

ADDENDUM
to
MEMORANDUM OF UNDERSTANDING
between
U.S. NUCLEAR REGULATORY COMMISSION
and
ELECTRIC POWER RESEARCH INSTITUTE, INC.
on
COOPERATIVE NUCLEAR SAFETY RESEARCH

Maintenance, Support, and Distribution of the xLPR Version 2 Code

I. Introduction

This legally binding Addendum to the Memorandum of Understanding on Cooperative Nuclear Safety Research (the MOU) is entered into by and between the U.S. Nuclear Regulatory Commission (NRC) and the Electric Power Research Institute, Inc. (EPRI) (collectively, the parties) effective as of the date of signature of the last of the parties to execute this Addendum (the Effective Date). The NRC and EPRI are parties to the MOU signed on September 30, 2016. Pursuant to the MOU, the parties agreed to encourage cooperation in nuclear safety research, which provides benefits to the NRC, the nuclear power industry (the Industry), and the public.

This Addendum is authorized pursuant to Section 31 of the Atomic Energy Act (AEA) of 1954, as amended, and/or Section 205 of the Energy Reorganization Act of 1974, as amended. The roles, responsibilities, terms, and conditions of this Addendum should not be interpreted in a manner inconsistent with and shall not supersede applicable laws and regulations.

This Addendum describes a cooperative effort to maintain, support, and distribute the xLPR Version 2 computer code (the "Code"). The parties jointly developed the Code under a separate addendum to the MOU titled, "Extremely Low Probability of Rupture (xLPR) V2."

II. Objectives

The objectives of this Addendum are to establish a framework through which the parties will jointly provide for maintenance, support, and distribution of the Code in its entirety.

III. Scope

A. Maintenance, Support, and Distribution

1. Maintenance

- (a) Maintenance includes, but is not limited to: modifications to the Products outlined in Section III.C to correct identified problems, improve performance or maintainability, keep the Products usable in a changed or changing environment, and detect and correct latent faults; documentation, tracking, and processing of maintenance activities; testing necessary to ensure proper functionality of the Code following maintenance-related changes; and electronic storage of the Products.
- (b) Maintenance activities shall be governed by a quality assurance plan, which will be developed by the parties. This plan shall be an extension of the quality assurance plan used for Code development. It shall, at a minimum, address version control, file back-up, and corrective action procedures.
- (c) All changes to the Products shall be subject to the joint approval of the Project Contacts designated in accordance with Article V. The Project Contacts shall oversee and prioritize all changes and shall render decisions about each change with consideration of the overall costs and benefits and input from the User's Group members.

2. Support

- (a) Support includes, but is not limited to, activities such as providing technical assistance to users regarding installation, licensing, and reporting and correction of issues in the Products. Users may separately procure services for modeling and analysis support.
- (b) A User's Group shall be established and supported to facilitate collaboration and Code application activities among users. User's Group activities may include, but are not limited to, issuing communications and announcements, preparing and delivering training, planning and holding periodic meetings and workshops, and facilitating online discussion forums. The Project Contacts shall oversee and steer the User's Group activities.

3. Distribution

(a) Domestic Distribution

- (i) Domestic Distribution of the Distributable Software and Configuration Control Documents shall be based upon the requirements set forth in Exhibit A. Prior to distribution of the Distributable Software, the License holder shall be required to describe its plans for using the Code. The NRC and EPRI will separately review the planned use to ensure that it is consistent with the

mission of the NRC or the mission of EPRI. The Distributable Software shall only be distributed after both parties determine that the planned use is consistent with their respective missions.

