating a contract for information management/electronic commerce and conduct a requirement for proposals to fund technology start-ups, business modernization initiatives and defense conversion projects in the region.

2 Ohio Defense Conversion Fund

The Ohio Defense Conversion Fund is administered by the Ohio Department of Development. Apart from the NCIC, this fund supports a variety of possible activities including studies and plans, technical and financial assistance to defense-oriented companies, technology transfer from the defense sector, financial, education, and technical assistance to communities impacted by the closure or cutback of military base activities, employment matching services and training programs for displaced defense workers, and assistance for communities wishing to bid for federal programs aid. Funding levels depend on appropriations by the Ohio General Assembly.

3 Montgomery County ED/GE Program.

Montgomery County administers a competitive grant program called ED/GE (Economic Development/General Equity). Under this program, Montgomery County has committed $50 million of county sales tax revenues over a ten-year period for economic development. Through a competitive process each year, $5 million is distributed based on criteria for local governments' projects that have potential for job creation.

4 Federal Community Development Block Grant (CDBG) program

Montgomery County administers the urban county CDBG program for which Miamisburg is eligible. The focus of the program is on projects that affect low and moderate income persons and families. However, local governments, like the City of Miamisburg, may apply for economic development funds as long as a low and moderate income benefit can be demonstrated.

5 Local Organizational Resource Leverage

The effects of the potential closing of the Mound Plant are far reaching. The loss or reduction in the levels of activity at the Mound Laboratory will have a devastating effect on the economies of the City of Miamisburg and surrounding communities, Montgomery County and surrounding counties and the State of Ohio. As such, the City of Miamisburg and the Mound Transition Office have received a tremendous amount of support from various persons, communities, and agencies. Although the transition effort did not receive funds directly from these sources, it did receive a "contribution" of time and services.

This contribution of time and services has been critical to the achievements to date; hence, this assistance constitutes an "in-kind" leverage of local resources. The persons, agencies, and organizations include the Montgomery County Treasurer's Office, the Dayton Area Chamber of Commerce, County Corp. (SBA lender), the State of Ohio Incubator Program, the Ohio Department of Development, the Ohio Bureau of Employment Services, the Job Training Partnership Act of Ohio, Minority & Women's Business Development Center, Minority Finance Council, as well as, various local lending institutions, business persons, and residents. Additionally, the City provides the "organizational infrastructure" for the various groups, including access to meeting space, a financial services, legal services, etc.

3.06 Impact of Implementation on Employment

The objective of the Economic Development Plan is to restore the economic health of the local community and utilize the assets the nation has invested in these many years. The plan uses technology to bring commercial enterprises into the community and expand business opportunities to achieve the goals and objectives described earlier. The following table shows the likely impact of the successful implementation of that strategy upon Mound technologies, and other known commercial developments. The table was developed utilizing: peak employment at Mound in each of the technological areas; current (September 1994) employment; and a discount employment percentage. The discount was based upon the University of Dayton assessment of the commercial potential of the technology (ie., Group One, Two, and Three). Based on this analysis, the potential jobs that could be retained or created which are technology specific total 656.

Potential Employment by Technology Grouping

Technology	Peak Employment	Current Employment	Discount %	Potential Employment
Group One				
Ceramics	45	12	0	45
Flexible Circuits	20	7	0	20
Machine Shop	132	50	0	132
Testing and Materials Analysis	61	29	0	61
Group Two				
Adhesives	3	1	25	2
Cleaning and Contamination Control	4	1	25	3
Encapsulation/ Foams	7	3	25	5
Isotope Separation	35	12	25	26
Laser Detonators	18	7	25	14
Tritium Processing	130	60	25	98
Welding and Joining	16	7	25	12
Group Three				
Film Deposition, Surface Finishing, Plating	12	7	50	6
Lasers	13	7	50	7
Metal Hydrides	35	20	50	18
Plastics	12	2	50	6
Thermites	7	3	50	4
Other				
Environmental Services	80	53	50	40
Energetic Materials/ Component Manufacturing	250	40	50	125
Incubator Businesses (as a group)	0	0	0	32
TOTAL				**656**

Employment will also be generated as a result of technologies and capabilities which were not identified in the University of Dayton Study. This fact has already manifested itself as a result of the business development process. Additional employment will also be generated as a result of amenities which the facility itself offers. These employment figures are a result of a "Real Estate Approach" to economic development at Mound. It is anticipated that an additional 439 jobs will be created as a result of efforts in these areas. In total it is anticipated that 1095 new jobs will be created or retained at Mound. See Appendix H—Projected Job Opportunities in Vacated Mound Space.

3.07 Conclusion

This plan has presented a detailed implementation program in the areas of redevelopment, business development and direct business assistance. If the plan's implementation program is approved and funded at the level contemplated, the commercialization effort could be self-sustaining within a period as short as 3 years. It is currently anticipated that no additional DOE funds would be necessary beyond those defined in this plan.

The likelihood for success of these efforts may be gauged by current interest in Mound physical and human assets as shown in the following table. It summarizes pending proposals as of September 1994. These proposals will generate from 78 to 243 jobs initially and utilize approximately 130,000 - 182,000 square feet in various Mound buildings. Several businesses—MCK Analytical, Mound Manufacturing Center, Star City Ordnance, and the Mound Business Development Center—will have direct participation by Mound employees. These businesses will also generate hundreds of thousands of dollars in investment. These interests have reinforced the community's belief in the success of its vision for Mound and the need for timely support from DOE to successfully fulfill the plan.

III

PENDING MOUND ECONOMIC DEVELOPMENT OPPORTUNITIES

Company	Anticipate d Jobs	Building	Area (S.F.)	USEPA Approval	Status
Sigma Tech	4 - 80	29	6,000	Complete	October: Lease execution, financing approved
*MCK Analytical Inc.	20 - 40	E	22,000 4,400	Pending	October:Lease Execution Financing Tentative approval
National Technical Systems Inc.	4 -10	87 3 63W 90	38,000 6,000 3,000 600	Pending	Business Proposal being reviewed
T.I.M.E.	17 - 35	COS	22,200 August, 1994	Submitted	Incorporation & Business Plan Complete
*Mound Business Development Center	18 - 28	COS	24,000	Submitted August, 1994	Plans being reviewed.DOE support being sought
*Star City Ordnance	5 - 20	27 3 42 49 DS	4,400 6,000 1,350 14,300 2,960	Submitted August, 1994	Lease proposal being reviewed.
*Mound Manufacturing Center Inc.	10 - 30	105(PM)	27,000	Complete	October: Lease execution, Financing Approved
Total	78 - 243		182,000		

ENDNOTES:

1. H.F Anderson, D.A. Galvin, and W.D. Pardieck, Mound Plant Site Specific Transition Plan, Draft MLM-3800 (Dayton: EG&G Mound Applied Technologies, June 15, 1994), Appendix J, Mound Plant Work Force Restructuring Plan,p.J-8.
2. R. Stock, Socio-Economic Impact of the Defense Program Phaseouts at the mound (Dayton: University of Dayton Center for Business and Economic Research, November 30, 1993),p.i.
3. Id.
4. J.P. Martino, J.E Weiler et al., Commercialization Study of the Mound Facility Phase I (Dayton: University of Dayton Research Institute and Center for Business and Economic Research, February 24,1994).
5. Id.,p.12
6. Id., pp. 14, 16 and 18
7. Id., p.13.
8. Martino et al., op cit., p. 10.
9. R.G. Wilson, "Competitive Business Strategies," in Handbook of Business Strategy, W.G. Guth,ed. (Boston: Warren, Gorham & Lamont,1985), p. 8-5.
10. W.F. Glueck, Business Policy and Strategic Management, 3d ed. (New York: McGraw Hill, 1980), Ch. 5.
11. Id.
12. Id.
13. Federal resources for communities that are Department of Energy sites are described in the DOE publication, Economic Development Funding, Assistance, and Points of Contact: FY 1994 Handbook (Washington: DOE Office of Facility Transition and Management,1994). This publication summarizes DOE, Department of Labor, and Department of Labor, and Department of Commerce Assistance program.

MOUND

APPENDICES

APPENDIX A

TRANSITION EFFORTS 1993-1994

Mound transition — the first year

Just fourteen months ago, the Mound stood as a facility that might have outlived its usefulness in the new world order. Today, it represents an asset that is ripe for business development. The vision of creating a high technology campus from a nuclear weapons production facility is taking form.

