

**IMPLEMENTING AGREEMENT
ON THERMAL-HYDRAULIC
CODE APPLICATIONS AND MAINTENANCE
BETWEEN
THE UNITED STATES NUCLEAR REGULATORY COMMISSION
AND
OFFICE OF ATOMS FOR PEACE**

This Implementing Agreement is made between the United States Nuclear Regulatory Commission (NRC) and Office of Atoms for Peace (OAP) (hereinafter, referred to as the "Parties");

Considering that the Parties:

1. Have a mutual interest in cooperation in the field of reactor and plant systems research, with the objective of improving and helping ensure the safety of reactors internationally;
2. Recognize a need to equitably share both the resources resulting from this research and the effort required to develop those resources;
3. Recognize the Arrangement Between the United States Nuclear Regulatory Commission and the Office of Atoms for Peace Authority of Thailand for the Exchange of Technical Information and Cooperation in Nuclear Safety Matters (the Arrangement), which was signed on March 15, 2017, for 5 years, and this cooperation is an implementation thereof.

The Parties have AGREED as follows:

ARTICLE I - PROGRAM COOPERATION

The Parties, in accordance with the provisions of this Implementing Agreement and subject to applicable domestic laws and regulations in force in their respective Countries, will join together for cooperative research in thermal hydraulic research programs sponsored by the Parties. This Implementing Agreement is not an international agreement and does not give rise to international legal rights or obligations.

ARTICLE II - FORMS OF COOPERATION

Cooperation between the Parties may take the following forms:

- A. Exchange of information in the form of technical reports, experimental data, correspondence, newsletters, visits, joint meetings, and such other means as the Parties agree.
- B. Temporary assignment of personnel of one Party or of its contractors to laboratories or facilities owned by the other Party or in which it sponsors research. Each assignment will be considered on a case-by-case basis and will generally require a separate agreement.
- C. Execution of joint programs and projects, including those involving a division of activities between the Parties. Each joint program and project will be considered on a case-by-case basis and may be the subject of a separate agreement, if determined to be necessary by either of the Parties to this Implementing Agreement or their research organizations. Otherwise, it will be accomplished by an exchange of letters between the research organizations of the Parties, subject at least to the terms and conditions of present Implementing Agreement.
- D. Use by one Party of facilities that are owned by the other Party or in which research is being sponsored by the other Party. Use of these facilities may be subject to commercial terms and conditions.
- E. Visits or assignment of personnel or use of the facilities owned or operated by entities other than the Parties to this Implementing Agreement. The Parties recognize that prior approval by such entities will in general be required regarding terms upon which such visit, assignment, or use should be made.
- F. Any other form agreed between the Parties.

ARTICLE III - SCOPE OF IMPLEMENTING AGREEMENT

- A. Program Objectives
 - 1. Share experience on code errors and inadequacies and cooperate in resolving the deficiencies and maintaining a single, internationally recognized code version. Software quality assurance procedures will be followed and code configuration control will be maintained. Standard programming language will be applied and code portability will be maintained.
 - 2. Share user experience on code scaling, applicability, and uncertainty studies.
 - 3. Share a well-documented code assessment data base.
 - 4. Share experience on full scale power plant safety-related analyses performed using the code. These include analyses of operating reactors, advanced light water reactors, transients, risk-dominant sequences including the front-end of

severe accident sequences, and accident management and operator procedures-related studies.

5. Maintain and improve user expertise and document user guidelines for applying the code.

B. NRC Scope of Responsibility

Subject to the availability of appropriated funds, NRC will provide over the duration of this Implementing Agreement the following specified goods and services:

