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U.S. Department of Energy
Nuclear Reactor Technology
Lead Laboratory Charter

Argonne National Laboratory
Idaho National Engineering & Environmental Laboratory



Nuclear Reactor Technology
Lead Laboratories



INEEL
IDAHO NATIONAL ENGINEERING & ENVIRONMENTAL LABORATORY

**U.S. DEPARTMENT OF ENERGY
NUCLEAR REACTOR TECHNOLOGY
LEAD LABORATORY CHARTER**

INTRODUCTION

The Department of Energy (DOE) believes that advancing the state of the art of nuclear reactor technology provides an important future energy option for the United States. Nuclear energy has played a large role in providing secure, reliable electric power to U.S. homes and businesses for the last three decades without emitting harmful air pollutants such as those associated with global climate change. Given the environmental and energy challenges that face the Nation as we enter a new century, nuclear energy's importance has considerable potential to increase—if the key issues that threaten its long-term viability can be resolved. For this reason, DOE has initiated and plans new research in nuclear reactor technology to address long-term issues such as reducing the cost of nuclear-generated electricity, finding better ways to deal with spent fuel and proliferation issues, improving the performance of existing plants, and achieving even higher levels of safety than has been seen thus far.

With much of this research to be performed by engineers and scientists working across industry, academia, and several of the Department's national laboratories, it is clear that the effectiveness of this endeavor will be multiplied if these disparate science and technology activities can be assessed as a whole and their contribution to the overall goals of the Department carefully evaluated. In pursuit of this outcome, the Department has selected Argonne National Laboratory (ANL) and the Idaho National Engineering and Environmental Laboratory (INEEL) to serve as Lead Laboratories to assist the Department's Office of Nuclear Energy, Science, and Technology (DOE-NE) in maximizing the value of the various reactor technology research activities conducted by the Department. This document discusses the importance and substance of this Lead Laboratory role and serves as a charter for the relationship between DOE-NE, ANL and INEEL in maximizing the value of the Department's activities associated with nuclear reactor technology.

DOE-NE MISSION

DOE-NE is home to much of the Federal Government's expertise in nuclear technology. This expertise is critical to assuring that, through its unique technical resources, the United States Government has the ability to respond to issues related to nuclear technology, including energy resource issues, matters of national security, nuclear engineering education, nuclear research, and the production and distribution of isotopes for medical and research uses. The United States relies on nuclear technology to provide about a fifth of its electricity, to provide critical isotopes

for health care and industry, to explore the solar system, and to enhance the nation's security. Many other countries in the world are even more reliant on nuclear energy, and nuclear energy will continue to become increasingly important, especially as energy security and environmental quality continue to grow in importance in the next century. Because of the worldwide reliance on this vital technology, DOE invests in services, products, and technologies that are beyond the scope of private industry.

DOE-NE STRATEGIC OBJECTIVES

Working with industry, academia, the national laboratories, other Government agencies, and international partners, the Department of Energy has established objectives set forth in the Department's Strategic Plan. DOE-NE has developed strategies to meet each of these objectives. In the area of Energy Resources, DOE-NE has established two critical strategies that are designed to assure a long-term nuclear energy option in the United States:

Energy Resources Objective 2: Ensure that a competitive electricity generation industry is in place that can deliver adequate and affordable supplies with reduced environmental impact.

Strategy: Support innovative nuclear energy research and science.

Strategy: Address critical technology issues associated with existing nuclear power plants.

In other areas, DOE-NE has also established strategies impacting its mission to provide advanced nuclear power systems for space and national security missions; its activities related to medical, research, and industrial isotopes; its nuclear facilities management mission; its support for the science and technology education and research infrastructure, and its activities to support the restoration of the environment.

VISION FOR DOE-NE

Through the DOE-NE budget for fiscal year 1999, the United States has initiated funding for the Nuclear Energy Research Initiative (NERI), which will support research into innovative nuclear energy technology at U.S. national laboratories, universities and industry. The Department believes that this program will give rise to innovative nuclear technologies that hold promise for invigorating and retaining the nuclear energy option for the U.S. While still in its infancy, this

program has energized the domestic and international nuclear technology communities and positions the United States at the forefront of a new century of nuclear energy research and development.

