

**TERMS OF REFERENCE  
FOR  
THE MEMORANDUM OF COOPERATION (MOC)  
ON  
ADVANCED REACTOR AND SMALL MODULAR REACTOR TECHNOLOGIES  
AMONG  
THE UNITED STATES NUCLEAR REGULATORY COMMISSION,  
THE CANADIAN NUCLEAR SAFETY COMMISSION,  
AND  
THE UNITED KINGDOM OFFICE FOR NUCLEAR REGULATION**

**Purpose**

The Participants prepared these Terms of Reference to:

1. Describe the administration of the cooperation under the Memorandum of Cooperation on Advanced Reactor and Small Modular Reactor (SMR) Technologies between the United States Nuclear Regulatory Commission (USNRC), the Canadian Nuclear Safety Commission (CNSC), and the United Kingdom Office for Nuclear Regulation (ONR), signed March 12, 2024 (the MOC).
2. Facilitate the establishment of a program of work through a committee to accomplish specific cooperative activities under the MOC.

**Governance**

All cooperative activities under the MOC are governed by the understandings set out in the following Memoranda of Understanding (MOUs):

1. Memorandum of Understanding for Cooperation and Exchange of Information in Nuclear Regulatory Matters Between the USNRC and the CNSC, signed March 14, 2023 (USNRC and CNSC MOU).
2. Memorandum of Understanding Between the USNRC and ONR for the Exchange of Information and Cooperation in the Area of Regulation of Safe Nuclear Energy Use for Peaceful Purposes, signed at Rockville and Bootle October 15 and 26, 2020 (USNRC and ONR MOU),
3. Memorandum of Understanding for Cooperation and Exchange of Information in Nuclear Regulatory Matters Between the CNSC and ONR, signed at Toronto and Ormskirk October 6, 2020 (CNSC and ONR MOU).

The activities under the MOC are to be coordinated by a committee of the USNRC-CNSC-ONR, which is to be known as the Advanced Reactor Technologies and Small Modular Reactors Committee (the ART-SMR Committee). The ART-SMR Committee will:

- Meet at least bi-annually, or more frequently, if needed
- Approve and prioritize work plans established to accomplish specific cooperative activities.
- Assess progress of activities, deliverables, and new work plans at least bi-annually or as needed.

The USNRC, the CNSC, and ONR are mature and agile nuclear regulatory bodies that jointly recognize the need for leadership in efficient and effective oversight of advanced reactor and SMR technologies. The Participants acknowledge the differences in each country's regulatory frameworks and licensing processes, while seeking to leverage scientific and engineering assessments from each other's reviews to the extent practical.

The MOC does not in any way change the national regulatory requirements of either country or fetter licensing decision-making. Further, the cooperative activities related to the review of specific technologies are subject to the terms and conditions in the agreements between the Participants and reactor design developers. For ONR, the scope and progression of activities under this MOC is subject to continued government and industry support to the initiative.

### **Application of the Terms of Reference**

Cooperation under the MOC pertains to regulatory activities associated with advanced reactor and SMR technologies. These Terms of Reference apply, but are not limited to, cooperative activities on:

- Nuclear reactors that produce energy
- Water-cooled or non-water cooled (i.e., with alternative coolant technologies) reactors
- Development of shared advanced reactor and SMR technical review approaches that facilitate resolution of common technical questions to facilitate regulatory reviews that address each country's national regulations
- Collaboration on pre-application or pre-licensing activities<sup>1</sup> e.g., design assessment to ensure mutual preparedness to efficiently review advanced reactor and SMR designs
- Collaboration on technical reviews for licensing based on the regulatory framework in each country.
- Collaboration on research, training, and in the development of regulatory approaches to address unique and novel technical considerations for ensuring the safety of advanced reactors and SMRs.
- Exchange of information on advanced reactor and SMR technologies.

