

**MEMORANDUM OF UNDERSTANDING**  
**between**  
**U.S. NUCLEAR REGULATORY COMMISSION**  
**and**  
**U.S. DEPARTMENT OF ENERGY**  
**on**  
**VERSATILE TEST REACTOR ENGAGEMENT**

**I. Purpose and Background**

1. This Memorandum of Understanding (MOU) between the U.S. Nuclear Regulatory Commission (NRC) and the Department of Energy (DOE), referred to as the “parties” or “party,” describes the roles, responsibilities, and processes that will guide interagency cooperation with respect to the DOE Versatile Test Reactor. DOE funding for initial planning for the Versatile Test Reactor (VTR) was received in the Consolidated Appropriations Act, 2018 (P.L. 115-141). The Versatile Test Reactor is intended to be a fast spectrum test reactor that is planned to be operational by 2026 and would be designed to provide prototypic fast flux for testing of advanced fuels and materials.
2. This MOU is specific to the development and deployment of a potential Versatile Test Reactor. DOE intends to authorize operation of the VTR using DOE’s authority to approve operation of a DOE-owned test reactor. The NRC’s engagement, consistent with its role as an independent safety and security regulator, is intended to provide the NRC with opportunities to benefit from the research and development of the VTR that will enhance its understanding of advanced technology and inform its approaches to licensing advanced reactors.
3. The VTR design, construction and authorization for operations provides a unique opportunity for cooperation between DOE and NRC regarding DOE authorization and NRC licensing initiatives for advanced reactor technologies.

**II. Authority**

1. The NRC enters into this MOU under the authority of section 205(c) of the Energy Reorganization Act of 1974 (Public Law 93-438, as amended; 42 U.S.C. 5845(c)).
2. DOE enters into this MOU under the authority of Section 646 of the Department of Energy Organization Act (Public Law 95-91, as amended; 42 U.S.C. 7256).

**III. Communication**

1. To provide for consistent and effective communications, DOE and the NRC have appointed representatives to serve as the points of contact responsible for communicating on all matters related to this MOU. Any changes to the points of contact will be communicated to the other party not less than 30 days in advance of the changes being implemented, to the maximum degree possible. The representatives are:

For the Nuclear Regulatory Commission:

Name: Raymond Furstenau

Title: Director, Office of Nuclear Reactor Research, NRC

Address: 11545 Rockville Pike, TWFN 10 A74, Rockville, MD 20852-2738

Phone: 301-415-1902

Email: Raymond.Furstenau@nrc.gov

For the Department of Energy

Name: Thomas J. O'Connor

Title: Director, Versatile Test Reactor Program, Office of Nuclear Fuel Cycle and Supply Chain, Office of Nuclear Energy, DOE

Address: 19901 Germantown Road, Room D-432, Germantown, MD 20874

Phone: 301-903-6781

Email: tom.oconnor@nuclear.energy.gov

2. DOE and the NRC will establish a monthly phone call (or at another periodicity, as agreed to by DOE and the NRC) between the DOE and the NRC points of contact for the exchange of relevant current information.
  - The call may establish mechanisms for formal correspondence, informal communications, and interfaces between NRC, DOE and laboratory personnel.

#### **IV. Roles and Responsibilities**

1. DOE is the agency responsible for development, funding, technical project management, authorization, deployment, construction, operation, and oversight of the VTR. DOE will conduct the safety review of the VTR and authorize its construction and operation.
2. The NRC, consistent with its role as an independent safety and security regulator and upon request by DOE, will:
  - i. provide DOE and laboratory personnel with information on NRC's regulations, guidance, and licensing processes, included but not limited to: environmental reviews, reactor design, siting, construction, fuel selection, and operation; and
  - ii. designate a senior staff member to provide technical and regulatory expertise to the DOE Safety Basis Approval Authority regarding the applicability, interpretation, and use of NRC Regulatory Guides and other NRC guidance or documentation.
3. DOE will invite NRC staff to technical training developed by DOE and laboratory personnel. Examples of training might include:
  1. Fast reactor system behaviors and responses
  2. Plant operations and interactions
  3. Safety analysis tools and methods
  4. Sodium fundamentals and behaviors (sodium school)