1. *Coordination and Program Management.* The Thermal-Hydraulic Code Applications and Maintenance Program (CAMP) will be coordinated by NRC. Program information will be documented and circulated via newsletters and NUREG/IA documents. A Technical Program Committee (TPC), comprised of representatives from the Parties, will meet regularly to report on code errors and modeling deficiencies, and recommend and assign rankings to code correction and improvement needs, including approaches to resolution. Error corrections and model improvements will be made within the limits of available resources allocated for each code, taking into account a priority list recommended by the TPC. The TPC will also exchange information on applications and assessment results. TPC meetings will be held twice per year, once in the U.S. and once abroad.
2. NRC is actively developing, improving and maintaining the reactor systems simulation codes known as TRACE and PARCS. NRC will provide to OAP the TRACE and PARCS codes and associated documentation. Code updates will be available on machine-readable media. Complete available documentation will be maintained consisting of: code manuals, models and correlations document, developmental assessment document, user guidelines document, and independent assessment documents. Code configuration control will be maintained to provide an internationally recognized code version. NRC will also provide subsequent updates of the TRACE and PARCS codes and associated documentation that are released during the Implementing Agreement period.
3. The reactor system simulation code known as RELAP5 will be maintained. Code updates will be available on machine-readable media. Complete available documentation will be maintained consisting of: code manuals, models and correlations document, developmental assessment document, user guidelines document, and independent assessment documents. Code configuration control will be maintained to provide an internationally recognized code version. NRC will also provide to OAP the RELAP5 code and associated documentation. NRC will also provide subsequent updates of the RELAP5 code and associated documentation that are released during the Implementing Agreement period.

Symbolic Nuclear Analysis Package (SNAP). SNAP is a graphical user interface and provides a computational environment currently with pre-processor capabilities that assist the user in the development of TRACE and RELAP5 input decks and in running the code. SNAP will be provided. Subsequent updates of SNAP and associated documentation that are released during the Implementing Agreement period will also be provided.

C. OAP Scope of Responsibility

1. In-Kind Contribution. OAP shall submit to NRC one (1) code assessment report per year or other work products of equivalent value. The assessment report shall contain assessment information on the NRC codes that are released through this Implementing Agreement. The content of assessment reports is defined in NUREG-1271. NRC will have the nonexclusive right to publish these assessment reports containing nonproprietary information as NUREG/IA reports with proper reference to the originating Party.

D. Code Applications Analyses to be Exchanged by the Parties

1. Code Scaling, Applicability, and Uncertainty Evaluations. An example of such studies was documented in NUREG/CR-5249.
2. Issue Resolution. Safety issues may arise requiring that analyses be performed to determine whether a particular problem exists. Examples include pressurized thermal shock, interfacing systems LOCA, and long term cooling following a LOCA. OAP will assure that any non-proprietary safety issue analyses performed using the codes specified in Section B.2 and B.3 of Article III will be exchanged.

ARTICLE IV - ADMINISTRATION OF THE IMPLEMENTING AGREEMENT

- A. The Parties will each designate one representative to coordinate and determine the detailed implementation of this cooperation. These representatives may, at their discretion, delegate this responsibility to the appropriate technical staff with respect to a given issue. The single designated representative will be referred to as the Administrator of this Implementing Agreement. Any notices required under this Implementing Agreement will be addressed to the Administrators using the most efficient communication method.
- B. The Implementing Agreement restricts dissemination of proprietary and other confidential or privileged information.
- C. The Parties will endeavor to select technical personnel for assignment in the program who can contribute positively to the program. Technical personnel assigned to the program will be considered visiting scientists (nonsalaried) within the program and will be expected to participate in the conduct of the analyses and experiments of the program as mutually agreed.
- D. Each Party to this Implementing Agreement will have access to all non-proprietary reports written by the other Party's technical personnel assigned to the respective programs that derive from its participation in the Implementing Agreement.
- E. Administrative details concerning questions such as security, indemnity, and liability related to the assignees or trainees will be addressed in personnel assignment Implementing Agreements between the respective Parties.

- F. Travel costs, living expenses, and salaries of visiting technical personnel or personnel participating in program review meetings shall be borne by the Party who incurred them unless specified otherwise.

ARTICLE V - EXCHANGE AND USE OF INFORMATION AND INTELLECTUAL PROPERTY

A. General

The Parties support the widest possible dissemination of information provided, created or exchanged under this Implementing Agreement, subject to the requirements of each Party's national laws, regulations and policies and the need to protect proprietary and other sensitive or privileged information, and subject to the provisions of the Intellectual Property Rights Annex hereby incorporated into this Agreement.