- (ii) The End User License Agreement for Domestic Distribution shall include all of the terms and conditions specified in Exhibit A. It may include additional terms and conditions deemed necessary by the Custodian, provided that the parties agree to the terms.
- (iii) Domestic Distribution of Source Code, as defined in paragraph III.C.1, shall be upon request only, limited to Licensees that possess a currently valid license and executed license agreement. Prior to the distribution of Source Code, the License holder shall be required to describe its plans for using the Source Code. The NRC and EPRI will separately review the planned use to ensure that it is consistent with the mission of the NRC or the mission of EPRI. Source Code shall only be distributed after both parties determine that the planned use is consistent with their respective missions. Nothing in this paragraph shall be interpreted to limit the ability of the parties to separately distribute individual elements of their respective Source Code, as delineated in Section III.D.1.

(b) International Distribution. The Distributable Software shall not be distributed to foreign entities, non-U.S. citizens, or non-U.S. permanent residents without the agreement of the parties. The parties will work toward developing a framework for international distribution, which may be outlined at a later time in an addendum.

B. Custodian

1. Role, Selection, and Direction

Within one year of entering into this Addendum, the parties shall select a suitable third-party contractor (the Custodian) to execute the activities described in this Addendum, with the exception of those activities specifically reserved to the NRC and EPRI. All direction provided to the Custodian shall require mutual agreement between the Project Contacts. The functions of the Custodian may be supplemented by NRC staff and contractors or EPRI staff and contractors.

2. Funding

The NRC and EPRI shall issue and maintain separate contracts with the Custodian. For planning and coordination purposes, the NRC and EPRI may discuss the proposed activities. The Custodian shall be required to allocate costs for activities within the scope of this Addendum between the respective contracts as further described in Section VI.A.

C. Products

1. Source Code

Source Code is the collection of statements or declarations written in human-readable computer programming language, which is primarily used as input to a process that produces an executable program to run “the Code” on a computer. It shall also include new and derivative works as may be produced and incorporated into “the Code” pursuant to the terms of this Addendum.

2. Distributable Software

Distributable Software is “the Code” executable files. It shall also include new and derivative works as may be produced and incorporated into “the Code” pursuant to the terms of this Addendum.

3. Configuration Control Documents

The Configuration Control Documents are, but are not limited to, the user’s manual; those documents pertaining to “the Code” software requirements, software design, software testing; other documents that support the technical basis for “the Code” and its intended applications; and the quality assurance plan required by paragraph III.A.1(b). They also include derivative works of such documents as may be produced or incorporated pursuant to the terms of this Addendum.

4. Reference Products

The Reference Products include other files and documents not covered under paragraphs III.C.1 through III.C.3 that were created as part of the joint NRC-EPRI developmental effort of “the Code” or through the joint activities described in this Addendum. Examples include, but are not limited to, reports, records, training materials, meeting minutes, presentations, technical papers, test files, inputs, and results.

D. Rights and Licensing

1. Source Code and Distributable Software

(a) EPRI Rights

- (i) EPRI possesses title to the following Source Code and Distributable Software elements of the Code:

- (A) Crack Coalescence Module

- (B) In-Service Inspection Module

(C) K Calculator for Circumferential and Axial Part-Through-Wall Cracks Module

(D) K Calculator for Circumferential and Axial Through-Wall Cracks Module

(E) Fatigue Crack Initiation Module

(F) Primary Water Stress Corrosion Crack Initiation Module

(G) Primary Water Stress Corrosion Cracking and Fatigue Crack Growth Rate Module

(H) Thermal Stress Intensity Factors for Any Coolant History (TIFFANY) Module

- (ii) The EPRI products listed in paragraph III.D.1(a)(i) are protected by intellectual property rights including, without limitation, by U.S. copyright laws and by international treaty provisions. EPRI has unlimited rights to use, disclose, reproduce, and prepare derivative works of these products; to distribute copies to the public; and to perform publicly and display publicly in any manner and for any purpose, and to have or permit others to do so.
- (iii) The rights in paragraph III.D.1(a)(ii) shall apply to any derivative works of the products listed in paragraph III.D.1(a)(i) as may be produced through the activities described in this Addendum.
- (iv) EPRI shall exercise its rights to grant the NRC a nonexclusive, nontransferable, worldwide, irrevocable, paid-up (cross) license to use, reproduce, prepare derivative works, and perform publicly and display publicly the products listed in paragraph III.D.1(a)(i), or any portions thereof. EPRI shall also extend to the NRC the same rights to derivative works of these products or any portions thereof as may be produced under this Addendum.
- (v) EPRI agrees to license the products listed in paragraph III.D.1(a)(i), and any derivative works as may be produced under this Addendum, to the Custodian to accomplish the activities outlined in this Addendum.