### **Desired Outputs**

The outputs of this cooperation may include, but are not limited to:

- Collaboration on technical reviews leading to:
  - Identification and documentation of specific areas of common focus and agreement on acceptability in view of respective safety frameworks
  - Documentation of specific elements of the design where either regulator identified safety concerns.
- Exploration of opportunities for joint research in areas where further research and development could benefit the regulators.
- Collaboration in oversight of research or testing activities related to ongoing or expected regulatory reviews and/or activities intended to be submitted to the regulators for review.

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<sup>1</sup> The pre-application or pre-licensing activities are engagement activities with reactor design developers or proponents (license applicants or licensees). These activities are optional for the applicant or licensee to carry out activities under each Participant's national laws.

- Joint participation in inspections, especially vendor inspections, related to ongoing or expected regulatory review activities intended to be submitted to both regulators for review.
- Sharing independent regulatory review results, seeking to identify possible areas of potential alignment in regulatory approaches and framework.

The cooperative activities under this MOC are intended to:

- Contribute to more efficient use of regulator’s’ resources by leveraging the technical knowledge and resources between the USNRC, the CNSC, and ONR, thereby reducing undue regulatory burden.
- Enhance the depth and breadth of understanding of the respective staff of the CNSC, the USNRC, and ONR on the counterpart nation’s regulatory review activities and requirements.
- Enhance the joint opportunities for learning and understanding the advanced reactor and SMR technologies under review.
- Enable the sharing of regulatory assessments of technical submissions that would be common to NRC, CNSC, and ONR with the goal of assessing the submission once to reduce regulatory burden.
- Ultimately influence a convergence in regulatory standards between the two organizations.

In addition, work plans will describe the deliverables associated with specific cooperation activities. Examples of specific cooperation activities are included in Annex A.

**Administration of the ART-SMR Committee**

Participants will appoint one primary lead (Co-Chair) for all activities under the MOC. These leads will serve as the primary interface between the organizations. Participants will appoint a primary lead for each work plan. These work plan leads are responsible for the delivery of the agreed work.

The ART-SMR Committee members are as follows:

<b>CNSC</b>	<b>USNRC</b>	<b>ONR</b>
Director General of Advanced Reactor Technologies - <i>Co-Chair</i>	Director, Division of Advanced Reactors and Non-Power Production and Utilization Facilities, Office of Nuclear Reactor Regulation (NRR) - <i>Co-Chair</i>	Head of Regulation, Advanced Nuclear Technologies - <i>Co-Chair</i>
Director of Advanced Reactors Assessment Division	Director, Division of New and Renewed Licenses, NRR	Head of Regulation, Generic Design Assessment
Director of Advanced Reactor Licensing Division	Director, Division of Systems Analysis, Office of Nuclear Regulatory Research (RES)	

The program of work will contain projects that will cover common issues of regulatory interest that are within the scope of the MOC.

A work plan will be prepared for each project. The work plan includes a description of the activity that aligns with the MOC, purpose, expected outcomes, responsibilities, project team structure, and schedule. The work plan will also identify the participation status of each participant (e.g.,

active participant, observer, not participating) based on the organization's needs, project timelines, and availability of resources. A sample work plan is included in Annex B.

## **Roles and Responsibilities**

### 1. The ART-SMR Committee will:

- Provide direction on cooperation activities.
- Approve the specific cooperative activities and work plans proposed under the MOC and establish a prioritized list of activities to be accomplished within an agreed upon timeline.
- Oversee the execution of the cooperative activities under the MOC.
- Establish interfaces with organizations, divisions, or directorates within the USNRC, the CNSC, and ONR to ensure appropriate participation.
- Approve the MOC deliverables such as common positions, or other documents or reports related to this MOC (e.g., documentation of regulatory practices, processes, comparison of technical criteria).
- Report on the progress of cooperation activities to the CNSC's Executive Vice-President and Chief Regulatory Operations Officer (EVP-CROO) and the Chief Science Officer (EVP-CSO), the USNRC's Executive Director for Operations (EDO), and ONR's Director of Regulation for New Reactors.