B. Definitions

1. The term "information" means unclassified nuclear energy-related regulatory, safety, safeguards, waste management, scientific, or technical data, including information on results or methods of assessment, research, and any other knowledge provided, created or exchanged under this Agreement.
2. The term "proprietary information" means information created or made available under this Agreement that contains trade secrets or other privileged or sensitive commercial information (such that the person having the information may derive a commercial benefit from it or may have a commercial advantage over those who do not have it), and may only include information which:
 - (a) has been held in confidence by its owner;
 - (b) is of a type which is customarily held in confidence by its owner;
 - (c) has not been transmitted by the owner to other entities (including the receiving Party) except on the basis that it be held in confidence;
 - (d) is not otherwise available to the receiving Party from another source without restriction on its further dissemination;
 - (e) is not already in the possession of the receiving Party; and
 - (f) is otherwise restricted by the provider.
3. The term "other confidential or privileged information" means non-classified information, other than "proprietary information," which has been transmitted and received in confidence under this Implementing Agreement and is protected from public disclosure under the laws, regulations, or policies of the country of the Party providing the information, or is otherwise restricted by the provider.

C. Marking Procedures for Documentary Proprietary Information

A Party receiving documentary proprietary information pursuant to this Agreement will respect the privileged nature of such information, provided that such proprietary information is clearly marked with the following (or substantially similar) restrictive legend:

"This document contains proprietary information furnished in confidence under an Agreement dated _____ between the United States Nuclear Regulatory Commission and the Office of Atoms for Peace and will not be disseminated outside these organizations, their consultants, contractors, and licensees, or concerned departments and agencies of the Government of the United States and the Government of Thailand, without the prior written approval of (name of transmitting Party). This notice will be marked on each page of any reproduction hereof, in whole or in part. These limitations will automatically terminate when this proprietary information is disclosed by the owner without restriction."

This restrictive legend shall be respected by the Parties to this Implementing Agreement. Proprietary information bearing this restrictive legend shall not be made public or otherwise disseminated in any manner unspecified or contrary to the terms of this Implementing Agreement without the prior written consent of the transmitting Party. Proprietary information bearing this restrictive legend shall not be used by the receiving Party or its contractors and consultants for any commercial purposes without the prior written consent of the transmitting Party.

D. Dissemination of Documentary Proprietary Information

1. In general, proprietary information received under this Agreement may be disseminated by the receiving Party without prior consent to persons within or employed by the receiving Party, and to concerned Government departments and Government agencies in the country of the receiving Party, provided
 - (a) such dissemination is made on a case-by-case basis to persons or departments and agencies having a legitimate need for the proprietary information; and
 - (b) such proprietary information shall bear the restrictive legend appearing in section C above of this Agreement.
2. Proprietary information received under this Agreement may be disseminated by the receiving Party without prior consent to contractors and consultants of the receiving Party located within the geographical limits of that Party's nation, provided
 - (a) that the proprietary information is used by such contractors and consultants only for work within the scope of their contracts with the receiving Party relating to the subject matter of the proprietary information, and shall not be used by such contractors and consultants for any other private commercial purposes; and

- (b) that such dissemination is made on a case-by-case basis to contractors and consultants having a legitimate need for the proprietary information and who have executed a non-disclosure agreement; and
 - (c) that such proprietary information shall bear the restrictive legend appearing in section C above of this Agreement.
3. With the prior written consent of the Party furnishing proprietary information under this Agreement, the receiving Party may disseminate such proprietary information more widely than otherwise permitted under the terms set forth in this Agreement. The Parties will endeavor to grant such approval to the extent permitted by their respective national laws, regulations and policies, provided
- (a) that the entities receiving proprietary information under Article V of this Agreement, including domestic organizations permitted or licensed by the receiving Party to construct or operate nuclear production or utilization facilities, or to use nuclear materials and radiation sources, have a legitimate need for the proprietary information and have executed a non-disclosure agreement; and
 - (b) that the entities receiving proprietary information under Article V of this Agreement, including domestic organizations permitted or licensed by the receiving Party to construct or operate nuclear production or utilization facilities, shall not use such proprietary information for any private commercial purposes; and
 - (c) that those entities receiving proprietary information under Article V of this Agreement that are domestic organizations permitted or licensed by the receiving Party, agree to use the proprietary information only for activities carried out under or within the terms of their specific permit or license.