But the challenges of defense conversion have never been faced before: there are no formulas for how the process should proceed or its duration. The first year has brought many surprises, dilemmas, opportunities and accomplishments. The successes have been significant: legislative battles have been fought and won; budgets have been reinstated; a major Department of Energy operations office with a projected 250 employees has been opened; economic development mechanisms are in place; employees have been trained and are submitting their own business plans; disagreements over equipment have been resolved; the interest of the business community has been aroused; and business prospects are active.

Much of the first year's effort has been directed toward laying the foundations that allow economic development to occur. Evaluating capabilities, assessing facilities, developing procedures, creating marketing plans, evaluating business proposals, negotiating lease agreement terms, and establishing financing programs all are part of that foundation. These activities give business development the base upon which to build.

As a practical matter, bringing new businesses to Mound has been difficult because of the strict security that has been required by continued defense production at the facility. Once this production ends in October of this year, security will be eased and private concerns will have the flexibility to operate in conventional ways.

Active business interest is sending the message that conversion of the facility into a high tech campus is a realistic goal. Currently, 6 strong business proposals — two from Mound employees and four from outside concerns — are in process. They represent the creation of some 97-107 jobs at the facility in 1995 and the use of 160,200 square feet of Mound's 1.4 million square feet of floor space. (Please see the tables attached to this document.)

Current active business proposals include:

- Star City Ordnance, a subsidiary of EG&G, has proposed an ordnance production facility which will employ 5 or more people and occupy 38,440 square feet.
- A group of employees incorporated as Mound Manufacturing Center, Inc. has proposed to take over the machine shop, Building 105. The company projects some 30 jobs and the use of 27,000 square feet.
- An employee-based firm, MCK Analytical, Inc., is proposing to privatize the environmental services provided to Mound. The company estimates it will employ 40 workers and occupy 22,200 square feet.
- A national testing firm proposes to operate all the destructive and non-destructive testing services provided at Mound with up to 10 employees and 53,600 square feet of floor space.
- T.I.M.E., a newly incorporated, not-for-profit organization, designed to assist U.S. circuit board manufacturers is proposed to be located at Mound. The facility will employ 17 people and occupy 13,000 square feet.

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- Sigma Tech, an electromagnetic shielding company, proposes to employ 4 people and use Building 29 with 6,000 square feet.

- In addition, 9 new business prospects with a total of some 18-28 employees, are interested in renting up to 13,700 square feet of space with the Mound business incubator, where office and laboratory facilities, shared administrative services and assistance with legal, financial and business development matters are provided during the critical start-up phase.

A chronology of significant events during the first year of the Mound transition includes:

- In November 1993, the Department of Energy announced the creation of an Ohio Operations Office at Mound. This site was chosen from among numerous potential options. Phil Hamric, former manager of DOE's Fernald Environmental Management Project, was named manager in June 1994, and the office will be fully operational in October 1994. The Ohio Field Office will be responsible for Fernald, Mound and the West Valley Demonstration Project near Buffalo, New York. Hamric has said his main areas of focus will be economic development and environmental clean-up.

  In addition to the economic development impact of the agency's 225-250 employees (125 of these employees will be located at Mound) and $10 million annual budget, optimism stems from the fact that local reporting to DOE headquarters will be direct rather than through the Operations Office in Albuquerque, New Mexico. DOE decision makers will be in a position to become familiar with site-specific problems. They will be able to respond quickly — and with authority — to local needs.

- Also in November, Congress passed the Hall amendment — legislation allowing DOE to lease Mound land and buildings to a local government agency for 10 years at less than market value, with the option to renew. The bill also allows DOE to transfer Mound personal property it no longer needs at less than fair market value.

- At a January 31, 1994, news conference, two key announcements were made:
  The first private business, Sigma Tech, had committed to locating at Mound.
  Also at the news conference, DOE officials committed a $4 million economic development grant for the City's creation of a Community Improvement Corporation, establishment of a capital improvement program for leasehold improvements to Mound facilities and the creation of two financing programs.

- In February 1994, a Business Development Planning Program presented by the Small Business Development Center was begun for Mound employees. This series of programs was designed to assist Mound employees with their business ideas and guide them in how to prepare business and marketing plans. The first two information sessions were attended by 150 people. Of those, 66 participated in the first phase of the BO$$ Program, a 12-hour course that addressed such topics as market research, risk assessment and trend analysis. Another 30 employees attended the 11-week business plan writing course at Sinclair Community College. As a result, a number of business proposals by Mound employees are in various stages of readiness.

- In May, DOE and the City extended the offer to lease Building 105, Mound's machine shop, to a group of employees who have incorporated as Mound Manufacturing Center, Inc. Several "suitors" had expressed interest in the building and were asked to explain their interest via a

proposal or business plan. The employee group was selected based on this process.

- Also in May, the Miamisburg City Council passed legislation creating the Mound Community Improvement Corporation (MCIC) as the administrative agency for Mound economic development. By creating the non-profit corporation, the City puts itself at arm's length from Mound economic development funding, liability and business. MCIC's board includes professionals experienced in business, finance and engineering or technology. All trustee positions are non-paid and have been filled.

- The City created the Mound Reuse Committee, an advisory committee providing policy guidance and stakeholder input to the Office of Mound Transition. This organization has approved the Mound Economic Development Plan.

- The President's fiscal 1995 DOE budget proposal which was submitted to Congress in April threatened to hasten layoffs of key employees and placed in question the safe deactivation of the facility. City and State officials, along with Ohio's Congressional delegation, made extraordinary efforts to have the budget reinstated. On June 8, 1994, DOE submitted to Congress a budget amendment increasing the funding from the originally proposed $83.8 million to $137.9 million.

- In July 1994, the City and DOE's Operations Office in Albuquerque established an equipment disposition procedure in response to the concern that pieces of equipment critical to economic development at Mound would be declared excess and sent to other DOE receiver sites and design labs. The procedure resolves the final disposition of the equipment.

- The City's intervention stopped the removal process before key equipment could be removed and until procedures were developed. From a capital equipment list of 495 pieces, about one-half will be retained at Mound. From a production, tooling, fixtures and gages list, 100 key pieces will be retained for business ventures at Mound.

- In July, Building 29 was released by the U.S.E.P.A, the agency charged by law with assuring the environmental safety of Mound buildings to be used by business tenants. The building contained asbestos which had to be removed. It was the first building in the country to be released under the Hall amendment. Building 105, the machine shop, was released this week and fourteen additional buildings are undergoing evaluation.

- The Mound business incubator is now being planned as a means of helping new small businesses. At the same time, the City of Miamisburg and the Downtown Dayton Partnership together have asked the University of Dayton's Center for Business and Economic Research to determine if there will be sufficient long-term demand to justify a regional business incubator after the initial needs created by the decommissioning of Mound have been filled. The development of the Mound incubator, however, does not depend on the long-term regional concept.

- The Mound Community Improvement Corporation in August entered into an agreement with COUNTY CORP, Montgomery County's development arm, to administer financial programs for businesses locating at the Mound. One program lends money from a pool; the other guarantees loans made by financial institutions. Two million dollars have been set aside by the City for these programs.

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- In September 1994, the Mound Community Improvement Corporation and the Department of Energy came to terms on a standard lease agreement and overhead rates for facilities available for commercial use. Lease rates vary depending on the building and the equipment it contains.

- Early efforts to market the Mound and its technologies include:

  - The mailing of more than 500 brochures about Mound's capabilities to Fortune 500 companies and international businesses.

  - Mound Transition officials joined member communities of the I-70/75 development organization in displaying information at a booth at the United States Air and Trade Show.

  - The Mound Advanced Technology Center will be featured in two window displays at the Dayton International Airport beginning August 25.

  - The MCIC has entered into an agreement with David K. Burnap Advertising Agency to promote Mound capabilities to potential customers with articles placed in trade and industry journals.

  - About local commercial real estate professionals from the National Association of Industrial and Office Parks toured Mound on September 13 as a part of their annual program.

  - A comprehensive marketing plan is being developed for implementation to begin in the fall as a part of the Mound Economic Development Plan.

Political leadership has been critical to the progress made to-date. The area's political leaders, especially Congressmen Tony Hall and Dave Hobson, Senator John Glenn, Governor George Voinovich, Lt. Governor Michael DeWine and the Board of Montgomery County Commissioners have made important contributions to this effort.