(b) NRC Rights

(i) Non-Copyrighted Products

(A) The following Source Code and Distributable Software elements of the Code were either developed by NRC employee(s) during the course of their Federal employment or first produced during performance of services procured by the NRC under contract:

- (1) Preprocessor

- (2) Axial Through-Wall Crack Opening Displacement Module
- (3) Circumferential Through-Wall Crack Combined Tension and Bending Crack Opening Displacement Module
- (4) Axial Crack Stability Module
- (5) Through-Wall Crack Axial Stability Module
- (6) Circumferential Through-Wall Crack Stability Module
- (7) Crack Transition Module
- (8) Leakage Rate Module, excluding third-party-developed source code used to determine the thermodynamic properties of water.

(B) The NRC has unlimited rights to the products identified in paragraph III.D.1(b)(i)(A). The NRC may use, disclose, reproduce, and prepare derivative works of these products; distribute copies to the public; and perform publicly and display publicly, in any manner and for any purpose, and to have or permit others to do so.

(C) The rights in paragraph III.D.1(b)(i)(B) shall apply to any derivative works of the products listed in paragraph III.D.1(b)(i)(A) as may be produced through the activities described in this Addendum.

(D) The NRC will exercise its rights to grant EPRI a nonexclusive, nontransferable, worldwide, irrevocable, paid-up (cross) license to use, reproduce, prepare derivative works, and perform publicly and display publicly the products listed in paragraph III.D.1(b)(i)(A), or any portions thereof. The NRC will also extend to EPRI the same rights to derivative works of these products or any portions thereof as may be produced under this Addendum.

(E) The NRC shall authorize the Custodian to use the products listed in paragraph III.D.1(b)(i)(A) and any derivative works as may be produced under this Addendum to accomplish the activities outlined in this Addendum.

(ii) Copyrighted Products

(A) The National Technology and Engineering Solutions of Sandia, LLC possesses copyrights to the following Source Code and Distributable Software elements of the Code:

- (1) GoldSim Model

- (2) GoldSim Player
- (3) Inputs Set
- (4) Graphical User Interface
- (5) Dynamic Link Libraries for Licensing
- (6) Dynamic Link Library Module Wrappers
- (7) Circumferential Surface Crack Stability Module

- (B) The NRC has unlimited rights to the products listed in paragraph III.D.1(b)(ii)(A). The NRC may use, disclose, reproduce, and prepare derivative works of these products; distribute copies to the public; and perform publicly and display publicly, in any manner and for any purpose, and to have or permit others to do so.
- (C) The rights in paragraph III.D.1(b)(ii)(B) will apply to any derivative works of the products listed in paragraph III.D.1(b)(ii)(A) as may be produced through the activities described in this Addendum.
- (D) The NRC will exercise its rights to grant EPRI a nonexclusive, nontransferable, worldwide, irrevocable, paid-up (cross) license to use, reproduce, prepare derivative works, and perform publicly and display publicly the products listed in paragraph III.D.1(b)(ii)(A) or any portions thereof. The NRC will also extend to EPRI the same rights to derivative works of these products or any portions thereof as may be produced under this Addendum.
- (E) The NRC shall authorize the Custodian to use the products listed in paragraph III.D.1(b)(ii)(A) and any derivative works as may be produced under this Addendum to accomplish the activities outlined in this Addendum.