E. Marking Procedures for Other Confidential or Privileged Information of a Documentary Nature

A Party receiving under this Agreement other confidential or privileged information shall respect its confidential nature, provided such information is clearly marked so as to indicate its confidential or privileged nature and is accompanied by a statement indicating:

- 1. that the information is protected from public disclosure by the Government of the transmitting Party; and
- 2. that the information is transmitted under the condition that it be maintained in confidence.

F. Dissemination of Other Confidential or Privileged Information of a Documentary Nature

Other confidential or privileged information may be disseminated in the same manner as that set forth in Paragraph D above, Dissemination of Documentary Proprietary Information.

G. Non-Documentary Proprietary or Other Confidential or Privileged Information

Non-documentary proprietary or other confidential or privileged information provided in seminars and other meetings arranged under this Agreement, or information arising from the attachments of staff, use of facilities, or joint projects shall be treated by the Parties according to the principles specified for documentary information in this Agreement provided however, that the Party communicating such proprietary or other confidential or privileged information has placed the recipient on notice as to the character of the information communicated.

H. Business-Confidential Information

In the event that information identified in a timely fashion as business-confidential is furnished or created under a written arrangement, each Party shall protect such information in accordance with applicable laws, regulations, and administrative practice. Information may be identified as business-confidential if a person having the information may derive an economic benefit from it or may obtain a competitive advantage over those who do not have it, the information is not generally known or publicly available from other sources, and the owner has not previously made the information available without imposing in a timely manner an obligation to keep it confidential. Without prior written consent, neither of the Parties shall disclose any business-confidential information provided by the other Party except to employees and personnel authorized for the specific project pursuant to paragraph D above, Dissemination of Documentary Proprietary Information. All such disclosures shall be for use only within the scope of their contracts or employment with the Parties relating to cooperation under the relevant written arrangement. The Parties shall impose, or shall have imposed, an obligation on those receiving such information to keep it confidential.

I. Consultation

If, for any reason, one of the Parties becomes aware that it will be, or may reasonably be expected to become, unable to meet the non-dissemination provisions of this Agreement, it shall immediately inform the other Party. The Parties shall thereafter consult to define an appropriate course of action.

J. Other Considerations

1. Nothing contained in this Implementing Agreement shall preclude a Party from using or disseminating information received without restriction by a Party from sources outside of this Implementing Agreement.
2. All NRC computer codes disseminated under this Implementing Agreement are to be considered privileged information unless otherwise noted, are protected as such by NRC and OAP respectively, and shall be treated likewise by the Parties. They are, in particular, subject to all the provisions of this Article prior to dissemination. The codes are subject to this protection in both object and source forms and as recorded in any media.
3. NRC codes and other related analytical techniques covered under this Implementing Agreement, and any improvements, modifications or updates to such codes or techniques, are for the purpose of reactor and plant systems safety research and

licensing and will not be used for commercial purposes, or for other benefits not related to the study of reactor safety without the prior consent of NRC.

4. Among the code uses that will be permitted under this Implementing Agreement are those related to research in the reactor safety area and analyses performed by CAMP members or their contractors that can assist regulators and plant personnel in assessing the safety of the plant, analyzing operating events, and training of operators. Specific examples of permitted analyses include: design basis accidents (e.g., loss-of-coolant-accidents), anticipated transients, accident management and emergency operating procedures, mid-loop operation, analyses to support PRA success criteria, power uprates and reload.

Prohibited uses of the NRC codes include: (1) analyses to develop a new reactor design and (2) analyses to support power uprates and reload in the U.S. unless performed by a U.S. subsidiary.

5. NRC codes and other related analytical techniques will not be advertised directly or by implication to obtain contracts related to the construction or servicing of nuclear facilities, nor shall advertising imply that NRC or OAP has endorsed any particular analyses or techniques.
6. All reports published within the scope of this Implementing Agreement and all meetings held shall be in English.