APPENDIX B

PROCESS FOR LEASEING MOUND FACILITIES

A. Introduction

The Mound Partnership seeks the best possible uses for the Mound Facility and its employees. In order to achieve that goal, the Mound Partnership has established an 8 step process for receiving and assessing proposals for leasing Mound facilities. This process begins with an indication of interest and ends with the awarding of a lease, if the applicant is successful. The Mound Community Improvement Corporation (MCIC) is not obligated to award leases for any portions of the Mound facility if it is determined that no acceptable proposals have been submitted.

There are three points of assessment within the process:

1. An initial screening following the initiation of contact;
2. A preliminary assessment of the applicant's proposal; and
3. A final assessment.

During each of the assessments within the process, the following criteria will be used:

1. Technical match with Mound capabilities
2. Commercial viability/understanding the market
3. Impact on environment/safety
4. Impact on current employees
5. Length of time it would take for operation to begin
6. Financial capability
7. Utilization of Mound assets

B. Steps in the Process

There are 8 steps involved in the lease process. As with any negotiation process, some variations are likely to occur. Variations may exist because of the type of proposer and the opportunities the proposal and proposer may have associated with them.

Formal Proposal - a written preliminary or final proposal for assessment and, ultimately negotiation.

Informal Proposal - a preliminary or final proposal which may take the form of oral discussions between proposer and the City of Miamisburg and its representatives. The city may choose to provide technical assistance to the proposer in developing the final plan, a formal proposal.

Regardless of possible variations in the process, all applicants will be judged by the same set of criteria and can expect to go through most of the steps as described below. The proposer will be classified at the beginning of the process and the exact nature of the process will be determined.

1. Initial Contact

Initial contact may be made through a number of agents including EG&G, the City of Miamisburg, Mound employees, and the DOE. The information is forwarded to the Business Development

Manager at the City of Miamisburg or the MCIC for appropriate follow-up. In addition, the Business Development Manager may initiate contact as part of the marketing effort.

2. Sending Materials

The Business Development Manager will provide the applicant with a package of materials which includes financial, employee, facility, equipment, and nominal lease rate information for the operation(s) under consideration. Each applicant will receive the criteria by which proposals are judged. Normally, the materials will be sent within 2 weeks of the initial determination of interest.

3. Request for Preliminary Proposal

Based on knowledge of Mound capabilities and discussions, the Business Development Manager will make a tentative decision about requesting a preliminary proposal from the applicant. Part of this initial screening will involve an interface with appropriate DOE personnel. It is expected that most prospective applicants will be invited to submit a preliminary proposal. However, this initial screening provides an opportunity to end the process if the applicant and the Mound's capabilities are clearly incompatible. Normally, the request for a preliminary proposal will take place within 2 weeks of sending the initial package of materials.

The preliminary proposal may be formal or informal. Although a written proposal is preferred, information may be gathered through verbal discussions with the applicant. In either case, relevant information includes the following elements:

a. Some background on the company and/or principals
b. Some financial information (type depends on whether it is an existing company or a new start)
c. Their concept of how they would use the Mound (including something about equipment, buildings, and use of employees).
d. Their assessment of market opportunities.
e. Special needs for support, eg., safety and environmental factors.

4. Review of Preliminary Proposal

Proposals will be reviewed by a 4-or 5-person committee assembled by the University of Dayton. Members will possess a variety of expertise including accounting, marketing, and appropriate technical expertise. The review will result in feedback to the applicant and the City of Miamisburg or its representatives. The feedback will include both a written assessment and a meeting with the applicant. The review process will be completed within 2 weeks of receipt of the proposal.

The process is not designed to prohibit someone from going further with their idea. Instead, it will give them feedback in order to:

a. Alert them to critical elements needing to be addressed in their final plan.
b. Give them feedback which should improve the quality of their final plan.
c. Give them an early indication of whether or not their plan is consistent with goals for the Mound. This could cause the applicant to re-evaluate the decision to move forward.
d. Give them feedback from a preliminary technical review by DOE regarding the business proposal and its impact on the site from an environmental perspective.

5.Request Final Proposal

After receipt of the results of the preliminary proposal assessment, the City of Miamisburg or its representatives will request a final proposal from the applicant.

6.Assessment of Final Proposal

Final proposals will be assessed by a team composed of appropriate City of Miamisburg personnel, DOE personnel, University of Dayton personnel, and other appropriate experts. The evaluation will include both an assessment of the written plan and discussions with the applicant, if deemed useful. If there are multiple proposals, the evaluation will include a ranking of the proposals. The final evaluation will be completed as soon as possible of receipt of the proposal.

The proposal evaluation process may end with any of the following decisions:

a. Approval of the proposal. The applicant will then move to step 7, Lease Negotiation. If there are multiple proposals, step 7 will begin with the proposal ranked #1 and continue, if necessary, to lower rated, acceptable proposals.
b. Rejection of the proposal. The applicant will be advised of the decision and the factors that caused the proposal to be rejected.
c. Tabling of the Proposal. It may be decided to make no final decision on the proposal at this time. Reasons could include waiting for additional proposals, the need for more information, or the desire to seek additional proposals. Applicants will be advised of the decision and the City of Miamisburg will maintain regular contact with the applicant and provide information on the status of the proposal.

7.Negotiation

Officials of the Mound Community Improvement Corporation will enter negotiations with the successful applicant. If there are multiple approved applicants, negotiations will begin with the one receiving the highest ranking and continue, if necessary with the second ranked, the third ranked, etc.

8.Lease Award

The Mound Community Improvement Corporation will advise DOE of the proposed action and award the lease to the successful party. Appropriate stakeholders will be advised of this action.

APPENDIX C

ASSESSMENT OF MOUND TECHNOLOGIES
GROUP ONE TECHNOLOGIES
CERAMICS

Description:

The Mound ceramics capability was developed to support the manufacture of ceramic and glass-ceramic headers. Their entire production consists of headers, which are essentially electrodes fed through an insulating glass contained in a metal housing or shell. Twenty four different header configurations are produced and used as detonators, actuators, and igniters. In 1990, their peak production year, 30,000 of these parts were produced. Technical expertise also exists in metalizing and brazing ceramic material to form glass-to-metal seals.

The primary capabilities of the ceramic group are:

Glass to metal seals
High pressure seals
Hermetic seals
Process development and quality control for the above
Raw material to finished product processes for the above

The following are the major pieces of equipment in the ceramics group:

High temperature water cooled atmosphere and vacuum furnaces, extensively monitored for computer control and data acquisition
Quality control equipment, CTE, comparators, microscopes, Acoustic emission inspection
Zoned belt furnaces, hydrogen furnaces, induction furnaces
CIP and HIP facilities
Dry glass making rooms
Burst testing
Sophisticated machining capability for super alloy and ceramic materials

Positive Aspects

1. There are excellent personnel in the ceramics group. A number have ten years or more experience, including a Ph.D. in ceramics engineering, six other engineers, several techni cians, and a trained production work force.

2. Mound has sophisticated and modern ceramic processing and machining equipment.

3. Mound has experience in many facets of ceramic product processing including production of glass to metal seals, high pressure seals, hermetic seals, and electrical and fiber optic feed-throughs. They are also experienced in metalizing and brazing, process development, and quality control of all facets of ceramic product processing.

4. Mound has a unique advantage in glass to metal seals. They understand the process and can control it. No one else can do this better.

Challenges

1. The cost per part is high compared to standard commercial glass-to-metal seals. Quality requirements for most commercial operations are currently low and, therefore, costs are lower.

2. Although there is a lot of expertise and experience, there is very little production capacity. At the moment, available space to grow is limited.

3. Physical location of equipment would have to be changed for scaled-up production. Currently, the equipment has been organized according to process, not by project.

Recommendations

The Mound's advantage is in areas where high quality and dependability are important. In these high value added areas, higher prices would be paid. Commercial niches should concentrate on products which could be manufactured in limited quantity, require tight physical property specifications, and documented manufacturing history. Examples of potential applications are:

- Biomedical applications, including orthopedic and dental implants, transcutaneous connectors, and laser surgery connectors
- Extreme pressure applications, especially in marine applications such as oil platforms, fiber optic underwater cable, and mini-submarines
- Corrosive environment applications
- Aircraft and space applications

The Mound's machining of ceramics capability is probably necessary to support the overall ceramics operation. However, it may not be a stand alone capability. There are a fair number of other organizations who have the machining capability.

The Mound enjoys some unique capabilities in the ceramics area and this technology should continue to receive priority in the commercialization process. Niche markets should be explored more completely and current producers should be contacted to determine their possible interest in operating at the Mound.