2. Configuration Control Documents and Reference Products

- (a) The NRC and EPRI shall each have unlimited rights to use, disclose, reproduce, and prepare derivative works of the products identified in paragraphs III.C.3 and III.C.4 and shall have the rights to distribute copies of those products to the public, to perform publicly and display publicly in any manner and for any purpose, and to have or permit others to do so provided that each of EPRI and the NRC include any applicable copyright or other intellectual property notices. For the avoidance of doubt, the rights discussed in this paragraph will be granted through the (cross) licensing actions discussed in paragraphs III.D.1. No rights are transferred herein.

(b) The rights in paragraph III.D.2(a) shall also apply to any derivative works of the products listed in paragraphs III.C.3 and III.C.4 as may be produced through the activities described in this Addendum.

E. Development

1. Definition

Development includes modifications that significantly expand the functional capabilities of the Code.

2. Third Party Developments

Any Developments from non-NRC and non-EPRI sources ("Third Party Developments") may be incorporated into the Code subject to approval as described in paragraph III.A.1(c).

3. NRC and EPRI Development

Joint NRC and EPRI Developments and related activities are not authorized under this Addendum. The parties may separately pursue developmental activities, and the results of those activities may be proposed for incorporation into the Code in the same manner as for Third Party Developments. Until the conditions of this paragraph are met, the parties agree not to claim that such Developments are part of the "xLPR" Code or any variation thereof.

F. Organizational Conflicts of Interest

Implementing Section 170A of the Atomic Energy Act, "Conflicts of Interest Relating to Contracts and Other Arrangements," Title 48 CFR Subpart 2009.5, Section 2009.570-3 sets forth the NRC's criteria for recognizing contractor organizational conflicts of interest. EPRI shall inform the NRC of all planned requests for the Custodian to perform work involving the Code including, but not limited to, research, development, evaluation activities, technical support activities, and distribution so that the NRC may determine if such activity gives rise to an organizational conflict of interest or potential organizational conflict of interest, each as defined in Title 48 CFR Subpart 2009.5, Section 2009.570-2. If the NRC determines that an organizational conflict of interest or a potential organizational conflict of interest exists, the parties shall work together to remedy such conflict.

G. Promotional Activities

1. NRC

The NRC, as an independent regulatory agency, does not have statutory promotional authority; therefore, it will not engage in any joint promotion or advertising of the Code. The NRC may, however, provide factual information about the Code.

2. EPRI

EPRI is free to promote the Code provided that it does not claim or publish any statements that indicate the NRC's approval or endorsement of the Code unless approved by the NRC as specified in the Subarticle 1.3, Paragraph (f) of the MOU.

IV. Period of Performance

The initial period of performance will be from the Effective Date through September 30, 2021, to be extended in writing if mutually agreeable to EPRI and the NRC's Office of Nuclear Regulatory Research.

V. Project Direction and Coordination

Designated points of contact for each party (the Project Contacts) shall have the joint authority to plan, coordinate, direct, oversee, monitor, and make decisions concerning activities within the scope of this Addendum. Technical meetings to coordinate this effort and to discuss progress will be arranged through the respective Project Contacts. The Project Contacts are:

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| <p>NRC:</p> <p>Matthew Homiack, Materials Engineer Component Integrity Branch Division of Engineering Office of Nuclear Regulatory Research U.S. Nuclear Regulatory Commission Washington, DC 20555 301-415-2427 Matthew.Homiack@nrc.gov</p> | <p>EPRI:</p> <p>Craig Harrington, Technical Leader, Principal Materials Reliability Program Electric Power Research Institute Las Colinas Tower I, 201 East John Carpenter Freeway, Suite 800 Irving, TX 75062 817-897-1433 charrington@EPRI.com</p> |
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Each party is free to change its respective Project Contact without the consent of the other party; however, any such change shall be communicated in writing to the other party's Project Contact.

VI. Costs and Schedule

A. Costs

The NRC and EPRI shall allocate equally the net total costs for implementing this Addendum. The net total costs are the gross total costs minus any fees collected by the Custodian. The NRC and EPRI are responsible for their respective share of the net total costs. This Addendum does not obligate any funds and is subject to the availability of appropriated funds.