4. DOE or laboratory personnel will provide training to NRC staff on DOE processes, as needed. Topics may include:
  1. Regulations and requirements associated with the DOE phased approval approach (planning, construction and operations)
  2. Agreed upon regulatory pathway (combination of deterministic and risk informed approaches).
  3. DOE approach to safety basis approval, quality record keeping and other approval review requirements
5. DOE will provide NRC staff with an opportunity to observe DOE's VTR authorization review and to attend DOE training to expand NRC staff knowledge and capability to conduct regulatory reviews of future license applications for commercial non-LWRs.
6. DOE and NRC will share information, as appropriate and within the scope of their statutory authority, to support:
  - i. DOE acquiring technical and regulatory information to support the timely research, development, deployment, construction, and operation of the VTR; and
  - ii. NRC acquiring technical expertise to evaluate future applications for licenses, permits, design certifications, and other requests for regulatory approval that involve sodium fast reactors and other advanced technologies.
7. DOE may request that some NRC staff with technical and regulatory expertise in a few key areas supplement DOE's safety review team on a reimbursable basis. DOE may also request that some NRC staff participate on a reimbursable basis in DOE-led independent program review activities, including those required by DOE Order 413.3B, *Program and Project Management for the Acquisition of Capital Assets*. If DOE requests such support and the NRC agrees to provide it on a reimbursable basis, DOE and NRC will enter into an interagency agreement subject to DOE's and NRC's policies and procedures for such agreements. Upon execution by both parties of an interagency agreement, the NRC staff will provide the requested technical and regulatory expertise.
8. DOE will provide NRC staff observing or participating in DOE safety review team with copies of design, analysis, and safety basis documents as needed.
9. The NRC may request that DOE share information used to validate analytical codes and develop other tools (e.g., risk assessments) in support of the safety basis for the VTR. If DOE provides the NRC with the requested information, such information may be used by the NRC to validate its own analytical codes and tools in support of future licensing of sodium fast reactor technology and other advanced technologies.
10. In the event that any activity undertaken by the parties to implement the purposes of this MOU involves access to and sharing or transfer of technology subject to patents or other intellectual property rights, such access and sharing or transfer will be specified in an interagency agreement with terms that recognize and are consistent with the adequate and effective protection of intellectual property rights.

## **V. Commencement, Modification, and Termination**

1. This MOU is effective upon the signature of both parties.
2. Any additions, deletions, or other changes to this MOU shall be by written modification agreed upon by the appropriate official for each party. Either party may initiate such modifications.
3. This MOU is neither a fiscal nor a funds obligation document. All activities pursuant to this MOU are subject to the availability of appropriated funds and each party's budget priorities. Nothing in this MOU authorizes, or is intended to obligate, either party to expend, exchange, or reimburse funds, services, or supplies, or transfer or receive anything of value, or enter into any contract, assistance agreement, interagency agreement, or other financial obligation.
4. The duration of the MOU shall be indefinite. Either party, however, may terminate its participation in this agreement upon 30 days prior written notice to the other party. After such notice, the parties shall meet at a mutually agreed upon location and date to effect an orderly termination of any ongoing or planned activities under this MOU.
5. Nothing in this agreement shall be interpreted as limiting, superseding or otherwise affecting either agency's normal operations or decisions in carrying out its statutory or regulatory duties. This agreement does not limit or restrict the parties from participating in similar activities or arrangements with other entities.
6. This agreement will be executed in full compliance with all applicable statutes and regulations, including the Privacy Act of 1974, the Freedom of Information Act, and the Federal Records Act, and consistent with policies and procedures of DOE and NRC.
7. This MOU is not legally enforceable and shall not be construed to create any legal obligation on the part of either the NRC or DOE. In addition, this MOU shall not be construed to provide a private right of action for or by any person or entity.

## **VI. Severability**

1. If any provision of this MOU, or the application of any provision to any person or circumstances, is or becomes invalid, the remainder of this MOU and the application of such provisions to other persons or circumstances shall not be affected.

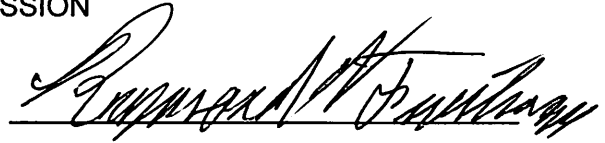
**VII. Agreement**

FOR THE U.S. NUCLEAR REGULATORY COMMISSION

A handwritten signature in black ink, appearing to be 'F. Brown', written over a horizontal line.

Frederick Brown, Director  
Office of New Reactors

Date 9/18/19

A handwritten signature in black ink, appearing to be 'Raymond Furstenau', written over a horizontal line.

Raymond Furstenau, Director  
Office of Nuclear Regulatory Research

Date 9-18-2019

FOR THE DEPARTMENT OF ENERGY

A handwritten signature in black ink, appearing to be 'Thomas J. O'Connor', written over a horizontal line.

Thomas J. O'Connor, Director  
Versatile Test Reactor Program  
Office of Nuclear Fuel Cycle and Supply Chain  
Office of Nuclear Energy

Date 9/18/2019

THE STATE OF TEXAS

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*[Signature]*

County of \_\_\_\_\_

State of \_\_\_\_\_

7/10/2012

1/10/2012

THE STATE OF TEXAS

*[Signature]*

County of \_\_\_\_\_

7/10/2012