FLEXIBLE CIRCUITS

Description

The Mound has the capability for the development and production of flexible circuits and flexible circuit production processes. A new 10,000 square foot clean room facility houses the custom designed reel-to-reel processing equipment. The Mound's process is based on a reel-to-reel format where the flexible circuit material is moved from a supply reel through the various process operations, in either a continuous or step and repeat mode, then wound onto a take-up reel. Data logging capability is built into each critical processing unit for electronic storage of information of process reconstruction, if needed.

Mound has considerable capability in providing subsequent processing operations, depending on the design of the flexible circuit being fabricated. These capabilities include cover coat fabrication and punching, selective material removal using custom designed lasers, laminating, sequentially electroplating up to two different materials, bridge joining, and component bonding.

The Mound staff consists of approximately ten people. Production output has been at 500 flexible cables per month.

Positive Aspects

1. The Mound facility and equipment is new, which should add to the ability to be competitive.
2. Flexible circuits have advantages over traditional circuit boards because they are lightweight and can be twisted and bent into almost any shape. The market seems likely to grow as new applications are discovered.
3. There is interest in funding an industry research facility at the Mound.
4. The total circuit board industry is large.
5. There were discussions about transferring WPAFB circuit manufacturing to the Mound. This would have provided Mound with increased activity in circuit boards as a com plementary activity.

Challenges

1. Mound has a relatively low capacity, approximately 500 cables per month.
2. Flexible circuits are more costly than printed circuit boards, especially in high volumes. This suggests the need to find niche markets.
3. Mound's cable technology may be consolidated near Kansas City, thus making equipment and personnel status uncertain.

Recommendations

The circuit board industry is large and is becoming increasingly interested in flexible circuits. Many commercial products could use the advantages of flexible circuits over printed boards in such

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products as cameras, computers, etc. The market may grow if the flexible circuit technology proves to be cost effective in certain applications.

This capability should continue to receive attention in the commercialization process unless the technology is going to be moved to Kansas City. The most promising opportunities appear to be research and development work for the circuit board industry and serving niche markets. The latter could be as a subsidiary of an existing manufacturer or based on an agreement with such a firm.

MACHINE SHOP

Description:

The machine shop occupies approximately 30,000 square feet in a new building on the outer rim of the Mound Facility. A ceramic shop and a mold shop are included within the machine shop. The ceramic shop is separated, not because of differences in equipment, but due to the chips and dust created by the machining.

The shop is well-equipped and could support approximately 150 machinists if it were used as a model or prototype shop. If arranged in cells and used for production machining, it could support 30 to 40 people.

The equipment is modern. Although all of the equipment was purchased to machine small parts, many machines can be used for parts up to 3 feet in size. There is also inspection equipment and two cutter grinders. There are currently (June 1993) 35 people working in the machine shop.

Positive Aspects

1. The machine shop has good equipment and experienced people:

   - Machines are new and usually the best available
   - Large number of experienced personnel with a mixture of skill levels (Model Maker categories 2 to 4).

2. The machine shop has some unique capabilities that would lend themselves to niche markets.

   - Capability for speciality machining in thread milling and cutter grinding.
   - Experience with design and prototype development
   - Ability to work with hard materials, especially glass-ceramics
   - Well equipped inspection department

Challenges

1. Experience is with meticulously producing small, precision pieces. Can the necessary mind-set be found to produce at more competitive levels?

2. Cost may be too high for production except in high value-added applications. Equipment and salary levels are likely to add up to high overhead.

3. There are a large number of machine shops in the Dayton area.

Recommendations

The machine shop has definite commercial possibilities and Miamisburg should continue to pursue some form of commercialization. It could be operated as a stand alone shop. Potential success depends on finding sufficient high value-added opportunities to cover the high costs. An additional issue is the political implications of starting a new machine tool company in a somewhat crowded, local market.

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A second alternative that has surfaced is to develop a facility that, at least in part, would provide training, inspection services, and precision services to existing, area shops. Some funding might be available from government and industrial sources for some of these non-commercial activities.

The machine shop is an asset with immediate commercial possibilities and should continue to receive serious attention for retention and commercialization.

NONDESTRUCTIVE TESTING

Description

There are six NAT areas in which the Mound has some expertise, radiography (RT), penetrant testing (PT), leak testing (LT), eddy current testing (ET), ultrasonic testing (UT), and magnetic particle testing (MP). The first three areas, RT, PT and LT, are areas where Mound has strength with respect to personnel and equipment. The last three areas, ET, UT and MP, are areas in which the Mound has weaknesses in equipment or personnel certification. The ultrasonic area does have some promise.

The rankings reflect (first and foremost) the technical training of the personnel. The ASNT certifies the technical expertise of NDT personnel to set industry wide standards in the NDT industry. Most commercial service labs will have people certified to Level III in the areas of claimed expertise. The Mound has personnel with Level III certification only in radiography and penetrant testing and personnel with Level II certification only in leak testing. Current certification levels are not a measure of the technicians true capabilities. Certification has not been a goal in the lab. However, commercialization will require additional training and certification of personnel.

The equipment is state of the art in three areas, radiography, leak testing and ultrasonics, while adequate for current work in the other areas. Of particular relevance in radiography are the two micro-focus real time X-ray systems and the SMS Computed Tomography system. In ultrasonics, the 3 Panametric computer controlled digital systems with high spatial resolution and the Sonoscan Inc. Scanning Laser Acoustic Microscope (SLAM) are worth noting.

Positive Aspects

1. The NDT group has the capability and equipment to perform a wide variety of the nondestructive test required in the commercial marketplace.

2. The Mound may have some unique NDT experience with respect to tests in the metal matrix composite and ceramic areas.

Challenges

1. The NDT market is stagnant or growing slowly in most of the areas where the Mound has capabilities.

2. One would expect an increased supply of captive NDT labs and personnel to be entering the commercial market because the Department of Defense was a major customer for NDT work. The slowdown in defense spending should cause large firms with NDT capability to look for outside work or let their NDT personnel go.

3. If the Mound is to make the transition to commercialization as an NDT service lab, some attention should be given to setting up a consortium of local customers. Prior efforts to set up a dedicated computed tomography facility (in Toledo) were not successful.
4. Given the large number of firms in the market already, the question is whether the Mound NDT group might have a comparative advantage due to its central location along Automobile Alley (I-75).

5. The current salary structure of Mound NDT personnel is relatively high in comparison to salaries obtainable in the commercial testing market.

Recommendations

The Mound NDT capability should continue to be pursued for commercialization. The capability of the personnel, as well as the excellent equipment, suggests possibilities for commercialization. The synergy with other kinds of testing at the Mound could provide a competitive advantage for this activity.

DESTRUCTIVE TESTING

Mound has a variety of capabilities in the destructive testing area. The areas evaluated included the Explosive Component Test Facility, the Mechanical Test Facility, the Metallurgical Laboratory and the Electron Optics Laboratory. Each of these would have difficulty competing in the commercial marketplace as a stand alone entity. Each adds to the capability of the Mound Testing group as a testing service organization.

Explosive Component Test Facility

Description

The unique capability of the ECTF are the three large explosive high speed camera test cells (rated at 10 lbs of TNT each) around which the facility was constructed and the automated control system instrumentation designed to safely run explosive tests in the three test cells. In addition the ECTF has 12 standard product testing boom boxes that are a relatively standard item among firms that have a use for them. There are five engineers and seven technicians assigned to the ECTF.

Positive Aspects

1 .The ECTF constitutes a state of the art explosive facility that could have significant advantages over other government facilities in bidding for particular government work involving shaped warhead charges testing.

2. In addition the ECTF might be able to attract some work in the commercial markets from companies that currently conduct their explosive tests in an outdoor environment. The ECTF would have to detail the advantages of the data gathered in the confines of the test cells.

Challenges

1. The current cost structure of the ECTF (cost plus 350%) is probably prohibitive for potential commercial users.

2. The use of flash radiography equipment is apparently limited at the ECTF. That limitation however should be readily dealt with, given the radiographic experience of the NDT group.

Recommendations

The crucial obstacle may be the limited size of the commercial market for the ECTF. A strong emphasis should be placed on the ECTFs ability to compete for government contracts in this area.