NERI, while vital to the future of nuclear energy in the United States, is still a first step. If nuclear energy is to remain viable for the long-term future, new, innovative technologies must be developed to the point of commercial implementation. It is the role of the U.S. Government to support such long-term, high-risk research and development directed toward serving the national interest. For development of nuclear energy technology, this support will continue to be provided through the Department of Energy Office of Nuclear Energy, Science, and Technology.

The Department will continue to consider a broad range of areas for potential government involvement. While leaving most issues related to near and intermediate term nuclear energy research to the private sector, the Department plans:

- continued investments in long-term nuclear reactor technology;
- new investments in long-term research to develop new answers to old problems such as dealing with nuclear waste;
- necessary cooperative activities with the private sector when government resources and leadership are required for success;
- more extensive cooperation between universities, industry, national laboratories, and the international research community; and
- more investments and development of policies to support our national nuclear science and technology research infrastructure, including both federal facilities and university education and research capabilities.

A key focal point for these future activities will be to work with a broad range of experts in the U.S. and abroad as well as within and outside the nuclear research community to engage in a new enterprise to understand the long-term energy, environmental, and economic needs of the world community with a view toward the future application of nuclear technology. Successful efforts in this area may enable the Department, in coordination with many others, to set a path to determining the shape of nuclear power in the long-term future. Furthering this enterprise, which has become known as *Generation Four*, will be a primary area of work for DOE-NE and the Lead Laboratories.

THE NEED FOR LEAD LABORATORIES

The Secretary of Energy Advisory Board recommended that "[the DOE] should establish Lead Laboratories according to mission assignments and programmatic strengths." The Board further recommended that "the Department and the national laboratories should move promptly to establish clear mission statements for the laboratories which will be utilized as tools for budget decisions and long-term strategic planning."¹

With this in mind, DOE-NE will work with the Nuclear Reactor Technology Lead Laboratories to maintain and apply world class technical capabilities to assure the Department is maximizing its investment in nuclear energy research and development. Applying these capabilities will also better equip the Department to:

- explore and evaluate potential future technology activities;
- evaluate the facility requirements to support the Department's research agenda;
- understand and track developments in other programs and other countries as well as serve as a long-term repository to maintain and apply the results of nuclear energy research worldwide.

ROLES AND RESPONSIBILITIES UNDER THIS NUCLEAR REACTOR TECHNOLOGY LEAD LABORATORY CHARTER

DOE-NE will provide the overall leadership to assure that the Department maintains a long-term strategic vision that incorporates the application of the Nuclear Reactor Technology Lead Laboratories to furthering the Department's goals and objectives. In implementing this charter, DOE-NE will:

- establish a Technical Integration Office to be jointly administered by ANL and INEEL;
- act as the responsible landlord for the core infrastructure at the Lead Laboratories;

¹Alternative Futures for the DOE National Laboratories, Secretary of Energy Advisory Board, January 1995.

- provide base support to make user facilities and expertise available at the Lead Laboratories; and
- apply the expertise of the Lead Laboratories to coordinate applicable cross-cutting activities involving other laboratories, agencies, and organizations such as the creation of technology roadmaps and other strategic planning documents, and as needed, support new programs and initiatives at the Lead Laboratories.

The Lead Laboratories will provide the capabilities at the Technical Integration Office to coordinate activities between the parties as required to implement this charter. This joint office will be staffed by personnel from the Lead Laboratories and will be responsible for the interface between DOE-NE and the Lead Laboratories on day-to-day activities within the scope of the Lead Laboratory charter. In implementing this charter, the Lead Laboratories will:

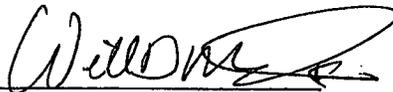
- maintain world-class staff and maintain key facilities to pursue advanced nuclear reactor technology research and development, and play a leading role in future reactor technology programs;
- maintain a living knowledge base to understand, evaluate, and provide for the future application of results of completed advanced nuclear reactor technology activities;
- continually evaluate and integrate the results of research and consider the need for follow-on research, development and demonstration programs as required to meet the Department's long-term goals, and serve as a technical resource to provide support to DOE-NE decision making for R&D efforts;
- stay abreast of developments associated with nuclear energy-related research and development activities in the U.S. and abroad, and become a national resource regarding the state of nuclear energy research activities; and
- at the request of DOE-NE, organize and host national and international forums to address key issues in the national interest.