### 2. Project teams will:

- Initiate, plan, coordinate, and report on the activities at an agreed upon schedule.
- Prepare work plans and seek approval as necessary of specific cooperative activities under the MOC.

## **Issue Resolution**

Issues will be resolved as contemplated under Section IX of the USNRC and CNSC MOU, Section IV of the USNRC and ONR MOU, and Article VIII of the CNSC and ONR MOU. Where issues fail to be resolved amicably through mutual consultation or negotiation within the conduct of cooperative activities, disagreements will be raised and addressed in the following manner:

- the project team will send supporting documentation to the ART-SMR Committee to resolve the issue and document the resolution. If the issues cannot be resolved at this level; then
- the supporting documentation will be sent to the CNSC's Executive Vice President and Chief Regulatory Operations Officer (EVP-CROO), the USNRC's EDO, and ONR's Director of Regulation for New Reactors to resolve the issue and document the resolutions.

## **Guiding Principles**

1. Cooperative work on any specific reactor design will be most effective and valuable when the reactor design developer engages with two, but preferably, all three regulators in a similar time frame to allow synergy in the efforts.
2. The USNRC, the CNSC, and ONR will supply the appropriate expertise to contribute effectively to cooperative activities and ensure that the views of the organization are represented.

3. The USNRC, the CNSC, and ONR will endeavor to share their regulatory experiences and lessons learned within the scope of the MOC.
4. The cooperative activities will appropriately control proprietary, sensitive, pre-decisional, and export-controlled information in accordance with Section III of the USNRC and CNSC MOU, Section III of the USNRC and ONR MOU, Article III of the CNSC and ONR MOU, and applicable laws in each country.
5. The cooperative activities will abide by any agreements with reactor design developers or proponents (license applicants or licensees) on the sharing of their information.
6. The issues to be addressed under this cooperation may be proposed by either Participant's members.
7. The ART-SMR Committee members will strive to maintain awareness of the other organizations' work and align its own tasks accordingly where appropriate.
8. The cooperative activities will seek to draw information from existing sources where possible.

### **Communications between the Participants**

Communication between Participants will be through a common and secure information-sharing platform. The platform will facilitate information sharing of the cooperative activities and will be restricted to authorized individuals and password protected.

The ART-SMR Committee meeting may be held using online virtual meeting software or through face-to-face meetings.

### **Communications to Third Parties about Cooperative Activities**

Communications about cooperative activities under the MOC to third parties will be in accordance with Section III of the USNRC and CNSC MOU, Section III of the USNRC and ONR MOU, and Article III of the CNSC and ONR MOU. Each Participant will consult the other on communications it prepares on the results and outcomes of the cooperative activities, with a view towards mutually satisfactory communications. Communications to third parties by a Participant will be provided to the other Participants through the appropriate platform or channel. Communication plans will be included in work plans where appropriate.

Recognizing that the UK Generic Design Assessment (GDA) is a process jointly undertaken by ONR and the Environment Agency of England, ONR will involve the Environment Agency in technical discussions where the topic covers matters of mutual interest, such as radioactive waste management, decommissioning and impacts to the environment.

### **Financial Aspects**

Each Participant continues to be solely responsible for its own participation costs under the MOC, as per Section VII of the USNRC and CNSC MOU, Section IV of the USNRC and ONR MOU, and Article VI of the CNSC and ONR MOU. including the costs each Participant incurs for maintaining and updating a common and secure information sharing platform.

### **Review of Terms of Reference**

This Terms of Reference may be revised from time to time to reflect changes to the scope, objectives, governance, and structure of the cooperative activities under the MOC.