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MECHANICAL TEST FACILITY
METALLURGICAL LABORATORY
ELECTRON OPTICS LABORATORY

Description

The mechanical test facility includes two servo-hydraulic test systems, two electromechanical test systems, and a -75 to 250 degree Centigrade environmental chamber that can be used on any of the test systems. The electromechanical systems have load capacities of 1 lb. to 20,000 lbs. The first servo-hydraulic system has load capabilities of 25 lbs. to 22,000 lbs. and frequency capabilities up to approximately 100 Hertz. The facility's unique characteristic resides in the second servo-hydraulic test system. It's maximum load capability is 10,000 lbs. but it has a capability of producing ramp speeds of 1000 inches per second. An engineer currently maintains the equipment because no technician is available.

The metallurgical Lab has an automatic polisher and two metallographs. The Electron Optics Lab has five scanning electron microscopes. Several of these are equipped with energy dispersive spectroscopy.

Positive Aspects

1. Previous experience in testing of metals and adhesives.

2. Unique capabilities of second servo-hydraulic testing system.

Challenges

1. Not equipped for high volume testing and therefore unable to compete with established testing labs.

2. Limitations in temperature ranges in the mechanical test lab would make it difficult to work with advanced materials without an equipment upgrade.

Recommendation

Potential use for equipment as part of a larger test or research capability. The servo-hydraulic test system could be used for impact work testing component panels to protect cockpits or advanced automotive uses.

SURFACE ANALYSIS

Description

Six large systems with multiple capabilities comprise the Mound surface lab. It is certainly the best equipped surface lab in the state of Ohio. The general capabilities include:

- Auger electron spectroscopy (3)
- X-Ray photoelectron spectroscopy (3)
- Energy Dispersive X-Ray spectroscopy (2)
- Ion scattering spectroscopy (1)
- Secondary Ion Mass spectroscopy (1)
- Fast Atom Bombardment (1)

The four people currently assigned to the lab are cross trained on much of the equipment.

Positive Aspects

1. The equipment assembled provides the capability to resolve almost any surface analysis dilemma that a commercial customer might bring.

2. The internal research and technical work the staff has done may have wide application outside of DOE in the areas of energetic materials, glass to metal and ceramic to metal seals CFC solvent replacement and super abrasives.

Challenges

1. The surface analytic capabilities may be too sophisticated for commercialization.

2. There is no current staff with an entrepreneurial bent.

3. There may be excess surface analysis capability in the country with the slowdown of defense related spending. Many captive labs in large companies are now looking for outside work to keep their capability intact.

Recommendation

A search should be instituted for a private sector partner who has marketing expertise in the surface analytic sector.

C

GROUP TWO TECHNOLOGIES

ADHESIVES

Description

Over the years Mound has worked with adhesives technology which has enabled them to provide a selection of adhesives to accomplish joining and sealing tasks for a wide variety of materials and uses. Processing operations available at Mound utilize both hand mixing and automated dispensing equipment for liquid systems and laminating presses for film adhesives.

In order to provide for optimal bonds, surface preparation technologies, for example, plasma processing, are used for cleaning of substrates and for surface modification. These help guarantee fusion to a variety of metallic and nonmetallic substrates. An analytical support organization with surface analysis capabilities is available to determine that desired bonding surface conditions are met.

Positive Aspects

1. Mound has proficiency in processing many commercial and in-house formulated materials, including epoxies, urethanes, silicones, acrylics, and polysulfides.
2. Over the years, Mound has produced many innovative solutions to adhesive and bonding problems.
3. Processing expertise includes liquid/paste and film configurations using room and elevated temperatures, and photo and oxygen free cures.
4. Mound has experience in bond testing and also in the environmental testing of adhesives.
5. Mound has been a leader in eliminating identified carcinogenic adhesive components, and replacing them with approved hazard-free materials.

Challenges

1. Adhesive group is relatively small, usually only about three or four people.
2. Leader of the adhesive group, and lead researcher, Dr. John Dichiro, has recently retired.

Recommendations

Although Mound has a great deal of expertise in many aspects of adhesives technologies, this is an area which probably would best be used as support for other units or functions. The small size of the group makes any type of production utilization difficult, if not impossible. However, their experience in solving a wide variety of bonding problems as well as their surface analysis capabilities, help make this a potentially important support group for a number of other technologies.

CLEANING AND CONTAMINATION CONTROL

Description

Mound has capabilities in five cleaning and contamination control technologies:

1. Semi aqueous
2. Dry gas plasma
3. Super critical carbon dioxide
4. Laser ablation cleaning
5. High Pressure aqueous spray cleaning

The relevant unique capabilities appear to be in super critical carbon dioxide cleaning. Super critical carbon dioxide is a gas with the properties of a liquid solvent. It is capable of being used as a substitute for CFCs in the removal of particles and organic contaminants introduced in the manufacture of circuit boards, optical equipment and aerospace hardware.

Positive Aspects

1. A CRADA was signed between Los Alamos National Laboratory and Hughes in June 1992 to improve designs for super critical carbon dioxide cleaning equipment as well as clean and test sample components. Mound has the capability to enter that same market.

2. Mound has the capability to advise other production facilities in the establishment of cleaning techniques that are non waste generating.

3. Experience with machine oil contamination and blemishes. Consulting capability.

Recommendations

Immediate attention should be given to Mound's comparative capabilities in the newer environmentally friendly cleaning technologies. Mound may be ceding to L.A.N.L. a market in which it has greater capability and advisory know how. It is estimated super critical carbon dioxide cleaning techniques could replace CFCs in 1/3 of their current applications. This would require the overhaul of a large number of current production lines.

C

ENCAPSULATION/FOAMS

Description

Mound has done considerable work in the development of nonhazardous encapsulants and foams for its components. Mound utilizes epoxy, polyurethane, and silicone encapsulants in manufacturing components. One possible application is in the encapsulation of environmental hazardous materials.

Mound also has considerable experience in the generation and application of polymeric foamed products made by three techniques: gas blown, syntactic, and removable pore former. Mound has considerable development experience studying polyurethane and epoxy foams for various applications.

Mound has been making low density carbon for years, with densities in the range of 30 - 50 milligrams/cc. The key feature of carbon foam is not the low density as such, but the fact that the porous material has a high surface area per unit volume. Another important feature of carbon foam is that the pores can be tailored to have a uniformly small size.

Mound is currently funded by the U.S. Automobile Battery Consortium to develop carbon foam as a material for batteries for electric autos. The rechargeable batteries are to use lithium as an electrode element. The problem with batteries containing bulk lithium is that on recharge, the lithium forms dendrites which short out the cell. With carbon foam having the proper spacing between carbon atoms, lithium atoms can readily move in and out of the carbon foam without forming dendrites.

Positive Aspects

1. There are several applications for carbon foam:

   - Batteries
   - Capacitors
   - Fuel cells
   - Filters
   - Molecular sieves

2. The foam produced at the Mound is apparently unique in terms of low density and high purity.

Challenges

1. The production processes are still in research and development. Product development will require additional funding.

2. The Mound lacks expertise in many of the areas which would be needed to manufacture complete products.

3. While the Mound has expertise in developing carbon foam, the overall battery expertise resides at Sandia Lab, to which Mound is a subcontractor for the USABC project.

Recommendations

The Mound has definite capability in producing carbon foams. There are potential markets, but the technology is not ready for the market. Potential markets are for ozone filters, fuel cells, and compact, high capacitance capacitors. However, the Mound is likely to be a supplier of materials unless a partnership can be arranged with a firm that has complimentary expertise in production.

Markets and potential partnerships should be explored. However, the need for additional R & D suggests that this is not going to be commercialized in the short term.

C

EXPLOSIVES

Description

Mound has considerable experience in developing explosive devices for nuclear weapons applications as well as producing many components containing high explosives. Process technologies used by Mound for explosive materials include recrystallization, microencapsulation, and microcoating to produce the powder in the desired purity, particle size, composition and flow characteristics. Various forms of foams have been used and evaluated in the development and/or production of explosive components. The bases for these foams have been epoxies, polysulfides, and silicones. Production of electro-explosive components includes the use of a foamed in-place polyurethane to encapsulate the unit. Such production was done at Mound using automatic equipment to meter, mix, and dispense the gas-generated foam.

In addition to explosives, Mound also has considerable expertise producing pyrotechnic materials including hot gas producers and low gas producing flammable solids such as thermites. Unlike explosive powders, pyrotechnics are physical mixtures of fuels - fine particle metals or metal hydride powders - and oxidizing agents. Mound has extensive experience and expertise in synthesis of the metal hydride fuels and in formulation and blending of the forerunner powders to achieve complete homogeneity (physical and chemical) necessary to ensure consistent product performance.