ARTICLE VI - DISPUTES AND WARRANTY OF INFORMATION

- A. All costs arising from this Implementing Agreement shall be borne by the Party that incurs them except when specifically agreed to otherwise. It is understood that the ability of the Parties to carry out their obligations is subject to the availability of funds. It is also understood that the terms herein agreed to represent feasible commitments according to the best understanding regarding resources and costs of the Parties at the time of signature.
- B. Cooperation under this Implementing Agreement shall be in accordance with the laws and regulations of the Parties' respective countries. Any dispute or questions between the Parties concerning the interpretation or application of the Implementing Agreement will be settled by mutual agreement.
- C. Information furnished by one Party to the other under this Implementing Agreement shall be accurate to the best knowledge and belief of the Party supplying the information. However, the application or use of any information exchanged or transferred between the Parties under this Implementing Agreement shall be the responsibility of the Party receiving the information, and the Transmitting Party does not warrant the suitability of the information for any particular use or application.
- D. NRC makes no warranties whatsoever for the ability or suitability of any NRC code or other analytical technique to perform in any particular manner for any particular purpose, or to accomplish any particular task. NRC accepts no liability for damages of any type that may result from the use of its codes or other analytical techniques provided under this Implementing Agreement.

ARTICLE VII - FINAL PROVISIONS

- A. This Implementing Agreement will enter into force upon signature and shall remain in effect for a period of 3 years. This Implementing Agreement may be extended for an additional period of time upon mutual agreement of the Parties.
- B. The Parties enter into this Implementing Agreement with the understanding that reasonable allowances for normal delays will be made in completing the work. The Parties have the right to utilize information provided under this Implementing Agreement after its termination; however, all information protected by provisions of this Implementing Agreement as proprietary, confidential, privileged, or otherwise subject to restriction on disclosure shall remain so protected indefinitely unless mutually agreed to in writing.
- C. A Party may terminate this Implementing Agreement after providing the other Party written notice of its intent to terminate at least 180 days in advance. The Party not terminating will notify the terminating Party before the effective date of termination if termination will result in the terminating Party receiving a disproportionate share of the expected benefit from this Implementing Agreement. Both Parties will endeavor to reach an equitable settlement of the matter through negotiation.
- D. The Parties to this Implementing Agreement reserve the right to modify or extend the specific activities described in Article III within the intended scope of the Implementing Agreement upon written concurrence of their Administrators.
- E. If the portion of the research program of any Party that is pertinent to this Implementing Agreement is substantially reduced or eliminated, the technical scope described in Article III may be adjusted to substitute research of equivalent programmatic interest upon mutual agreement of the Parties.

FOR THE UNITED STATES NUCLEAR REGULATORY COMMISSION:

FOR OFFICE of ATOMS for PEACE of THAILAND:

BY: *Michael F. Weber*

BY: *A. Wongsangchan*

NAME: (PRINT) Michael F. Weber

NAME: (PRINT) Dr. Atchara WONGSAENGCHAN

TITLE: Director of Nuclear Regulatory Research

TITLE: Secretary General

DATE: 24 April 2017

DATE: _____

PLACE: Rockville, MD

PLACE: Bangkok, Thailand

INTELLECTUAL PROPERTY RIGHTS ANNEX

I. General Obligation

The Parties shall ensure adequate and effective protection of intellectual property created or furnished under this Implementing Agreement. Rights to such intellectual property shall be allocated as provided in this Annex.