B. Fees

1. Basic License

A fixed-term, non-supported license to use the Code shall be offered for a fee not to exceed \$1,000. The license shall entitle the user to receive all updates to the Code that may be issued during the term of the license. It shall also allow the user to access the Configuration Control Documents. The license fee shall be set by the NRC and EPRI with consideration given to covering handling costs and basic installation assistance.

2. User's Group Membership

Membership in the User's Group and access to related services may be subject to fees in addition to the fee established pursuant to paragraph VI.B.1. The parties shall determine the amount of the fee, provided that the anticipated costs of supporting the User's Group activities shall be considered. The terms of User's Group memberships shall be outlined by the Custodian and subject to NRC and EPRI approval.

3. EPRI Member Fees

EPRI members shall pay the full fee set pursuant to paragraphs VI.B.1 and VI.B.2, as applicable.

4. Fee Collection

The Custodian shall collect all fees set pursuant to paragraphs VI.B.1 and VI.B.2 and use those fees to offset costs pursuant to Section VI.A.

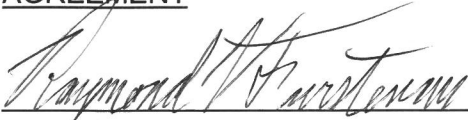
C. Schedule

No specific milestones have been established because of the ongoing nature of the activities outlined in this Addendum. The parties shall deem the work complete when the period of performance ends as specified in Article IV, to include any subsequent extensions.

VII. Dispute

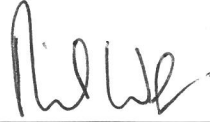
If a dispute arises out of or relating to this Addendum or any breach thereof, the parties will first attempt to settle the dispute through direct negotiation between the Project Contacts. If the Project Contacts cannot settle such a dispute, the dispute shall be submitted to the Senior Management Contacts (as defined in the MOU) for resolution.

AGREEMENT



Raymond V. Furstenau
Director of Nuclear Regulatory Research
U.S. Nuclear Regulatory Commission

Date: August 24, 2018



Neil Wilmshurst
Vice President & Chief Nuclear Officer
Electric Power Research Institute, Inc.

Date: September 14th 2018

Exhibit A

Domestic Distribution Parameters

This Exhibit describes the parameters for Domestic Distribution only.

1. Defined terms:
 - a. "Licensee" shall be an individual who may be the sole end user or a legally recognized corporate entity formed in the United States.
 - b. "User" shall be an individual with access to the Code, either as an individual Licensee or as an employee or third-party consultant performing work on behalf of an entity Licensee.
 - c. "Code" means the Distributable Software or executable version of the xLPR Version 2 computer code funded by EPRI and the NRC.
 - d. "Source Code" means the collection of statements or declarations written in human-readable computer programming language, which is primarily used as input to a process that produces an executable program to run the Code on a computer.
2. Prior to obtaining access to the Code or Source Code, each individual Licensee or an authorized representative of an entity Licensee, as applicable, shall execute a license agreement between the Licensee and Custodian containing the terms and conditions described herein (and any additional terms as agreed to by the parties) in a form to be agreed upon between the NRC, EPRI, and Custodian.
3. All Licensees and Users shall be a U.S. Citizen, a U.S. Permanent Resident or a U.S. entity, as applicable.
4. Each Licensee shall pay a fee set by the NRC and EPRI for a fixed-term, non-supported license to use the Code. The license shall entitle the user to receive all updates to the Code that may be issued during the term of the license. It shall also allow the user to access the Code's Configuration Control Documents. Each Licensee shall be eligible, but shall not be required, to participate in the Users Group.
5. Each Licensee shall be granted an internal use, nonexclusive, nontransferable license to use the Code in accordance with the terms and conditions below. This license shall extend to the Source Code, provided that the NRC and EPRI authorize access to the Source Code in writing. No sale, lease, loan, or transfer of the Code and Source Code may be granted.
6. A Licensee may use the Code and (if authorized) Source Code for its own internal use and may not provide the Code and Source Code to any affiliate or other third party,

except that a Licensee may provide the Code to its employees and third party consultants or contractors performing work for the benefit of such Licensee, provided that any such third party is a U.S. Citizen, a U.S. Permanent Resident or a U.S. entity and agrees to be bound by the terms and conditions of the license agreement.