**DOE Office of Nuclear Energy, Science and Technology
Nuclear Reactor Technology Lead Laboratory Agreement
With Argonne National Laboratory
and the Idaho National Engineering and Environmental Laboratory**

The Department of Energy (DOE) believes that advancing the state of the art of nuclear reactor technology provides an important future energy option for the United States. Nuclear energy has played a large role in providing secure, reliable electric power to U.S. homes and businesses for the last three decades without emitting harmful air pollutants such as those associated with global climate change. Given the environmental and energy challenges that face the Nation as we enter a new century, nuclear energy's importance has considerable potential to increase if the key issues that threaten its long-term viability can be resolved. For this reason, DOE's Office of Nuclear Energy, Science and Technology (NE) has initiated and plans new research in nuclear reactor technology to address long-term issues such as reducing the cost of nuclear-generated electricity, finding better ways to deal with spent fuel and proliferation issues, improving the performance of existing plants, and achieving even higher levels of safety than have been seen thus far.

For over 50 years, Argonne National Laboratory (ANL) and the Idaho National Engineering and Environmental Laboratory (INEEL) have been leaders in nuclear technology research and development. They continue to maintain world class expertise and unique facilities for nuclear technology research and development. Accordingly, NE has selected ANL and INEEL to serve as its Lead Laboratories for Nuclear Reactor Technology. This selection will ensure that DOE retains the capability to perform long-term, high-risk nuclear research and development in order to maintain the viability of the nuclear energy option in the U.S.

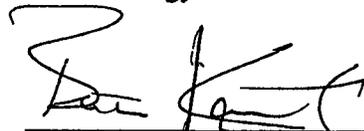
Specific roles and responsibilities of DOE-NE and the Lead Laboratories are delineated in the attached DOE-NE Nuclear Reactor Technology Lead Laboratory Charter for ANL and INEEL. The undersigned hereby commit to carry out these roles and responsibilities, and to work cooperatively to advance the state of nuclear technology to help this technology achieve its full potential.



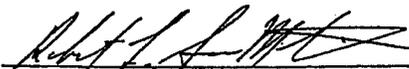
William D. Magwood, IV, Director
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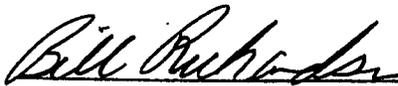
**U.S. Department of Energy
Nuclear Reactor Technology Lead Laboratory Agreement
With Argonne National Laboratory
and the Idaho National Engineering and Environmental Laboratory**

Proclamation

The past 50 years have seen nuclear energy develop from a promising outgrowth of the Manhattan Project to a major energy source that provides 20 percent of U.S. electricity. The Department of Energy (DOE) believes that nuclear energy provides an important future energy option for the United States, and that the key issues facing its long-term viability can be resolved through advances in technology. For this reason, DOE has initiated and plans new research in nuclear reactor technology to address these long-term issues.

Over the past 50 years, Argonne National Laboratory (ANL) and the Idaho National Engineering and Environmental Laboratory (INEEL) have been world leaders in nuclear technology research and development. From the formation of the National Reactor Testing Station by the Atomic Energy Commission in 1949, the number of nuclear energy-related firsts achieved by these two laboratories, and by the people of Idaho, is unparalleled. This impressive list includes the first nuclear-generated electricity, supplying the electricity to the first city to be lighted by nuclear power, the development of the first naval reactor and commercial nuclear reactor prototypes, and countless other milestones. In fact, over 50 reactors in all have been constructed and operated in Idaho, on what is now the INEEL site.

ANL and INEEL continue to maintain world class expertise and unique facilities for nuclear technology research and development. Accordingly, DOE's Office of Nuclear Energy, Science and Technology has selected ANL and INEEL to serve as its Lead Laboratories for Nuclear Reactor Technology. This selection will ensure that DOE retains the capability to perform the important long-term nuclear reactor research and development necessary to maintain the viability of the nuclear energy option in the U.S. The State of Idaho welcomes this long-term commitment by DOE, and looks forward to nuclear reactor technology research and development programs in Idaho for many years to come.


BILL RICHARDSON, SECRETARY
U.S. DEPARTMENT OF ENERGY


DIRK KEMPTHORNE, GOVERNOR
STATE OF IDAHO