II. Scope

- A. This Annex is applicable to all cooperative activities undertaken pursuant to this Implementing Agreement, except as otherwise specifically agreed by the Parties or their designees.
- B. For purposes of this Implementing Agreement, "intellectual property" shall mean the subject matter listed in Article 2 of the Convention Establishing the World Intellectual Property Organization, done at Stockholm, July 14, 1967 and may include other subject matter as agreed by the Parties.
- C. Each Party shall ensure, through contracts or other legal means with its own participants, if necessary, that the other Party can obtain the rights to intellectual property allocated in accordance with this Annex. This Annex does not otherwise alter or prejudice the allocation between a Party and its participants, which shall be determined by that Party's laws and practices.
- D. Except as otherwise provided in this Implementing Agreement, disputes concerning intellectual property arising under this Implementing Agreement shall be resolved through discussions between the concerned participating institutions, or, if necessary, the Parties or their designees. Upon mutual agreement of the Parties, a dispute shall be submitted to an arbitral tribunal for binding arbitration in accordance with the applicable rules of international law. Unless the Parties or their designees agree otherwise in writing, the arbitration rules of the United Nations Commission on International Trade Law (UNCITRAL) shall govern.
- E. Termination or expiration of this Implementing Agreement shall not affect rights or obligations under this Annex.

III. Allocation of Rights

- A. Each Party shall be entitled to a worldwide, non-exclusive, irrevocable, royalty-free license in all countries to translate, reproduce, and publicly distribute monographs, scientific and technical journal articles, reports, and books directly arising from cooperation under this Implementing Agreement. All publicly distributed copies of a copyrighted work prepared under this Implementing Agreement shall indicate the names of the authors of the work unless an author explicitly declines to be named.
- B. Rights to all forms of intellectual property, other than those rights described in paragraph III(A) above, shall be allocated as follows:

- (1) Prior to participation in cooperative activities under this Implementing Agreement by a visiting researcher, the host Party or its designee and the Party or its designee employing or sponsoring the visiting researcher may discuss and determine the allocation of rights to any intellectual property created by the visiting researcher. Absent such a determination, visiting researchers shall receive rights, awards, bonuses and royalties in accordance with the policies of the host institution. For purposes of this Implementing Agreement, a visiting researcher is a researcher visiting an institution of the other Party (host institution) and engaged in work planned solely by the host institution.
- (2)
 - (a) Any intellectual property created by persons employed or sponsored by one Party under cooperative activities other than those covered by paragraph III(B)(1) shall be owned by that Party. Intellectual property created by persons employed or sponsored by both Parties shall be jointly owned by the Parties. In addition, each creator shall be entitled to awards, bonuses and royalties in accordance with the policies of the institution employing or sponsoring that creator.
 - (b) Unless otherwise agreed in an implementing or other arrangement, each Party shall have within its territory a right to exploit and allow others to exploit intellectual property created in the course of the cooperative activities.
 - (c) The rights of a Party outside its territory shall be determined by mutual agreement considering, for example, the relative contributions of the Parties and their participants to the cooperative activities, the degree of commitment in obtaining legal protection and licensing of the intellectual property and such other factors deemed appropriate.
 - (d) Notwithstanding paragraphs III.B(2)(a) and (b) above, if either Party believes that a particular project is likely to lead to or has led to the creation of intellectual property not protected by the laws of the other Party, the Parties shall immediately hold discussions to determine the allocation of rights to the intellectual property. If an agreement cannot be reached within three months of the date of the initiation of the discussions, cooperation on the project in question shall be terminated at the request of either Party. Creators of intellectual property shall nonetheless be entitled to awards, bonuses and royalties as provided in paragraph III.B(2)(a).
 - (e) For each invention made under any cooperative activity, the Party employing or sponsoring the inventor(s) shall disclose the invention promptly to the other Party together with any documentation and information necessary to enable the other Party to establish any rights to which it may be entitled. Either Party may ask the other Party in writing to delay publication or public disclosure of such documentation or information for the purpose of protecting its rights in the invention. Unless otherwise agreed in writing, the delay shall not exceed a period of six months from the date of disclosure by the inventing Party to the other Party.

IV. Business Confidential Information

In the event that information identified in a timely fashion as business-confidential is furnished or created under this Implementing Agreement, each Party and its participants shall protect such information in accordance with applicable laws, regulations, and administrative practices. Information may be identified as "business-confidential" if a person having the information may derive an economic benefit from it or may obtain a competitive advantage over those who do not have it, and the information is not generally known or publicly available from other sources, and the owner has not previously made the information available without imposing in a timely manner an obligation to keep it confidential.