Positive Aspects

1. Mound has significant experience in the area of compacting and pelletizing of explosive and precursor powders.

2. Mound has extensive experience in destructive and nondestructive testing of explosives. This experience helps assure the manufacturing quality of explosive devices they might produce.

3. Capabilities exist at Mound to safely handle explosives and other hazardous materials, either as finely divided powders, compacts of the powder, and in an extrudable paste form.

4. Mound has worked hard to develop and use nonhazardous encapsulants and foams for its explosive components. In one example, methylenedianiline , a suspected human carcinogen, was eliminated from use at Mound during 1991 and replaced with acceptable nonhazardous alternatives.

5. Mound has a very high reliability in terms of low false ignition rates with respect to their explosive work.

6. Specialized techniques have been developed at Mound to evaluate the quality and performance of the materials produced. These include, but are not limited to, laser and shock tube initiation to evaluate sensitivities, emission spectroscopy, infrared video thermography, laser-illuminated high speed photography, laser-induced fluorescence, solid-state nuclear magnetic resonance, and solution calorimetry.

7. Mound is recognized as being the top lab in thermite material development. It is also recognized as a leader in evaluation of the use of thermites for various applications.

Challenges

1. It is unclear as to what DOE's position will be as to allowing Mound personnel or other contractors to produce commercial explosives from technology developed at Mound and do it "outside the fence". If they allow the possibility of such production, Mound may have, either as a stand-alone operation, or in conjunction with other commercial partners, a real business opportunity. If they do not allow this, or if permission is too slow in coming, current competitive advantages may be lost.

2. There is uncertainty as to how many key personnel in the explosives area will be transferred or otherwise lost before commercial development can be initiated. If too many are unavailable, there will be difficulties in maintaining any competitive advantage.

3. There is a great deal of uncertainty as to the commercial value of the thermites developed at Mound. It is not obvious that this technology has any particular application for which it is the best choice.

Recommendations

With Mound's background and experience in many phases of explosives and pyrotechnics, this is an area which definitely warrants further evaluation. Since their expertise is not only in the production of these materials, but also in their safe handling, there might be commercial possibilities at various levels: production, transportation, disposal, etc. Whether there is sufficient capacity for Mound to develop a "free-standing" operation, or whether a joint venture or outside organization's use of Mound for this area is best, needs to be analyzed. Also needing to be determined is DOE's position on what aspects of Mound's explosive capability can be commercialized.

C

ISOTOPE SEPARATION

Description

The Mound has production level capability in a variety of isotopes. It has world leader expertise in thermal diffusion techniques for the separation of the noble gases. It also has liquid thermal diffusion capability for Chlorine12,13, Bromine79,81 and Sulfur 34,36. While currently not in production, it does have the capability to carbon, nitrogen and oxygen isotopes through distillation.

Positive Aspects

1. Existing customer base
2. World leader in thermal diffusion techniques
3. Experience and capability in high purity isotope separation

Challenges

1. DOE funding cutbacks
2. Oversupply in the world markets
3. Decisions will be made at the federal level for entire DOE isotope separation program.

Recommendations

Assessment should be made rapidly as to whether the Mound could commercialize successfully if its fate is untied from the fate of the entire isotope separation program. The information necessary to make that judgment is probably contained in an Arthur Andersen management study already conducted of the entire DOE isotope separation program. Miamisburg must evaluate its political capability to access the potential economic profit in the isotope separation program.

LASER DETONATORS

Description

The Mound has considerable expertise and experience in the laser ignition of energetic materials through an optical fiber. This experience has been acquired in developing explosive devices for nuclear weapons applications. Mound has the capability to construct and test fire such optically initiated components.

This technology involves an initiator, a compound or mixture which is relatively easy to detonate, which in turn causes the detonation of some more stable compound. In normal blasting practice, the initiator is fired electrically. The key change here is that the initiator is fired by laser pulse, transmitted through an optical fiber. Primary advantages of this technology include:

Freedom from spurious signals from stray electrostatic and electromagnetic fields
Simplified package design because there is no need for insulators
Only one feed-through is needed, instead of two as in an electrically fired device

Positive Aspects

1. The Mound technology has high reliability in terms of low false ignition rates.
2. The Mound has extensive capability in collateral areas such as nondestructive testing of explosive components, destructive testing of explosive devices, and glass to metal seals.
3. There is a potential expanding market in automobile airbags.

Challenges

1. The cost of laser detonated initiators is higher than electrical substitutes. However, mass production could reduce the cost of fiber optics and laser diodes.
2. Other organizations seem to be farther along in developing applications for laser detonated devices. These include Los Alamos and Lawrence Livermore National Laboratories.
3. Improvements are being made in electrical detonating devices that may prevent the laser device from becoming cost competitive.

Recommendations

The Mound has considerable expertise in the production of laser initiated detonators and related capabilities. The challenge is to find commercial applications where the Mound technology is competitive. Such applications would be those requiring high reliability and safety. Currently, the mass markets such as automobile airbags and mining and road construction do not have those demands.

This Mound capability deserves continued attention and may have its greatest promise as a component of some kind of explosives business. There is a real question as to whether this capability is superior to the developments currently occurring in other research facilities.

C

TRITIUM PROCESSING

Description

The tritium facility at Mound has been involved with a full range of activities, including project management, development of design criteria, design, cost estimates, schedules, installation, inspection, start-up, and the documentation and safety analysis of processes. Facility engineers at Mound have expertise in the design of total integrated systems for processing and handling of radioactive materials and components. Systems are used for development and production activities, waste management, environmental control, basic/applied research, and analytical functions.

Mound's personnel and expertise in tritium facility design have been used by many DOE locations. Mound's tritium facility design has provided safe, environmentally sound, facilities, operating over a wide range of processing conditions. These include a new Component Evaluation Operations facility developed for the Savannah River Site, the Tritium Storage and Delivery System designed and built for fusion research at Princeton, and the Kyle Function Test System designed and installed for the Sandia National Laboratory.

Mound's tritium facility design employs modern highly-developed gas processing technology methods. The system design accommodates a wide range of process conditions and many different chemical forms of tritium. The main tritium facility incorporates advanced and innovative environmental containment concepts. The Mound Tritium Effluent Removal Facility incorporates features for safe and environmentally careful processing of tritium effluent streams. The Tritium Aqueous Waste Recovery System completes the environmental processing cycle and recovers tritium for recycle back into the production process.

Mound has developed a range of technologies to process large quantities of tritium while releasing very low quantities to the environment. Processing systems, which are operated within double or triple containment, have been designed, fabricated, and implemented at Mound with the technologists remaining as resident experts in a broad range of fields. Mound has communicated much of this technology to DOE sites and others through publications and presentations. Mound has a reputation as the leading tritium handling site in the world.

Positive Aspects

1. Mound leader in purifying and recycling of old tritium supplies.

2. Mound is only operator in country that can recycle tritium that has decayed to very diluted levels. Mound has developed capabilities that can enrich tritium at very low or intermediate concentrations to 99+% isotopic purity using an integrated enrichment system, decanted to produce high purity product.

3. Many products and industries use small volumes of low level tritium as light source. Examples are exit signs, landing strip lights, and specialized flash lights.

4. The design and capacity of the Mound tritium facilities include state-of-the-art triple containment for all production related operations.
5. Mound's tritium facilities design has the advantage of low holdup of valuable tritium in process inventory. Minimum inventory is accomplished by maintaining low impurity

content in process tritium. In addition, Mound uses hydride materials for storage beds that have lower holdup than alternative alloy beds.

Challenges

1. Most of tritium work is being transferred to South Carolina.
2. Mound primarily experienced with large volumes of tritium used in nuclear warheads. Commercial volume would be much smaller.
3. Uncertain as to DOE's treatment of remaining equipment when majority of tritium work goes to South Carolina. (Usual approach is to destroy contaminated equipment.) Has never transferred to a private concern.

Recommendations

With the large number of personnel at Mound who work with tritium refining and related activities and the extensive experience and reputation that Mound has in tritium technology, this is very definitely an important area for further evaluation. There are some major areas of uncertainty, including: DOE's approach to disposition of Mound's tritium facilities; size and needs of potential markets; current supplies and suppliers of commercial tritium; and practicality of reprocessing very low level commercial products containing tritium, such as tritium-containing lights. Once some of these are resolved, a plan could probably be developed that would use a good portion of Mound's facilities, as well as a number of Mound personnel.