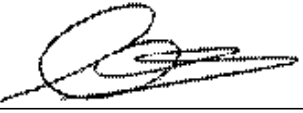
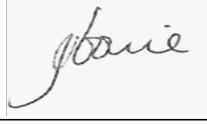
## **Attachments**

- Annex A: Potential Cooperative Activities
- Annex B: Sample Work Plan

## **References**

1. Memorandum of Understanding for Cooperation and Exchange of Information in Nuclear Regulatory Matters Between the United States Nuclear Regulatory Commission and the Canadian Nuclear Safety Commission.
2. Memorandum of Understanding Between the United States Nuclear Regulatory Commission and the Office for Nuclear Regulation of the United Kingdom of Great Britain and Northern Ireland for the Exchange of Information and Cooperation in the Area of Regulation of Safe Nuclear Energy Use for Peaceful Purposes.
3. Memorandum of Understanding for Cooperation and Exchange of Information in Nuclear Regulatory Matters Between the Canadian Nuclear Safety Commission and the United Kingdom Office for Nuclear Regulation.
4. Memorandum of Cooperation on Advanced Reactor and Small Modular Reactor Technologies among the United States Nuclear Regulatory Commission, the Canadian Nuclear Safety Commission, and the United Kingdom Office for Nuclear Regulation.

**Document Approval:**

<p><b>For the NRC:</b></p>	<p><i>ART-SMR Committee Co-Chair</i></p> <p><b>Jeremy Bowen</b></p> <p>Director, Division of Advanced Reactors and Non-Power Production and Utilization Facilities Office of Nuclear Reactor Regulation</p> <p><b>JEREMY BOWEN</b></p> <p> Digitally signed by JEREMY BOWEN Date: 2024.10.11 09:26:07 -04'00'</p> <hr/> <p>Signature</p> <hr/> <p>Date</p>	<p><b>Dr. Mirela Gavrilas</b></p> <p>Executive Director for Operations</p> <p><b>Mirela Gavrilas</b></p> <p> Digitally signed by Mirela Gavrilas Date: 2024.11.04 15:21:06 -05'00'</p> <hr/> <p>Signature</p> <hr/> <p>Date</p>
<p><b>For the CNSC:</b></p>	<p><i>ART-SMR Committee Co-Chair</i></p> <p><b>Sarah Eaton</b></p> <p>Director General of Advanced Reactor Technologies</p> <p><b>Eaton, SarahJane</b></p> <p> Digitally signed by Eaton, SarahJane DN: C=CA, O=GC, OU=CNSC-CCSN, CN="Eaton, SarahJane" Reason: I am approving this document Location: Date: 2025.01.06 13:35:52-05'00' Foxit PDF Editor Version: 13.0.1</p> <hr/> <p>Signature</p> <hr/> <p>Date</p>	<p><b>Ramzi Jammal</b></p> <p>Executive Vice-President and Chief Regulatory Operations Officer</p> <p><b>Jammal, Ramzi</b></p> <p> Digitally signed by Jammal, Ramzi DN: C=CA, O=GC, OU=CNSC-CCSN, CN="Jammal, Ramzi" Reason: I am approving this document Location: Date: 2025.01.06 13:18:10-05'00' Foxit PDF Editor Version: 13.0.1</p> <hr/> <p>Signature</p> <hr/> <p>Date</p>
<p><b>For ONR:</b></p>	<p><i>ART-SMR Committee Co-Chair</i></p> <p><b>Tim Parkes</b></p> <p>Head of Regulation, Advanced Nuclear Technologies</p> <p></p> <hr/> <p>Signature</p> <hr/> <p>21 January 2025</p> <hr/> <p>Date</p>	<p><b>Jane Bowie</b></p> <p>Director of Regulation for New Nuclear Reactors</p> <p></p> <hr/> <p>Signature</p> <hr/> <p>22 January 2025</p> <hr/> <p>Date</p>

## **Annex A: Potential Cooperative Activities**

Cooperative activities carried out under the MOC can include matters of safety, security, safeguards and environmental protection as governed by the understandings set out in the participants' MOUs. This is a proposed list of cooperative activities that may be carried out under the MOC and will align with the scope of this cooperation. A work plan is to be prepared to describe the specific activities, purpose, expected outcomes, deliverables, organizational responsibilities, and schedule.