7. A Licensee may improve, modify or otherwise make derivative works of the Code only in accordance with the following restrictions:
 - a. Licensee shall provide Custodian with the source code for all derivative works of the Code, along with a written description of all improvements or modifications and a summary of their impact on the representative Code calculations. Custodian shall provide a copy of all such derivative works and descriptions to the parties.
 - b. Licensee shall grant to the Custodian, the United States Government, and EPRI a non-exclusive, perpetual, irrevocable, royalty-free, copyright license to copy, modify, create derivative works, publicly display, disclose, distribute, sublicense, incorporate, and otherwise use the modifications, including derivative works thereto, for any and all purposes.
 - c. Licensee may only distribute such derivative works under the same conditions provided in the license agreement for distribution of the Code and Source Code.
 - d. Licensee shall not call a derivative work of the Code "xLPR" or any derivative name.
8. The Code shall be provided "as-is." EPRI, the United States Government nor any agency thereof, nor any of their employees makes any warranty, expressed or implied, or assumes any legal liability or responsibility for any use, or the results of such use, or of any information, product, or process included in or calculated by the Code, or represents that use of the Code would not infringe privately-owned rights.
9. The Code, Source Code, any related documentation, and any derivative works created by Licensee shall be considered confidential information and may not be released to any third party, except as permitted by the license agreement.
10. Each installation instance of the Code shall require a unique license key to run, which will be provided to a named User by the Custodian. Each Licensee may obtain an unlimited number of keys to provide access to its eligible employees or third party contractors or consultants for work performed on Licensee's behalf. The costs associated with issuing additional keys may be charged to Licensee as an additional fee by the Custodian.
11. Licensee shall be required to notify Custodian, EPRI, and the NRC of any public safety problem that may be uncovered through the use of the Code. Information on how to report a safety concern to the NRC is available on its public Web site at www.nrc.gov.

12. Licensee shall be required to describe its plans for using the Code and (if requested) Source Code prior to obtaining the Code or Source Code. The Licensee shall not use the Code or Source Code in a manner that is inconsistent with either the mission of the NRC or the mission of EPRI.
13. Licensee shall be required to communicate any Code errors to Custodian.
14. Licensee shall be solely responsible for obtaining any assistance needed to implement or use the Code. Neither EPRI nor the NRC will provide support for the Code.
15. In no event shall the NRC and its contractors, EPRI and its contractors, and Custodian and its contractors be liable for consequential, indirect, incidental, or special damages. The NRC's and EPRI's liability to any licensee shall be limited to the initial cost to purchase the license.
16. Licensee shall indemnify, defend and hold the NRC and EPRI harmless from and against all damages, costs and fees arising from licensee's use or misuse of the Code and/or breach of Licensee's obligations under any license agreement.
17. Licensee shall acknowledge that the NRC and EPRI neither endorse products or services, nor allow the data or other results of NRC or EPRI work to be used as an endorsement. Licensee shall further agree that it will not, whether explicitly or through implication, use the NRC's name, EPRI's name, the Code, any license agreement, or the results of work from the Code for advertising or other promotional purposes, raising of capital, recommending investments, or in any way that states or implies endorsement by NRC or EPRI. Any exceptions will require the advanced written approval of the NRC and EPRI, which may be withheld at the NRC or EPRI's sole discretion.
18. Licensee shall acknowledge and agree that third party software is required in order to run the Code, including, but not limited to, Microsoft Windows, Microsoft Excel, and GoldSim or the GoldSim Player and that such software is not included as part of the license.