C

WELDING/JOINING

Description

In support of and in conjunction with production programs, Mound has developed a number of methods for joining a wide variety of metals. Areas of experience include component weld joint design, material selection, joining process selection, welding metallurgy, fixturing, and process parameter selection. Mound has utilized a number of joining processes, including: Laser Welding; Electron Beam Welding; Resistance Welding; Diffusion Bonding; Ultrasonic Welding; Thermosonic Welding; Gas Tungsten Arc (GTA) Welding; Pinch Welding; Forge Welding; Brazing; and Soldering. There are a number of welding systems located throughout the Mound facility which provide a variety of welding/joining operations to support both production and development programs. Many of these applications are unique and represent systems not found elsewhere.

The personnel involved with the welding and joining processes at Mound enjoy a solid reputation within and outside of DOE. Other design labs relied very much on the expertise at Mound to solve many of their most complicated joining problems. Mound personnel have a combination of development, production, and training experience.

Positive Aspects

1. Mound has extensive experience in a number of welding and joining technologies.
2. Mound has a very good reputation among DOE labs for their ability to solve complex joining problems.
3. Mound's micro-welding abilities appear to be rather unique.
4. Mound has a great deal of flexibility because of their experience with a large number of different processes that they are able to use in solving joining or welding problems.
5. Mound can produce very high quality, precision welds that can be verified because of the data acquisition systems that are part of all welding techniques and used as part of the product acceptance documentation.
6. Mound has experience joining a wide variety of materials involving complex or intricate components.

Challenges

1. Cost structure at Mound will probably limit the welding and joining use to high end business only.
2. Size of facility and number of personnel and equipment probably will limit the types of applications that Mound can undertake in the commercial sector.

Recommendations

Welding operations at Mound appear to be an area that is worth further investigation and evaluation as to future use. It might be able to become a unique stand-alone welding shop. This would require determination of a niche in market that needs some combination of Mound's unique capabilities, such as extremely accurate welds, high quality welds, micro-welding, complex or intricate welding problems, etc. This might be in some specialty industry such as medical implants or devices or in small lot batches of very high value and critical components.

Mound might better act as consultants or as a training facility for production people or producers of welding equipment. They have much experience in design, development, and training. They could probably develop the expertise to train certified production people. They could do this alone or as a partner with some other organization.

Because of the integrative nature of much of the development and production at Mound, the welding unit might be part of a combination unit, for example with the machining operations or ceramics group. Combining of several of these groups might develop a symbiotic relationship that could evolve into a unique offering. This may provide that extra value to some market niche that would allow it to compete successfully in the marketplace.

C

GROUP THREE TECHNOLOGIES

FILM DEPOSITION, SURFACE FINISHING, AND PLATING

Description

Mound's electroplating and surface finishing capabilities support production as well as research and development activities. The Mound has capabilities in three areas:

1. Plating capabilities include electrodeposition of cadmium, chrome, copper, gold, nickel, and silver on selected surfaces.

2. Surface finishing capabilities include anodizing and dyeing, black oxiding, brush plating, chromating, electroless nickel plating, electropolishing, and passivating. Mound also has a variety of cleaning and etching processes.

3. Film deposition capabilities provide a wide variety of deposited and etched film configurations. It encompasses the preparation of both metallic and nonmetallic films using sophisticate physical and chemical deposition technologies.

Recommendations

The initial analysis of this Mound technology has treated it as support areas for other Mound activities. It should continue to be analyzed for possible applications. However, it seems unlikely to be a stand alone capability. Mound also has some plasma spraying capability that deserves additional analysis.

LASERS

Description

Mound personnel have considerable experience with a wide variety of laser related activities including laser welding, laser detonation, laser-induced fluorescence spectroscopy, and the development of prototype laser machines. In addition, Mound has ability and experience in developing new laser processes.

Most of the Mound's capabilities in lasers are described elsewhere in this report. However, the Mound's long experience with handling lasers does provide a unique primary advantage. It results in some potential for utilizing skills in a consulting capacity, as well as in the design and production of prototype equipment.

Positive Aspects

1. Mound personnel have considerable experience in a broad variety of laser applications.
2. Mound has expertise in designing and building prototypes of instruments.
3. Mound could provide consulting to laser users, especially in the area of safety.

Challenges

1. A number of sources of laser technology, products, and research resources are already available for most applications.
2. The capability to design and build prototypes may not be sufficient to support a stand alone enterprise.

Recommendations

Mound's overall capability with lasers is impressive and should provide viable commercial applications. The general laser capability described in this report deals primarily with consulting and developing prototypes. Although this may not be a stand alone technology, it could become part of a support group. There could be considerable synergy among the various laser applications.

C

METAL HYDRIDES

Description

Mound has extensive experience in the preparation, storage, and handling of a large number of metal hydrides. This expertise was developed primarily in conjunction with the tritium work which was done at Mound. The easiest way to store and transport tritium is in the form of a hydride. In developing their extensive capabilities in the production and handling of hydrides, they accumulated a great deal of experience and facilities in a number of related areas. Especially relevant are welding development, necessary to develop techniques which would seal metal hydride specimens in metal containers, X-Radiography, which was utilized to assess the integrity of the weld zones, and isotope separation, which was used in the development of some of the hydrides. Mound has demonstrated a great deal of breadth and quality in metal hydrides and related areas.

Positive Features

1. Experienced in production and handling of hydrides of all elements which form hydrides.
2. Good equipment available for the handling and storage of various metal hydrides.

Challenges

1. Uncertain commercial utilization of metal hydrides.
2. Main current use is as transportation form for tritium and this work is being transferred from Mound.
3. Market for samples of metal hydrides for experimental work by other organizations is unknown and likely to be small.

Recommendations

Possible markets include production of samples for companies wanting to use hydrides in testing or experimentation, production of hydrides for transportation of hydrogen as hydride, and production of metal hydride batteries for computers. More information is needed on the level of technology for hydrogen transportation and hydride batteries. Also, information on the size of the market for experimental purposes is required. This certainly is an area where Mound has a great deal of experience, but one where non DOE applications may be rather limited.

PLASTICS

Description

Mound has the technology for material selection, formulation, molding, and extrusion of thermosetting/thermoplastic and composite compounds. Capabilities include injection molding at high temperature, compression molding, thermoforming, and composite fabrication. The capability has been used to produce parts for detonators, actuators, igniters, torches, switches, and timers.

Positive Aspects

1. The Mound has specialized in high strength plastics.
2. The Mound has interesting capabilities in composites
3. There are good support areas in plastic machining, analytical testing, mold design and fabrication and surface treatment to facilitate joining.

Challenges

The amount of equipment and capacity is limited. It has primarily served as a support area to Mound production activities. Equipment is not extraordinary or unique.

Recommendations

This does not appear to be an area where Mound has sufficient capacity or a unique capability to hold great promise for an independent enterprise. However, it is one of those areas that is inter-related to other Mound capabilities. It could be part of a supportive environment for future Mound occupants. Attention should also be paid to the possibility of linking this capability with another, related one.

C

THERMITES

Description

Thermite materials are composed of a metal oxide and a reactive (usually aluminum). Ignition of the materials produces heat, and the time required to propagate depends upon the density of the material; high density thermite propagates more slowly. Mound has developed the ability to compress thermite materials into various shapes and sizes.

High density thermite may be used in situations requiring slower, high temperature reactions. Low density thermite propagates more quickly and may be used in destruct and disablement technologies as "torches." General applications of thermite torches include penetration of metals, specific miniaturized uses, thermo-mechanical propulsion, and welding.

Positive Aspects

1. The Mound is the leader in thermite material development and in evaluating its appropriateness for different uses.

2. Thermite materials can be used where there is no alternative heat source, such as electricity or petroleum fuel.

Challenges

Thermite appears to be a technology looking for a problem. There are ideas and speculation about possible uses, but currently not a substantial market.

Recommendations

There appears to be no immediate opportunity to develop this capability into a free-standing enterprise. Potential uses and possible partners can continue to be sought.

Source: University of Dayton Center for Economic and Business Reasearch, "Commercialization Study of th Mound Facility Phase I," February 24, 1994.