1. Development of shared advanced reactor and SMR technical review approaches that facilitate resolution of common technical questions to facilitate regulatory reviews that address each party's national regulations. Potential projects include:
  - Common review of reactor technologies that are in USNRC Design Certification (DC), the CNSC Vendor Design Review (VDR), and ONR Early Engagement or GDA at the same time.
  - Exchanging review results of reactor technology reviews.
  - Sharing of common review reports on selected areas or technical topics, with the goal of assessing the submission once to reduce regulatory burden.
  - Sharing of inspection findings.
2. Collaboration on pre-application activities to ensure mutual preparedness to efficiently review advanced reactor and SMR designs. Potential projects include:
  - Staff participation in the CNSC's VDR review for certain portions of an advanced reactor design.
  - Staff participation in the USNRC's review for certain portions of pre-application interactions on an advanced reactor design.
  - Staff participation in ONR's review for certain portions of pre-application interactions on an advanced reactor design.
3. Collaboration on research, training, and the development of regulatory approaches to address unique and novel technical considerations for ensuring the safety of advanced reactors and SMRs. Potential projects include:
  - Sharing training resources.
  - Sharing scope of research projects that are of common interest.
  - Documenting understanding of each party's regulatory framework based on technical discipline
  - Documenting differences in terminology to facilitate communication and understanding for all areas of collaboration.
  - Comparing key existing guidance documents to identify similarities and differences.
  - Consider harmonization of guidance documents, to the extent practicable.
  - Joint review of previously developed guidance to identify differences and commonalities between each party's advanced reactor review approaches in certain areas (e.g., licensing basis event selection and classification of structures, systems, and components).
  - Compare key CNSC, ONR, and NRC licensing documents (e.g., safety evaluations) to identify similarities and differences. Explore harmonizing document structure, to the extent practicable.
  - Collaborate on the development of computer codes for use in reviewing advanced reactor designs.
  - Collaborate on review of new ASME codes and standards.
  - Sharing information, knowledge, and experience in reviewing and regulating fusion activities.



### Annex B: Sample Work Plan

For each cooperative activity that may be carried out under the MOC, the ART-SMR Sub Committee will ensure that a work plan is developed, reviewed, and approved. The work plan should describe the specific activities, purpose, expected outcomes, deliverables, organizational responsibilities, and schedule. A sample work plan follows.

<b>Advanced Reactor Technologies and Small Modular Reactors Committee Work Plan</b>			
<b>Project Title</b>	Cooperation on ...		
<b>Participants' Status</b>	<ul style="list-style-type: none"> <li>• <b>Active Participants:</b> [Enter NRC, CNSC, ONR]</li> <li>• <b>Observers:</b> [Enter NRC, CNSC, ONR, or N/A]</li> <li>• <b>Not Participating:</b> [Enter NRC, CNSC, ONR or N/A]</li> </ul>		
<b>Objective/Scope</b>	Participants will work together to ...		
<b>Context/Background</b>			
<b>Relevance to Memorandum of Cooperation</b>	This project is supportive of MOC ...		
<b>Expected Outputs</b>	Issuance of ...		
<b>Work Process</b>	The participants will form a working group to accomplish this project. The topic areas to cooperate on ...		
<b>Schedule/Milestones</b>	Define tasks and milestones		
<b>Resources</b>	The participants will independently fund efforts for this project. <ul style="list-style-type: none"> <li>• NRC -</li> <li>• CNSC -</li> <li>• ONR -</li> </ul>		
<b>Staffing</b>	<ul style="list-style-type: none"> <li>• NRC - X (work plan co-lead), other individuals</li> <li>• CNSC - X (work plan co-lead), other individuals</li> <li>• ONR - X (work plan co-lead), other individuals</li> </ul>		
<b>Identification and status of potential ongoing international activities on a similar topic</b>			
<b>Interaction with Others</b>	The Working Group will interact with ...		
<b>Committee Approval</b>	<b>For:</b>	<b>Title / Signature:</b>	<b>Date:</b>
	NRC:		
	CNSC:		
	ONR:		