APPENDIX D

MOUND REUSE COMMITTEE MEMBERSHIP

Miamisburg City Schools
Michael McCabe
Director of School Services/ Business Affairs

Montgomery County
Don Lucas
Montgomery County Commissioner

Dayton Area Chamber of Commerce
Verity Snyder
V. P. of Economic Development

City of Miamisburg
John Weithofer
City Manager

Miamisburg Environmental
Safety & Health
Sharon Cowdrey
President

Mead Corporation
David Santez
Associate General Counsel
& Ass't Secretary

Ohio EPA
Brian Nickel

State of Ohio Department of Development
Jerry Paprocki

Society National Bank
Todd Clossin
Senior V. P. Division Manager
Commercial Banking

EG&G Mound Applied Technologies-Employee
Gary Nolley
President OCAW

John Hehmeyer
Mound Citizens Action Group

Citizen
John Stadler
Miamisburg Planning Commission

APPENDIX E

Technology Transition Budget

The approach used for developing costs associated with Technology Transition involved the identification of the minimum number of personnel or "gatekeepers" necessary to maintain technological capabilities in 11 technical ares. These "gatekeepers" are those individuals who possess sufficient knowledge of the technology, its breadth of application and the capability and operation of equipment and facilities. As such, these personnel will be required to oversee particular equipment and facilities to maintain operational capability. This includes ensuring that equipment is properly serviced and maintained. Moreover, "gatekeepers" will be required, for the mission of economic development, to assist in demonstrating technological capabilities to potential users, review proposals and business plans from prospective Mound users and assist in the marketing efforts by providing technological input. The number of "gatekeepers" in each technical area was arrived at through discussing with EG&G Mound Applied Technologies management. The numbers identified represent the baseline or minimum personnel knowledgeable of the technology, the relevant equipment, and the application of the technology to potential Mound customers.

Within each of the 11 areas, personnel costs were developed for each position. In developing these costs, an estimate of DOE operating funds necessary to support "gatekeeper" personnel in FY 95 was obtained from EG & G. Additionally, an estimate was made of those economic development proposals having a high probability of success. Those estimates indicated that approximately 65 Full Time Equivalents (FTE) will not be supported at the beginning of FY 95 due to lack of available DOE and new business funding. Thus, the 65 FTE figure was used as the basis for personnel costs needing funding. It was estimated that economic development and technology transfer success would diminish the FTE shortfall to 42 FTE's and 21 FTE's in FY 96 and FY97, respectively. In addition, the cost of servicing and maintaining those pieces of equipment necessary to preserve technological capability associated with each technical area was made. From that analysis, square footage costs for renting space were developed based on a chargeback rate. In all instances, the cost and space allocations were derived from information provided by EG & G. All are summarized below.

Category	1995	1996	1997
Full Time Equivalent (FTE) Employees	65	42	21
Personnel	3,409,000	2,202,738	1,101,369
Equipment	169,000	109,200	54,600
Space Charge	370,080	239,129	119,565
Total	**3,948,080**	**2,551,067**	**1,275,534**

Source: Office of Mound Transition, City of Miamisburg, 1994.

APPENDIX F

FACILITY AND SITE IMPROVEMENT BUDGET

The table below lists nine Mound buildings (totaling 237,754 square feet) which currently have serious prospects for commercialization. However, in order for these facilities to be converted to private use, certain improvements must take place. To accurately estimate the cost of these improvements, the Mound Community Improvement Corporation engaged the architectural/engineering firm of Barge, Waggoner, Sumner and Cannon to survey the facilities and recommend corrective action.

The resulting survey, *Summary of Facility Survey Corrective Actions*, recommended actions necessary for code and maintenance improvements which will be required once the facility is transitioned. The cost for these Corrective Actions for the nine facilities listed below is $2,015,752.

Code and Maintenance Improvement Costs

Building	Bldg. Area(S.F.)	Total Cost
29	5,200	35,211
E	50,254	1,196,448
27	5,300	158,370
49	15,000	203,002
3	12,000	295,729
87	38,000	31,934
COS	71,000	66,429
63W	3,000	5,657
105	38,000	22,972
TOTAL	**237,754**	**2,015,752**

Source : "Summary of Facility Survey Corrective Actions," Barge, Waggoner, Sumner and Cannon, September 1994.

Based upon the survey results for the nine buildings listed above, the average renovation cost is $8.47 per square foot. An estimate of future renovation costs can be projected by applying the $8.47 per square foot to buildings designated for economic development in ITR Report, "Independent Technical Review of the Mound Plant." These buildings include: 59, 35, DS, 43, 104, 40, I, 28, 60, 85, 67, B, 8, 81, GW, 20, 10, 80, 89, 52, 83, 5, 92, 100 and GH. The total square footage of these buildings is 214,800. Hence, the projected renovation cost for the ITR buildings is $1,819,356, thereby bringing the total renovation cost for eligible Mound structures to $3,835,108.52.

F

FY 95 Renovation Costs	Future Renovation Costs	Total Renovation Costs
$2,015,752	$1,819,356	$3,835,108

Leasehold Improvement Costs

In addition to facility renovations, leasehold improvements may be necessary for specific economic development prospects. Here, the costs for two types of facilities—office and manufacturing—have been estimated. The COS building is the only facility which has been classified as potentially high grade office space. As such, based upon local standards for office leasehold improvements, we estimate that COS leasehold improvements will cost approximately $20/square foot or $1,420,000. All other structures identified by the ITR report have been classified as manufacturing space. Based upon local standards for manufacturing, leasehold improvements will cost approximately $8/square foot. A survey of our current prospects, provides that only 70% of the manufacturing facilities will require leasehold improvements. Therefore, the total amount of space requiring these improvements have been discounted. Based upon the above total cost to provide these improvements will be $2,138,400.

Office Leasehold Improvements	Manufacturing Leasehold Improvements	Total Leasehold Improvements
$ 1,420,000	$ 2,138,400	$ 3,558,410

Total Renovation Costs	Total Leasehold Improvements	Total Costs
$ 3,835,108	$ 3,558,410	$ 7,393,518

APPENDIX G

SUMMARY OF TRANSITION GRANT FUNDS

September, 1994

A study of the viability of Mound Laboratory as a commercial laboratory, prepared by the University of Dayton Research Institute and Center for Business and Economic Research (1993)

Ohio Department of Development	$ 50,000
Montgomery County ED/GE Program	$ 50,000
City of Miamisburg	$ 20,000

Commercialization Assistance for Mound Laboratory from the University of Dayton Research Institute and Center for Business and Economic Research. The Center is assisting in the determination of the economic viability of potential Mound businesses. (1994)

Montgomery County ED/GE Program	$ 40,000

Establishment of the Miamisburg Mound Transition Office (1993)

U.S. Department of Energy	$ 200,000

Human Resource funds for employee skill assessment and training (1994)

Ohio Bureau of Employment Services	$ 20,000

Development of plans to assist in the future re-use of Mound Laboratories including a structure for stakeholder involvement and economic development. Program implementation and strategies in the reuse and redevelopment of the Mound (1994).

U. S. Department of Energy	$ 500,000

Development of a study to determine how water and sewer will be provided to the new "customers" of Mound. The study will assess and address such issues as: plant infrastructure, city infrastructure, current and projected system demands, alternative for water and sanitary sewer, and costs for all alternatives. (1994)

Montgomery County ED/GE Program	$ 21,000

Focusing on the existing human and technological resources and physical assets at the Mound, development of economic development plans including the establishment of a Community Improvement Corporation, a Loan Guarantee Program, a Pilot/Prototype Funding Program and a Capital Improvement Program. (1994)

U.S. Department of Energy	$ 4,000,000

Through Montgomery County, the Greater Dayton Job Training Program received Defense Conversion Adjustment (DCA) funds from the Department of Labor in order to provide out placement training for dislocated Mound workers.

Department of Labor	$ 502,026

APPENDIX H

PROJECTED JOB OPPORTUNITIES IN VACATED MOUND SPACE

Building	Square Footage	Type	Jobs
E	30,155	Office/Lab	60
DS	47,810	Office/Lab	96
COS	35,000	Office/Lab	70
GH	5,347	Office	11
I	25,736	Office/Lab	50
28	11,329	Office/Lab	23
B	27,735	Office/Lab	47
35	2,500	Office/Lab	5
63	16,461	Office/Lab & Manufacturing	16 Office/Lab 8 Manufacturing
46	2,439	Office/Lab	5
M	56,018	Manufacturing	56
TOTALS	**260,530**		**439**

Assumptions: Office/Lab, 1 job every 500 square feet.
Manufacturing, 1 job every 1,000 square feet.

Source: Office of Mound Transition, City of Miamisburg, 1994